

1. iglidur®



Polymer bearings...35 materials split into 7 groups...

...plastics

Application Examples: iglidur®

Exciting applications can be viewed online at ► www.igus.co.uk/iglidur-applications

SIX FLAGS THEME PARKS

(Rollercoaster)

Here iglidur® Z bearings led to significant reduction of the costs. This was achieved by eliminating the maintenance work completely during the season. With iglidur® Z bearings it is not necessary to check or

relubricate the units and shafts. Also it was possible to reduce the weight.





SURGICAL LIGHT

The motor-powered swiveling LED wings are adjusted with the aid of iglidur® JVFM bearings. Lubrication- and maintenance-free.

(Trumpf iLED Medical Systems Inc.)



WASHING CHAIN BEARINGS

Reduction of the drive power for bottle washing machines by using iglidur® under the most difficult conditions in a 2–3% caustic soda and temperature of +80°C. (Krones AG)



SPREADERS

Main reasons for iglidur® bearings: The special design to complement the centrifugal arm results in a significant reduction of manufacturing costs. It is also maintenance-free and has high wear resistance.

(Fella Werke GmbH & Co. KG)



TOOL CHANGER CHAIN

Main reasons for iglidur® bearings: Enormous cost advantages in comparison to standard metallic rolled bearings as well as low coefficient of friction also with soft shaft materials.

(Deckel Maho Seebach GmbH)



AXLE BOX ARRANGEMENT

The edge load is usually a deciding factor for or against the use of bearings. iglidur® G bearings solve this, also giving high wear resistance, low costs, resistance to corrosion and dirt.

(Zunhammer GmbH Gülletechnik)



TUBULAR BAG MACHINES

The continuous operating temperature in the bonding arms frequently reach +160°C and higher. These requirements are met by iglidur® Z bearings which also offer particularly high resistance to wear.

(Affeldt Verpackungsmaschinen GmbH)

iglidur® Standards from Stock

Standards

► from page 57



iglidur® G

The General Purpose Bearing: most popular iglidur® material worldwide

► page 61



iglidur® J

The Fast and Slow Motion Specialist: used in long-life applications, also with soft shafts

► page 89



iglidur® M250

Thick and tough: excellent vibration dampening

► page 107

iglidur® Specialists from Stock

General Purpose

► from page 171



NEW!*

iglidur® K

Versatile, wear-resistant universal material

► page 175



iglidur® P

Versatile, waterproof

► page 185

For Long Service Life

► from page 171



NEW!*

iglidur® J260

Suitable for plastic shafts

► page 209



NEW!*

iglidur® J3

Runs up to three times longer than iglidur® J

► page 219



NEW!*

iglidur® J350

Extremely wear-resistant in rotation

► page 229

High Temperatures

up to +250 °C

► from page 274



iglidur® V400

High chemical- and temperature resistance

► page 279



NEW!*

iglidur® X6

Runs up to six times longer than iglidur® X

► page 289



iglidur® Z

Wear-resistant at high loads and temperatures

► page 299

High Media Resistance

temperatures up to +200 °C

► from page 320



iglidur® H

The standard for wet and hot conditions

► page 325



iglidur® H1

Long life operation

► page 337



iglidur® H370

Wear resistant under water

► page 347

Applications with Food Contact

► from page 366



iglidur® A180

FDA-general purpose waterproof material

► page 371



iglidur® A200

FDA-compliant and vibration-dampening, absorbs moisture

► page 381



NEW!*

iglidur® A350

FDA-compliant and wear-resistant at high temperatures

► page 397

Special Application Areas

► from page 434



iglidur® F

Electrically conductive and strong

► page 439



iglidur® H4

The automotive under bonnet standard

► page 451



iglidur® Q

Wear-resistant at high loads

► page 461

* in this catalog



iglidur® W300

The Marathon Runner:
long service life, also for
soft shafts

► page 131



iglidur® X

The High-Tech Problem Solver:
chemical- and temperature
resistant up to +250 °C

► page 153

iglidur® Specialists on Request



iglidur® GLW

Strong and low-cost material for
high quantities

► page 197



iglidur® L250

For high speed

► page 239



iglidur® R

Low-cost material,
low wear

► page 249



iglidur® D

Low-cost material
with silicone

► page 259



iglidur® J200

Suitable for anodized
aluminum shafts

► page 267



iglidur® UW500

For use in hot liquids

► page 313



iglidur® H2

Low-Cost high temperature
material

► page 359



iglidur® A500

FDA-material for high
temperatures and high load

► page 407



iglidur® A290

The robust general purpose
material

► page 417



iglidur® T220

Suitable for the tobacco industry

► page 427



iglidur® UW

For fast rotation under water

► page 475



iglidur® B

The flexible material

► page 485



iglidur® C

Free from PTFE and silicone

► page 493



iglidur® G
The General Purpose Bearing
▶ page 61

most popular iglidur®
material worldwide

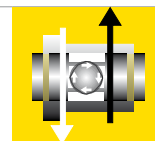


from stock



iglidur® J
The Fast and Slow Motion Specialist
▶ page 89

used in long-life
applications, also with
soft shafts



from stock



iglidur® M250
Thick and Tough
▶ page 107

excellent vibration
dampening



from stock



iglidur® W300
The Marathon Runner
▶ page 131

long service life, also for
soft shafts

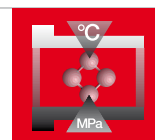


from stock



iglidur® X
The High-Tech Problem Solver
▶ page 153

chemical- and
temperature resistant
up to +250 °C



from stock

iglidur® Specialists | General Purpose



NEW!*
iglidur® K
▶ page 175

versatile, wear-resistant
universal material



from stock



iglidur® P
▶ page 185

versatile, waterproof



from stock



iglidur® GLW
▶ page 197

strong and low-Cost
material for high
quantities



on request

* in this catalog

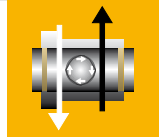


NEW!*

iglidur® J260

▶ page 209

suitable for plastic shafts



from stock

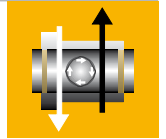


NEW*

iglidur® J3

▶ page 219

runs up to three times longer than iglidur® J



from stock



NEW!*

iglidur® J350

▶ page 229

extremely wear-resistant in rotation



from stock



iglidur® L250

▶ page 239

for high speed



from stock



iglidur® R

▶ page 249

low-cost material, low wear



from stock



iglidur® D

▶ page 259

low-cost material with silicone



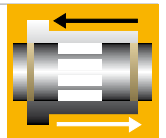
on request



iglidur® J200

▶ page 267

suitable for anodized aluminum shafts



on request

More iglidur® materials and iglidur® special designs (slewing ring bearings, clip bearings, flange bearings, thrust bearings) on the next pages.



* in this catalog

iglidur® Specialists | High Temperatures



iglidur® V400
▶ page 279

high chemical- and
temperature resistance

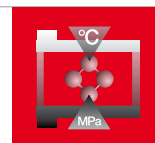


from stock



NEW!*
iglidur® X6
▶ page 289

runs up to six times
longer than iglidur® X

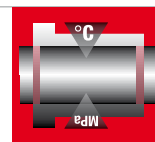


from stock



iglidur® Z
▶ page 299

wear-resistant at high
loads and temperatures

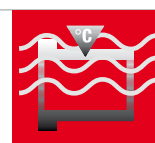


from stock



iglidur® UW500
▶ page 313

for use in hot liquids



on request

iglidur® Specialists | High Media Resistance



iglidur® H
▶ page 325

the standard for wet and
hot conditions

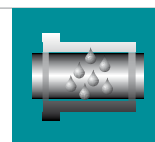


from stock



iglidur® H1
▶ page 337

long life operation

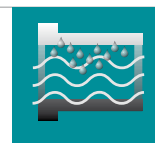


from stock



iglidur® H370
▶ page 347

wear resistant under
water

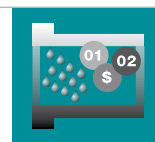


from stock



iglidur® H2
▶ page 359

low-cost high
temperature material



on request

* in this catalog



iglidur® A180
▶ page 371

FDA-general purpose
waterproof material



from stock

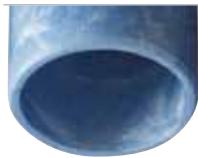


iglidur® A200
▶ page 381

FDA-compliant and
vibration-dampening,
absorbs moisture



from stock



NEW!*
iglidur® A350
▶ page 397

FDA-compliant and
wear-resistant at high
temperatures



from stock



iglidur® A500
▶ page 407

FDA-material for high
temperatures and high
load



from stock



iglidur® A290
▶ page 417

the robust general
purpose material



from stock



iglidur® T220
▶ page 427

suitable for the tobacco
industry



on request

More iglidur® materials and iglidur® special designs (slewing ring bearings, clip bearings, flange bearings, thrust bearings) on the next pages.



* in this catalog



iglidur® F
▶ page 439

electrically conductive
and strong

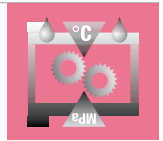


on request



iglidur® H4
▶ page 451

the automotive under
bonnet standard

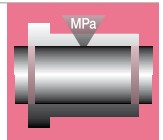


from stock



iglidur® Q
▶ page 461

wear-resistant at high
loads

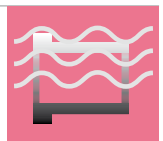


from stock



iglidur® UW
▶ page 475

for fast rotation under
water



from stock



iglidur® B
▶ page 485

the flexible material

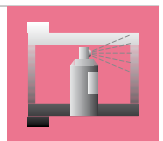


on request



iglidur® C
▶ page 493

free from PTFE and
silicone



on request

iglidur® | Additional Products



**iglidur®
Clip Bearings**
▶ page 503

standard bearing for
sheet metal



from stock



**iglidur®
Clips2**
▶ page 509

easy assembly due to
angle slot



from stock
















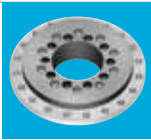






iglidur® MKM
▶ page 513

double flanged bearing



from stock

	<p>iglidur® MDM ▶ page 517</p>	<p>flanged at both ends, easy assembly</p>	
	<p>iglidur® JVSM/JVFM ▶ page 521</p>	<p>pre-tensioned, no clearance</p>	
	<p>iglidur® Flange Bearings ▶ page 525</p>	<p>for every application: made from iglidur® G, J, X or A180</p>	
	<p>iglidur® PEP ▶ page 529</p>	<p>independent of shaft material and surface</p>	
	<p>Polysorb ▶ page 533</p>	<p>compensation of axial clearances and manufacturing tolerances</p>	
	<p>iglidur® JATM/VATM ▶ page 537</p>	<p>maintenance-free high performance thrust bearing</p>	
	<p>iglidur® Sealed Bearing ▶ page 541</p>	<p>polymer bearing with lip seal</p>	
	<p>iglidur® PRT Slewing Ring Bearings ▶ page 545</p>	<p>ready-to-fit and maintenance-free in different designs</p>	
	<p>iglidur® Stock Bars and speedigus ▶ page 555</p>	<p>iglidur® materials as round material or customized molded parts</p>	
	<p>NEW!* iglidur® Piston Rings ▶ page 559</p>	<p>easy clipping</p>	

* in this catalog

iglidur® | Selection According to Four Main Criteria

	Standards					General purpose			Long service life							High	
iglidur®	G	J	M250	W300	X	K	P	GLW	J260	J3	J350	L250	R	D	J200	V400	X6
	●	●	●	●	●	●	●		●	●	●	●	●		●	●	
	●				●			●			●						●
					●						●						●
		●		●		●			●	●	●	●	●	●	●	●	●
	●		●	●			●	●							●		
					●											●	●
		●			●	●	●		●	●	●		●	●		●	●
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		●	●	●						●	●	●	●	●	●	●	
					●												
	●	●	●	●		●	●	●		●			●	●			
Page	61	89	107	131	153	175	185	197	209	219	229	239	249	259	267	279	289



Long life dry running



For high temperatures



Dirt resistant



For high loads



Low friction/high speed



Chemical resistant

temperatures		High media resistance				Applications with food contact						Special application areas					
Z	UW500	H	H1	H370	H2	A180	A200	A350	A500	A290	T220	F	H4	Q	UW	B	C
●			●			●		●					●	●			
●			●						●	●		●	●	●			
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							●									●	
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	●	●	●	●	●			●	●				●		●		
					●	●				●			●		●		
299	313	325	337	347	359	371	381	397	407	417	427	439	451	461	475	485	493



Low water absorption



Vibrations dampening



For under water use



Food suitable








































Edge pressure





Economic

iglidur® | Selection According To Four Main Criteria

	iglidur®	Load [MPa]					Temperature [°C]					Page	
		0	20	40	60	80	100	120	140	0	50		100
Standards	 iglidur® G	[Bar chart: 0-80 MPa]					[Bar chart: 0-120°C]					61	
	 iglidur® J	[Bar chart: 0-30 MPa]					[Bar chart: 0-100°C]					89	
	 iglidur® M250	[Bar chart: 0-15 MPa]					[Bar chart: 0-70°C]					107	
	 iglidur® W300	[Bar chart: 0-55 MPa]					[Bar chart: 0-100°C]					131	
	 iglidur® X	[Bar chart: 0-140 MPa]					[Bar chart: 0-220°C]					153	
General purpose	 iglidur® K	[Bar chart: 0-55 MPa]					[Bar chart: 0-150°C]					175	
	 iglidur® P	[Bar chart: 0-45 MPa]					[Bar chart: 0-110°C]					185	
	 iglidur® GLW	[Bar chart: 0-75 MPa]					[Bar chart: 0-90°C]					197	
Long service life	 iglidur® J260	[Bar chart: 0-35 MPa]					[Bar chart: 0-110°C]					209	
	 iglidur® J3	[Bar chart: 0-40 MPa]					[Bar chart: 0-80°C]					219	
	 iglidur® J350	[Bar chart: 0-55 MPa]					[Bar chart: 0-210°C]					229	
	 iglidur® L250	[Bar chart: 0-35 MPa]					[Bar chart: 0-80°C]					239	
	 iglidur® R	[Bar chart: 0-20 MPa]					[Bar chart: 0-80°C]					249	
	 iglidur® D	[Bar chart: 0-20 MPa]					[Bar chart: 0-80°C]					259	
	 iglidur® J200	[Bar chart: 0-20 MPa]					[Bar chart: 0-80°C]					267	
High temperatures	 iglidur® V400	[Bar chart: 0-40 MPa]					[Bar chart: 0-180°C]					279	
	 iglidur® X6	[Bar chart: 0-140 MPa]					[Bar chart: 0-220°C]					289	
	 iglidur® Z	[Bar chart: 0-140 MPa]					[Bar chart: 0-220°C]					299	
	 iglidur® UW500	[Bar chart: 0-130 MPa]					[Bar chart: 0-220°C]					313	
High media resistance	 iglidur® H	[Bar chart: 0-80 MPa]					[Bar chart: 0-180°C]					325	
	 iglidur® H1	[Bar chart: 0-75 MPa]					[Bar chart: 0-180°C]					337	
	 iglidur® H370	[Bar chart: 0-70 MPa]					[Bar chart: 0-180°C]					347	
	 iglidur® H2	[Bar chart: 0-100 MPa]					[Bar chart: 0-180°C]					359	
Applications with food contact	 iglidur® A180	[Bar chart: 0-15 MPa]					[Bar chart: 0-80°C]					371	
	 iglidur® A200	[Bar chart: 0-15 MPa]					[Bar chart: 0-70°C]					381	
	 iglidur® A350	[Bar chart: 0-65 MPa]					[Bar chart: 0-160°C]					397	
	 iglidur® A500	[Bar chart: 0-110 MPa]					[Bar chart: 0-220°C]					407	
	 iglidur® A290	[Bar chart: 0-60 MPa]					[Bar chart: 0-120°C]					417	
	 iglidur® T220	[Bar chart: 0-35 MPa]					[Bar chart: 0-80°C]					427	
Special application areas	 iglidur® F	[Bar chart: 0-90 MPa]					[Bar chart: 0-120°C]					439	
	 iglidur® H4	[Bar chart: 0-55 MPa]					[Bar chart: 0-180°C]					451	
	 iglidur® Q	[Bar chart: 0-85 MPa]					[Bar chart: 0-120°C]					461	
	 iglidur® UW	[Bar chart: 0-45 MPa]					[Bar chart: 0-80°C]					475	
	 iglidur® B	[Bar chart: 0-35 MPa]					[Bar chart: 0-80°C]					485	
	 iglidur® C	[Bar chart: 0-35 MPa]					[Bar chart: 0-80°C]					493	

Maximum permissible radial load of iglidur® bearings at
 +20°C
 +120°C

Important temperature limits of iglidur® bearings
 Maximum permissible application temperature, continuous
 Temperature where bearings need to be secured against radial or axial movement in the housing

iglidur® | Selection According To Four Main Criteria

Icon	iglidur®	Coefficient of friction [μ]					Shaft	Wear [$\mu\text{m}/\text{km}$]					Shaft	Page	
		0	0,1	0,2	0,3	0,4		0,5	0	5	10	15			
	iglidur® G						3						3	61	Standards
	iglidur® J						3						3	89	
	iglidur® M250						5						3	107	
	iglidur® W300						7						3	131	
	iglidur® X						4						4	153	
	iglidur® K						3						3	175	General purpose
	iglidur® P						3						1	185	
	iglidur® GLW						1						2	197	
	iglidur® J260						4						3	209	Long service life
	iglidur® J3						7						3	219	
	iglidur® J350						2						7	229	
	iglidur® L250						4						1	239	
	iglidur® R						1						1	249	
	iglidur® D						7						7	259	
	iglidur® J200						6						5	267	
	iglidur® V400						2						3	279	High temperatures
	iglidur® X6						3						3	289	
	iglidur® Z						3						3	299	
	iglidur® UW500						3						6	313	
	iglidur® H						3						5	325	High media resistance
	iglidur® H1						1						3	337	
	iglidur® H370						3						2	347	
	iglidur® H2						3						4	359	
	iglidur® A180						4						3	371	Applications with food contact
	iglidur® A200						4						3	381	
	iglidur® A350						6						2	397	
	iglidur® A500						4						2	407	
	iglidur® A290						3						2	417	
	iglidur® T220						3						3	427	
	iglidur® F						6						1	439	Special application areas
	iglidur® H4						3						5	451	
	iglidur® Q						2						3	461	
	iglidur® UW						3						6	475	
	iglidur® B						6						1	485	
	iglidur® C						4						7	493	





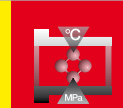

Coefficients of friction of iglidur® bearings sliding against steel, $p = 1.2 \text{ MPa}$, $v = 0.3 \text{ m/s}$
 Average coefficient of all the seven sliding combinations tested
 Coefficient of friction of best combination

Wear of iglidur® bearings sliding against steel, $p = 1 \text{ MPa}$
 Average wear of all the seven sliding combination tested
 Wear of best combination

Shaft material:
 1 = Cf53 5 = St37
 2 = Hard chromed 6 = V2A
 3 = Alu. hc 7 = X90
 4 = Free-cutting Steel

If you are unsure which material you need, please go back to relevant selection tables, or call us

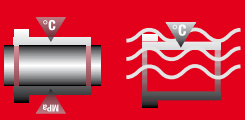


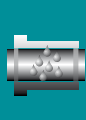
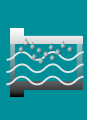

- ▶ According to main properties, page 32
- ▶ According to performance, page 34

	Standards					General
						
iglidur®	G	J	M250	W300	X	K
General properties						
Density (g/cm ³)	1.46	1.49	1.14	1.24	1.44	1.52
Colour	dark grey	yellow	charcoal	yellow	black	yellow-beige
Max. moisture absorption at +23 °C/50 % r.h. (% weight)	0.7	0.3	1.4	1.3	0.1	0.1
Max. moisture absorption (% weight)	4.0	1.3	7.6	6.5	0.5	0.6
Coefficient of sliding friction. dynamic against steel (μ)	0.08–0.15	0.06–0.18	0.18–0.40	0.08–0.23	0.09–0.27	0.06–0.2
pv value. max. (dry) against a steel shaft. +20 °C. wall thickness 1 mm MPa · m/s	0.42	0.34	0.12	0.23	1.32	0.3
Mechanical properties						
Modulus of elasticity (MPa)	7,800	2,400	2,700	3,500	8,100	3,500
Tensile strength at +20 °C (MPa)	210	73	112	125	170	80
Compressive strength (axial) (MPa)	78	60	52	61	100	60
Max. permissible static surface pressure (+20 °C) (MPa)	80	35	20	60	150	60
Shore-D-hardness	81	74	79	77	85	72
Physical and thermal properties						
Max. long term application temperature (°C)	+130	+90	+80	+90	+250	+170
Max. short term application temperature (°C)	+220	+120	+170	+180	+315	+240
Min. application temperature (°C)	-40	-50	-40	-40	-100	-40
Thermal conductivity [W/m · K]	0.24	0.25	0.24	0.24	0.60	0.25
Coefficient of thermal expansion (+23 °C) [K ⁻¹ · 10 ⁻⁵]	9	10	10	9	5	3
Electrical properties						
Specific volume resistance (Ωcm)	> 10 ¹³	> 10 ¹³	> 10 ¹³	> 10 ¹³	< 10 ⁵	> 10 ¹²
Surface resistance (Ω)	> 10 ¹¹	> 10 ¹²	> 10 ¹¹	> 10 ¹²	< 10 ³	> 10 ¹²
Page	61	89	107	131	153	175

purpose		Long service life								High temperatures	
P	GLW	J260	J3	J350	L250	R	D	J200	V400	X6	
1.58	1.36	1.35	1.42	1.44	1.5	1.39	1.4	1.72	1.51	1.53	
black	black	yellow	yellow	yellow	beige	dark red	green	dark grey	white	blue/grey	
0.2	1.3	0.2	0.3	0.3	0.7	0.2	0.3	0.2	0.1	0.1	
0.4	5.5	0.4	1.3	1.6	3.9	1.1	1.1	0.7	0.2	0.5	
0.06–0.21	0.1–0.24	0.06–0.2	0.06–0.2	0.08–0.2	0.08–0.19	0.09–0.25	0.08–0.26	0.11–0.17	0.15–0.20	0.09–0.25	
0.39	0.3	0.35	0.5	0.45	0.4	0.27	0.27	0.3	0.5	1.35	
5,300	7,700	2,200	2,700	2,000	1,950	1,950	2,000	2,800	4,500	16,000	
120	235	60	70	55	67	70	72	58	95	290	
66	74	50	60	60	47	68	70	43	47	190	
50	80	40	45	60	45	23	23	23	45	150	
75	78	77	73	80	68	77	78	70	74	89	
+130	+100	+120	+90	+180	+90	+90	+90	+90	+200	+250	
+200	+160	+140	+120	+220	+180	+110	+110	+120	+240	+315	
-40	-40	-100	-50	-100	-40	-50	-50	-50	-50	-100	
0.25	0.24	0.24	0.25	0.24	0.24	0.25	0.25	0.24	0.24	0.55	
4	17	13	13	7	10	11	11	8	3	1	
> 10 ¹³	> 10 ¹¹	> 10 ¹²	> 10 ¹²	> 10 ¹³	> 10 ¹⁰	> 10 ¹²	> 10 ¹⁴	> 10 ⁸	> 10 ¹²	< 10 ⁵	
> 10 ¹²	> 10 ¹¹	> 10 ¹⁰	> 10 ¹²	> 10 ¹⁰	> 10 ¹¹	> 10 ¹²	> 10 ¹⁴	> 10 ⁸	> 10 ¹²	< 10 ⁵	
185	197	209	219	229	239	249	259	267	279	289	

If you are unsure which material you need, please go back to relevant selection tables, or call us

- ▶ According to main properties, page 32
- ▶ According to performance, page 34

	High temperatures		High media resistance			
						
iglidur®	Z	UW500	H	H1	H370	H2
General properties						
Density (g/cm ³)	1.4	1.49	1.71	1.53	1.66	1.72
Colour	brown	black	grey	cream	grey	brown
Max. moisture absorption at +23 °C/50 % r.h. (% weight)	0.3	0.1	0.1	0.1	0.1	0.1
Max. moisture absorption (% weight)	1.1	0.5	0.3	0.3	0.1	0.2
Coefficient of sliding friction. dynamic against steel (μ)	0.06–0.14	0.20–0.36	0.07–0.2	0.06–0.2	0.07–0.17	0.07–0.30
pv value. max. (dry) against a steel shaft. +20 °C. wall thickness 1 mm MPa · m/s	0.84	0.35	1.37	0.80	0.74	0.58
Mechanical properties						
Modulus of elasticity (MPa)	2,400	16,000	12,500	2,800	11,100	10,300
Tensile strength at +20 °C (MPa)	95	260	175	55	135	210
Compressive strength (axial) (MPa)	65	140	81	78	79	109
Max. permissible static surface pressure (+20 °C) (MPa)	150	140	90	80	75	110
Shore-D-hardness	81	86	87	77	82	88
Physical and thermal properties						
Max. long term application temperature (°C)	+250	+250	+200	+200	+200	+200
Max. short term application temperature (°C)	+310	+300	+240	+240	+240	+240
Min. application temperature (°C)	-100	-100	-40	-40	-40	-40
Thermal conductivity [W/m · K]	0.62	0.6	0.6	0.24	0.5	0.24
Coefficient of thermal expansion (+23 °C) [K ⁻¹ · 10 ⁻⁵]	4	4	4	6	5	4
Electrical properties						
Specific volume resistance (Ωcm)	> 10 ¹¹	< 10 ⁹	< 10 ⁵	> 10 ¹²	< 10 ⁵	> 10 ¹⁵
Surface resistance (Ω)	> 10 ¹¹	< 10 ⁹	< 10 ²	> 10 ¹¹	< 10 ⁵	> 10 ¹⁴
Page	299	313	325	337	347	359

	Applications with food contact						Special application areas					
	A180	A200	A350	A500	A290	T220	F	H4	Q	UW	B	C
	1.46	1.14	1.42	1.28	1.41	1.28	1.25	1.79	1.4	1.52	1.15	1.1
	white	white	blue	brown	white	white	black	brown	black	black	grey	white
	0.2	1.5	0.6	0.3	1.7	0.3	1.8	0.1	0.9	0.2	1.0	1.0
	1.3	7.6	1.9	0.5	7.3	0.5	8.4	0.2	4.9	0.8	6.3	6.9
	0.05–0.23	0.10–0.40	0.09–0.2	0.26–0.41	0.13–0.40	0.20–0.32	0.1–0.39	0.08–0.25	0.05–0.15	0.15–0.35	0.18–0.28	0.17–0.25
	0.31	0.09	0.40	0.28	0.23	0.28	0.34	0.70	0.55	0.11	0.15	0.10
	2,300	2,500	2,000	3,600	8,800	1,800	11,600	7,500	4,500	9,600	1,800	1,900
	88	116	110	140	250	65	260	120	120	90	55	60
	78	54	78	n.b.	91	55	98	50	89	70	20	30
	28	18	60	120	70	40	105	65	100	40	40	40
	76	81	76	83	88	76	84	80	83	78	69	72
	+90	+80	+180	+250	+140	+100	+140	+200	+135	+90	+100	+90
	+110	+170	+210	+300	+180	+160	+180	+240	+155	+110	+130	+130
	-50	-40	-100	-100	-40	-40	-40	-40	-40	-50	-40	-40
	0.25	0.24	0.24	0.24	0.24	0.24	0.65	0.24	0.23	0.6	0.24	0.24
	11	10	8	9	7	11	12	5	5	6	12	15
	> 10 ¹²	> 10 ¹³	> 10 ¹¹	> 10 ¹⁴	> 10 ¹¹	> 10 ¹⁰	< 10 ³	> 10 ¹³	> 10 ¹⁵	< 10 ⁵	> 10 ¹⁰	> 10 ¹⁰
	> 10 ¹¹	> 10 ¹²	> 10 ¹¹	> 10 ¹³	> 10 ¹¹	> 10 ¹⁰	< 10 ²	> 10 ¹²	> 10 ¹²	< 10 ⁵	> 10 ⁹	> 10 ⁹
	371	381	397	407	417	427	439	451	461	475	485	493

iglidur® | High Performance Polymer – Properties



iglidur® – Plain Bearings Made of High Performance Polymers

Excellent polymers, improved by precise additions of reinforcing materials and lubricants, tested a thousand times and proven a million times.

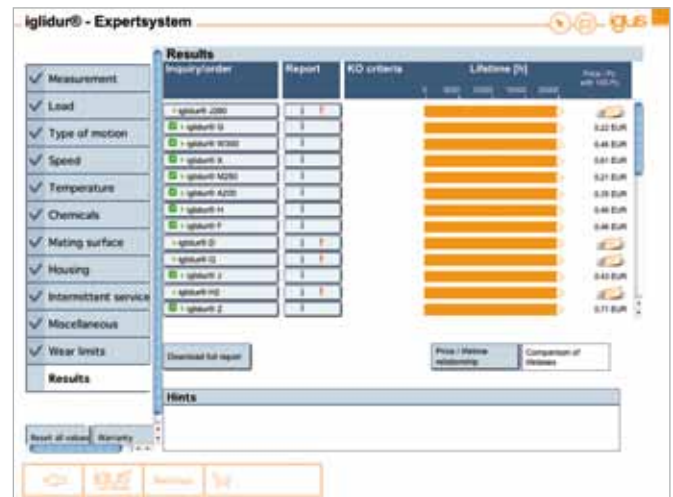
Each year, igus® engineers develop more than one hundred new plastic compounds and test maintenance free plain bearings in more than 5,000 experiments per year. That's how in recent years they have built an extensive database of the tribological properties of polymers.

This database makes it possible for us to better assess most of the applications in advance, to calculate the expected service life, and provide our customer with confidence during use.

Lifetime-predictable plain bearing without lubrication at low cost



Plain bearing laboratory for tribological tests



www.igus.co.uk/iglidur-expert

General Properties of iglidur® Plain Bearings

- High dimensional accuracy
- Corrosion resistance
- High compressive strength
- High vibration dampening
- Good heat dissipation
- Low heat relaxation
- Maintenance-free
- High dirt resistance
- Very low tendency to creep

Above and beyond the general properties, each iglidur® bearing material has a series of particular properties that makes it suitable for certain applications and requirements. You'll find a detailed description of the materials in the following chapters together with a complete list of existing dimensions.



iglidur® plain bearings: the right material for every application

iglidur® | Assembling

Bearings have to absorb – some over years – high loads while giving at the same time low friction and resistance to wear.

The Traditional Solution

Hard shells with soft coating. Every lubricated bearing works according to this principle, and also a number of maintenance-free bearings that are equipped with special slide layers. However, this soft slide layer is not strong enough. For high loads, edge pressure or oscillations, it is easily removed.

The iglidur® Solution: The Self-Lubricating Effect

The high performance polymers of the iglidur® plain bearing are composed of:

- Base polymer
- Fibres and filling materials
- Solid lubricants

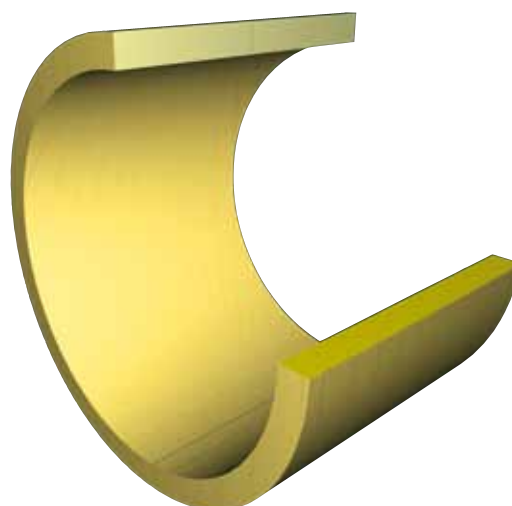
These components are not applied in layers, but instead are mixed together homogeneously. The advantage of this design is clear when the requirements are studied:

1. The coefficient of friction, which is determined especially by the surface of the bearing, should be as low as possible.
2. The surface cannot be removed by forces that act on the bearing.
3. The wearing force acts especially on the surface of the bearing, for this the bearing must be capable of high resistance.

There is no such thing as a single, universal material that performs all of these functions well.

One component of the iglidur® materials acts for each function of the bearing:

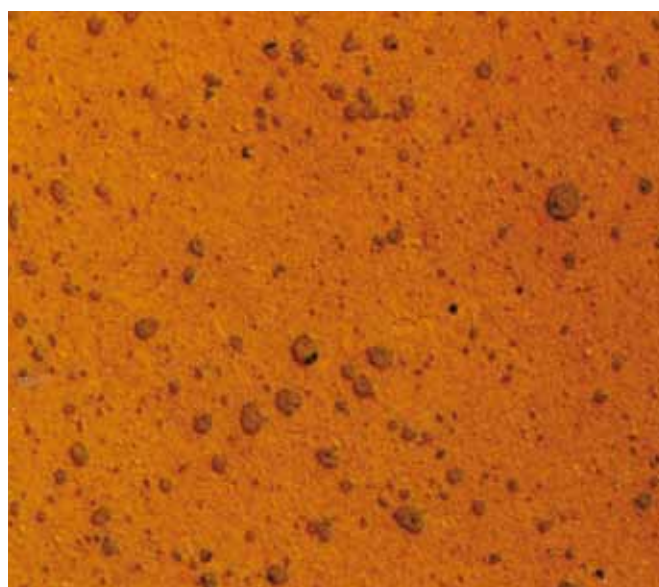
- The base polymers are responsible for the resistance to wear.
- Fibres and filling materials reinforce the bearing so that high forces or edge loads are possible.
- Solid lubricants lubricate the bearing independently and prevent friction of the system.



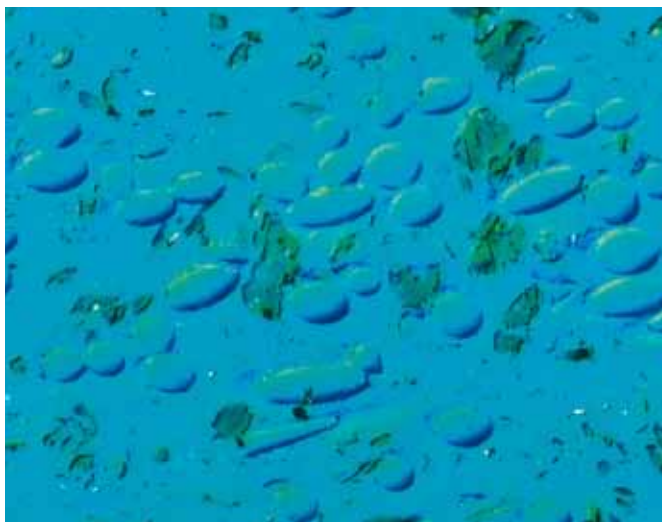
Injection molded iglidur® plain bearings are homogeneously structured. Base polymer, bonding materials and solid lubricants mutually complement each other.

Base Polymers and Technical Fibres

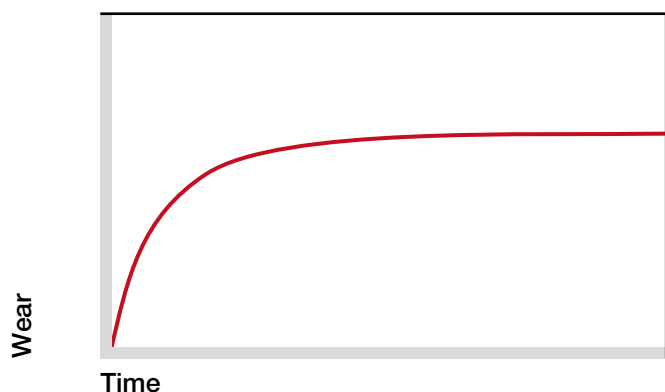
The radial pressure with which the bearings are loaded is received by the polymer base material. In the contact area, this material provides a support to the shaft. The polymer base material ensures that the lubricants do not receive a surface pressure that is too high. The base material is also reinforced by technical fibres or filling materials. These additional materials stabilize the bearing especially in cases of continuous load.



Base polymers without reinforcing materials with solid lubricants, magnified 50 times, dyed



Base polymers with fibres and solid lubricants, magnified 200 times, dyed.



Graph 01: During the start-up phase, the wear rate drops significantly, and then stabilises.

Incorporated Self-Lubrication

The solid lubricants are, as microscopically small particles, embedded in millions of tiny chambers of the mostly fibre reinforced material. From these chambers, the plain bearings release tiny amounts of solid lubricants during movement. The solid lubricants help to lower the coefficient of friction of the iglidur® bearing. Since they are embedded in the tiny chambers, they cannot be pressed out. They are always there as soon as the bearing or the shaft is set in motion.

The Start-Up Phase

In the starting phase, the shaft and the iglidur® plain bearing engage with each other. During this phase, the surfaces of both materials are adjusted to each other. The specific pressure of the system drops since the contact surfaces of the shaft and bearing expand during the start-up. At the same time, the rate of wear decreases and approaches a linear curve. In this phase, the coefficients of friction are changing until finally reaching a value that to a large extent is constant.

iglidur® | Technical Data

Surface Pressure

The load of a plain bearing is expressed by the surface pressure [p] in MPa. For this purpose, the radial load is determined on the projected surface of the bearing.

Radial bearing:

$$p = \frac{F}{d1 \cdot b1}$$

For thrust bearings, the load is produced accordingly.

Thrust bearing:

$$p = \frac{F}{(d2^2 - d1^2) \cdot \frac{\pi}{4}}$$

In these equations:

- F** load in N
- d1** bearing inner diameter in mm
- b1** bearing length in mm
- d2** outer diameter of the bearing in mm

Max. Recommended Surface Pressure

A comparative value of the iglidur® material is the recommended maximum static surface pressure [p] at +20 °C. The values of the individual iglidur® plain bearings differ greatly on this point. The value [p] indicates the pressure limit of a plain bearing. The plain bearing can carry this pressure permanently without damage. The given value applies to static operation; only very slow speeds up to 0.01 m/s are tolerated under this pressure. Higher pressures than those indicated are possible if the duration of the load is short. Please call us if you have questions.

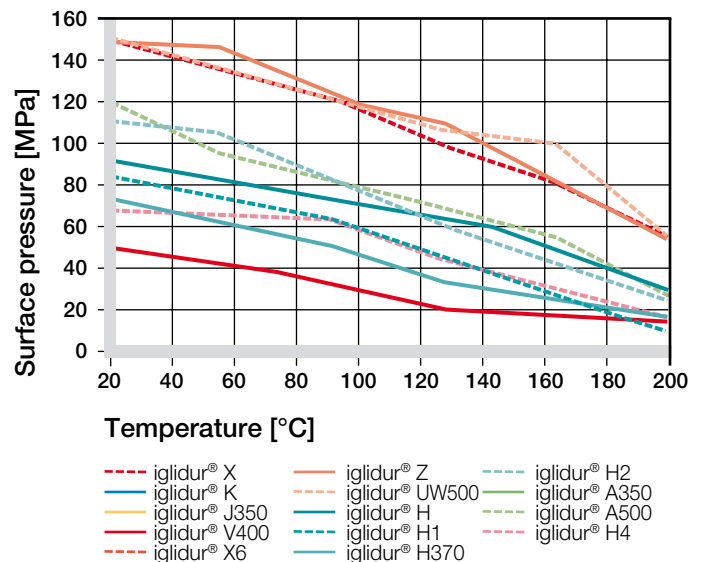
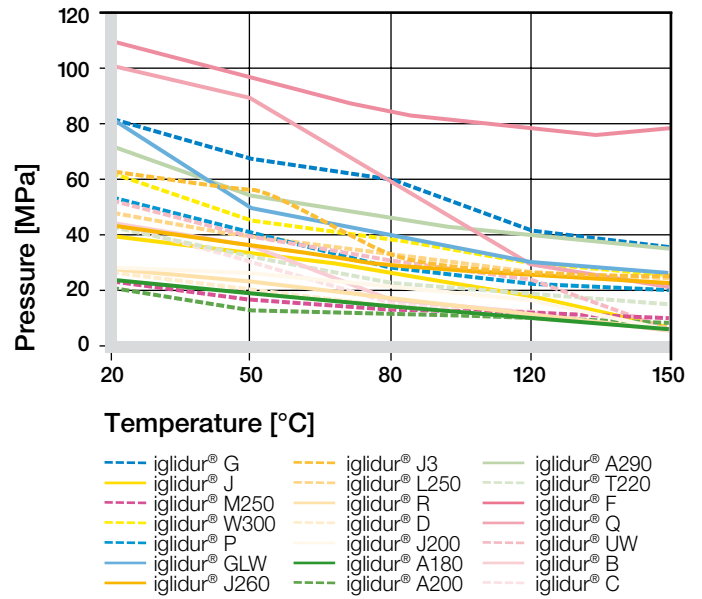
► Material Table, page 36

Load and Temperature

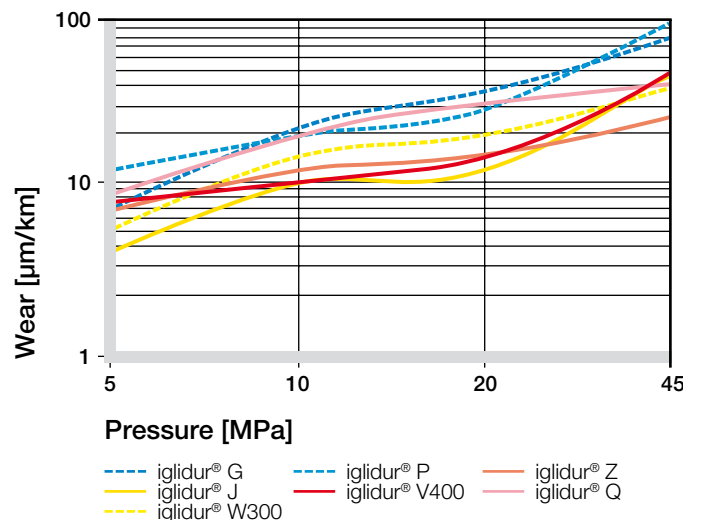
Graph 02 and 03 shows the recommended maximum static surface pressure [p] of the iglidur® plain bearing as a function of temperature. When using the plain bearing, the bearing temperature can be higher than the ambient temperature, due to friction. Take advantage of the opportunity presented by the predictability of the iglidur® plain bearing to record these effects in advance, or determine the effective temperatures in the test.

Pressure and Speed

With decreasing radial load on the plain bearing, the permissible surface speed increases. The product of the pressure [p] and speed [v] can be understood as a measurement for the frictional heat of the bearing. This relationship is shown by the pv graph that is the first in the respective chapter for each iglidur® material.



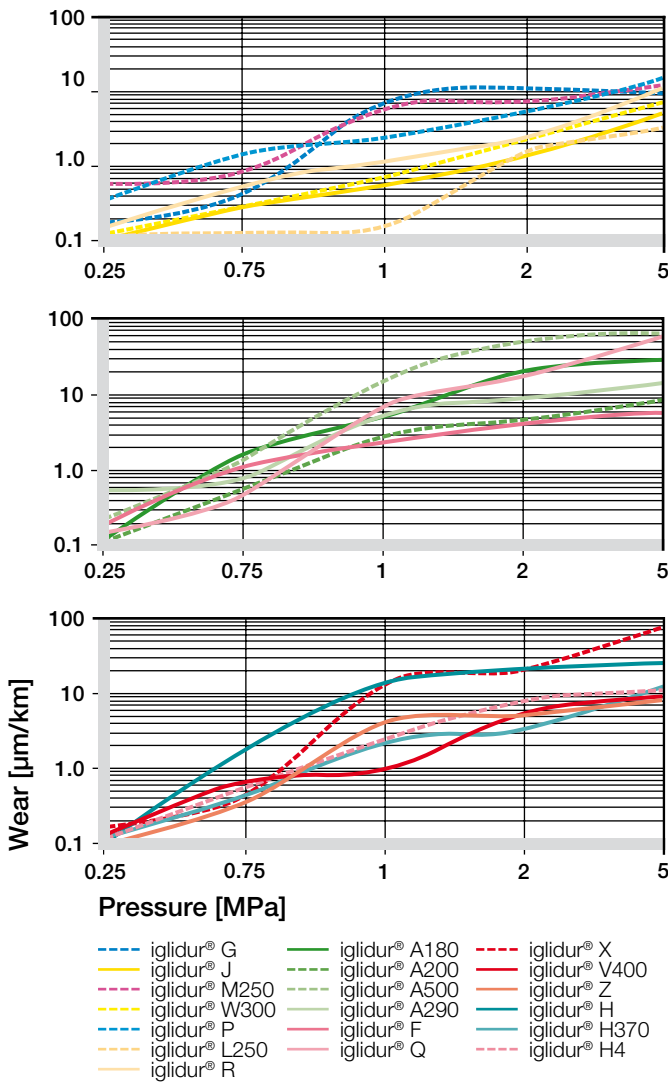
Graph 02 and 03: Recommended maximum surface pressure of iglidur® plain bearings as a function of temperature



Graph 04: Wear of iglidur® plain bearings under medium and high pressures

Pressure and Wear

The load of the plain bearing has an effect on the wear of the bearing. The following graphs show the wear behaviour of the iglidur® bearing materials. It is easily recognized that for each pressure, there is an optimal plain bearing available. The wear is shown as a wear rate in [µm/km].

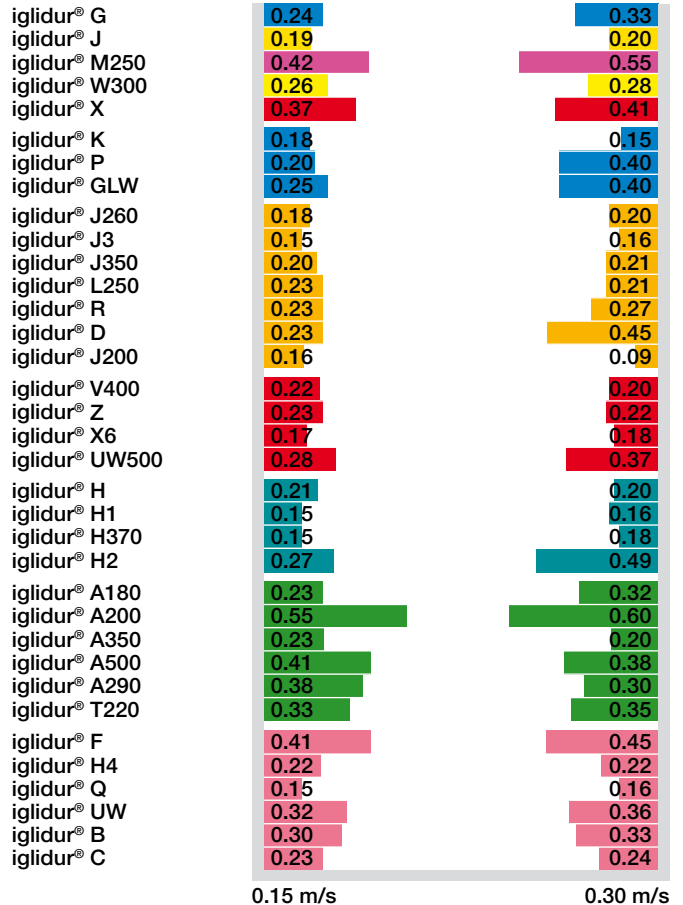


Graph. 05-07: Wear of iglidur® plain bearings under low pressures

Pressure and Coefficient of Friction

With increasing load, the coefficient of friction of the plain bearing typically decreases. In this context, shaft materials and the surface finish are also significant.

► Coefficient of Friction, page 48



Graph 08: Coefficients of friction of iglidur® materials for different surface speeds (shaft Cf53)

Surface Speed

With increasing load, the coefficient of friction of the plain bearing typically decreases. In this context, shaft materials and the surface finish are also significant.

Rotational motion
$$v = \frac{n \cdot d1 \cdot \pi}{60 \cdot 1.000} \left[\frac{m}{s} \right]$$

Oscillating motion
$$v = d1 \cdot \pi \cdot \frac{2 \cdot \beta}{360} \cdot \frac{f}{1.000} \left[\frac{m}{s} \right]$$

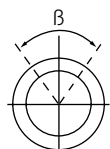
In these equations

d1 = Shaft diameter [mm]

f = frequency in Hertz

β = angle of motion per cycle [°]

n = rpm



With varying speed like seen for example with oscillating movements, the value needed is the average speed (see above formula)

Permissible Surface Speeds

iglidur® plain bearings were primarily developed for low to average running speeds in continuous operation. Table 1.1 shows the permissible surface speed of iglidur® plain bearings for rotating, oscillating, and linear movements. These surface speeds are limit values assuming minimum pressure loading of the bearing. In practice, these limit values are rarely reached due to an inverse relationship between load and speed. All increases of the pressure leads unavoidably to a reduction of the allowable surface speeds and vice versa. The speed limit is determined by the thermal properties of the bearing. This is also the reason why different running speeds can occur for the different movement types. For linear movements, more heat can be dissipated via the shaft, since the bearing uses a longer surface area on the shaft.

Surface Speed and Wear

Considerations regarding the permissible surface speeds should also include the wear resistance of the plain bearing. High running speeds automatically bring correspondingly high wear rates with them. With higher sliding speed, not only the wear rate rises but also the absolute wear.

Surface Speed and Coefficient of Friction

In practice the coefficient of friction of plain bearings is a result of the surface speed. High surface speeds have a higher coefficient of friction than low surface speeds. Graph 1.8 shows this relationship by using the example of a Cold Rolled Steel shaft (Cf53) with a load of 0.7 MPa.

pv Value

For plain bearings, the product is given a new value depending on the pressure [p] and the surface speed. The pv value can be considered a measure of the frictional heat and can be used as an analytical tool to answer questions concerning the proper application of a plain bearing. For this purpose, the actual pv value is a function of the shaft material of the ambient temperature and the operating time.

Material	Rotating		Oscillating		Linear	
	Continuous	Short term	Continuous	Short term	Continuous	Short term
Standards						
iglidur® G	1	2	0.7	1.4	4	5.3
iglidur® J	1.5	3	1.1	2.1	8	10
iglidur® M250	0.8	2	0.6	1.4	2.5	5
iglidur® W300	1	2.5	0.7	1.8	4	6
iglidur® X	1.5	3.5	1.1	2.5	5	10
General purpose						
iglidur® K	1	2	0.7	1.4	3	4
iglidur® P	1	2	0.7	1.4	3	4
iglidur® GLW	0.8	1	0.6	0.7	2.5	3
Long service life						
iglidur® J260	1	2	0.7	1.4	3	4
iglidur® J3	1.5	3	1.1	2.1	8	10
iglidur® J350	1.3	3	1	2.3	4	8
iglidur® L250	1	1.5	0.7	1.1	2	3
iglidur® R	0.8	1.2	0.6	1	3.5	5
iglidur® D	1.5	3	1.1	2.1	8	10
iglidur® J200	1	1.5	0.7	1.1	10	15
High temperatures						
iglidur® V400	0.9	1.3	0.6	0.9	2	3
iglidur® X6	1.5	3.5	1.1	2.5	5.4	10
iglidur® Z	1.5	3.5	1.1	2.5	5	6
iglidur® UW500	0.8	1.5	0.6	1.1	2	3
High media resistance						
iglidur® H	1	1.5	0.7	1.1	3	4
iglidur® H1	2	2.5	1	1.5	5	7
iglidur® H370	1.2	1.5	0.8	1.1	4	5
iglidur® H2	0.9	1	0.6	0.7	2.5	3
Applications with food contact						
iglidur® A180	0.8	1.2	0.6	1	3.5	5
iglidur® A200	0.8	1.5	0.6	1.1	2	3
iglidur® A350	1	1.2	0.8	0.9	2.5	3
iglidur® A500	0.6	1	0.4	0.7	1	2
iglidur® A290	1	2	0.7	1.4	3	4
iglidur® T220	0.4	1	0.3	0.7	1	2
Special application areas						
iglidur® F	0.8	1.5	0.6	1.1	3	5
iglidur® H4	1	1.5	0.7	1.1	1	2
iglidur® Q	1	2	0.7	1.4	5	6
iglidur® UW	0.5	1.5	0.4	1.1	2	3
iglidur® B	0.7	1	0.5	0.7	2	3
iglidur® C	1	1.5	0.7	1.1	2	3

Table 01: Surface speeds of iglidur® bearings in m/s; continuous and short term

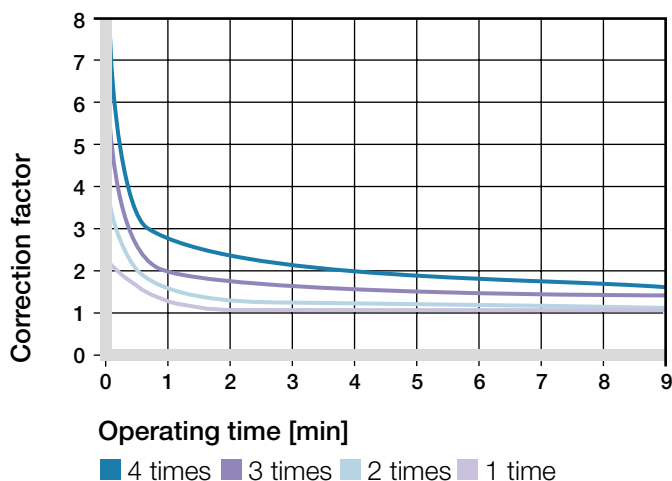
$$pv_{zul.} = \left(\frac{[K1 \cdot \pi \cdot \lambda k \cdot \Delta T]}{\mu \cdot s} + \frac{[K2 \cdot \pi \cdot \lambda s \cdot \Delta T]}{\mu \cdot b1 \cdot 2} \right) \cdot 10^{-3}$$

where

- K1, K2** = constant for heat dissipation
(K1 = 0,5, K2 = 0,042)
- s** = bearing wall thickness [mm]
- b1** = bearing length [mm]
- μ** = coefficient of friction
- λs** = thermal conductivity of the shaft
- λk** = thermal conductivity of the bearing
- ΔT** = (T_a - T_v)
- T_u** = ambient temperature [°C]
- T_a** = max. application temperature [°C]

Material	Thermal conductivity [W/m · k]
Steel	46
Aluminum	204
Grey cast iron	58
303 Stainless	16
Ceramics	1.4
Plastics	0.24

Table 02: Heat conductivity values of shaft or housing materials



Graph 09: Correction factor for p · v

Type of lubrication	Correction factor
Dry run	1
During installation	1.3
Continuous, grease	2
Continuous, water	4
Continuous, oil	5

Table 03: Correction of the tolerated p · v value by means of lubrication

Correction Factor

The permissible pv value can be increased in practical operation if the bearing temperature never reaches the maximum limit because of the short operating time. Tests have shown that this is true for operating times below 10 minutes. An important qualifier here is the ratio of the operating time and dwell times. It is known that a longer dwell time makes a greater contribution to re-cooling. The different curves of graph 09 represent different ratios (3 x means that the dwell time is three times longer than the operating time).

Lubrication

Although iglidur® plain bearings are designed to run dry, they are quite compatible with standard oils and greases. A single lubrication during the installation improves the start-up behaviour and the coefficient of friction, thus reducing the frictional heat. Due to this effect, the permissible loads for plain bearings can be increased by lubrication. For further information, please contact us. Table 03 shows the correction factors for pv value using lubrication

Temperatures

The temperature resistance of high performance polymer plain bearings is usually underestimated. Who would believe that plastic bearings can be used over +300 °C. Data is often found in the literature about the continuous use temperature. The continuous use temperature is the highest temperature, which the plastic can withstand for a period of time without a reduction in the tensile strength of the material above or below a prespecified value. Please note, these standard test results have limited applications, since bearings are almost always under load.

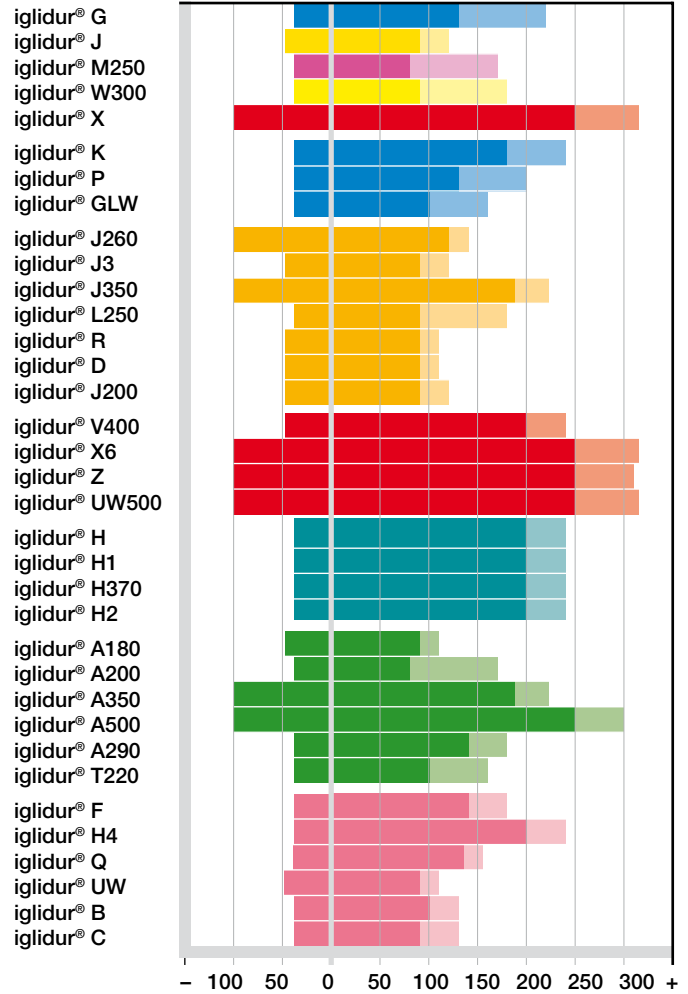
Application Temperatures

The minimum application temperature is the temperature below which the material is so rigid and hard that it becomes too brittle for standard applications. The maximum continuous application temperature is the temperature which the material can endure without the properties changing considerably. The maximum, short-term application temperature is the temperature above which the material becomes so soft, that it can only withstand small external loads.

“Short term” is defined as a period of a few minutes. If the plain bearings are moved axially or axial forces occur, there is more opportunity for the bearing to lose pressfit. In these cases, axial securing of the bearing is necessary in addition to the pressfit.

Coefficient of Thermal Expansion

The thermal expansion of polymers is approximately 10 to 20 times higher than metals. In contrast to metal, this expansion is non linear in plastics. The coefficient of thermal expansion of the iglidur® plain bearing is a significant reason for the required play in the bearing. At the given application clearance, seizing of the bearing to the shaft does not occur at high temperatures. The coefficient of thermal expansion of iglidur® plain bearings was examined for significant temperature ranges and the results are given in the individual materials tables, at the start of each chapter.



Graph 10: Comparison of the continuous and short term upper application temperature limits [°C]



Material tests are possible up to +250 °C

Material	Temp. [°C]	Material	Temp. [°C]
iglidur® G	+100	iglidur® UW500	+150
iglidur® J	+60	iglidur® H	+120
iglidur® M250	+60	iglidur® H1	+80
iglidur® W300	+60	iglidur® H370	+100
iglidur® X	+135	iglidur® H2	+110
iglidur® K	+70	iglidur® A180	+60
iglidur® P	+90	iglidur® A200	+50
iglidur® GLW	+80	iglidur® A350	+140
iglidur® J260	+80	iglidur® A500	+130
iglidur® J3	+60	iglidur® A290	+110
iglidur® J350	+150	iglidur® T220	+50
iglidur® L250	+55	iglidur® F	+105
iglidur® R	+50	iglidur® H4	+110
iglidur® J200	+60	iglidur® Q	+50
iglidur® D	+50	iglidur® UW	+80
iglidur® V400	+100	iglidur® B	+50
iglidur® X6	+160	iglidur® C	+40
iglidur® Z	+145		

Table 04: Temperature at which additional securing of the iglidur® plain bearing is required

Coefficient of Friction

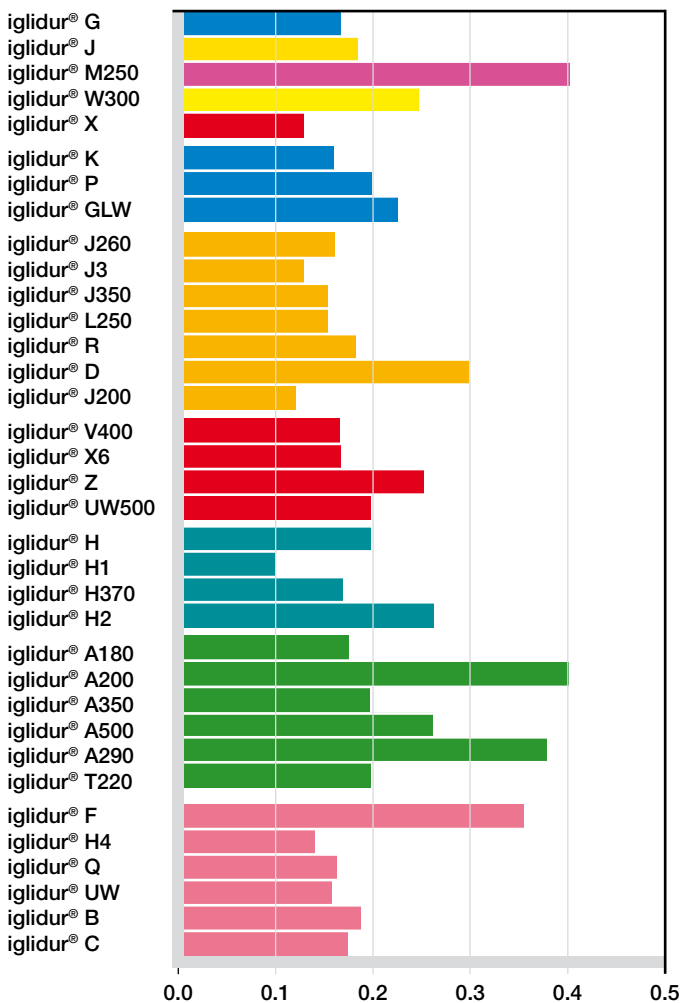
iglidur® plain bearings are self-lubricating by the addition of solid lubricants. The solid lubricants lower the coefficient of friction of the plain bearings and thus increase the wear resistance. The coefficient of friction μ is proportional to the normal force and describes which force is needed to move a body in relation to another.

Depending on whether an application is starting from a stationary position or the movement is in progress and needs to be maintained, a choice is made between static friction coefficient and the dynamic friction coefficient.

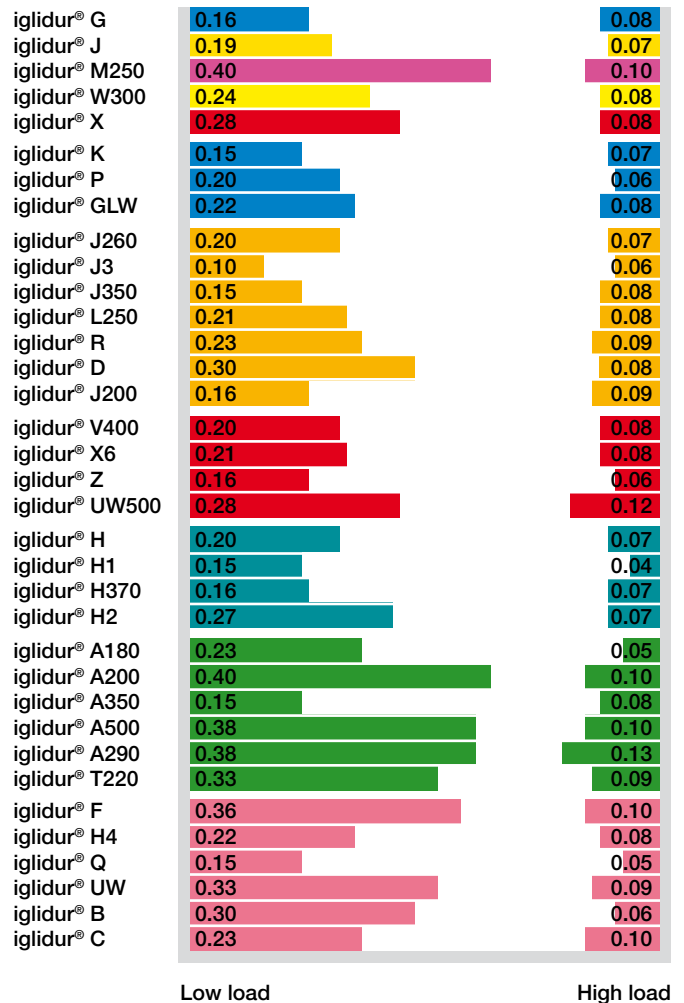
Coefficients of Friction and Surfaces

At study here is the relationship between coefficients of friction and surface roughness of shaft materials. It is clearly shown that the amount of friction is composed of different factors. If the shaft is too rough, abrasion levels play an

important role. Small areas of unevenness that can interlock with each other must be worn off the surface. When the surfaces are too smooth, however, higher adhesion results, i.e. the surfaces stick to each other. Higher forces are necessary to overcome the adhesion, which results from an increased coefficient of friction. Stick-slip can be the result of a large difference between static and dynamic friction and of a higher adhesive tendency of mating surfaces. Stick-slip also occurs due to intermittent running behaviour and can result in loud squeaking. Stick slip thus represents a cause for malfunction of plain bearings. Over and over again, it is observed that these noises do not occur or can be eliminated with rough shafts. Thus for applications that have a great potential for stick slip – slow movements, large resonance of the housing – attention must be paid to the optimal roughness of the shafts.



Graph 11: Coefficients of friction of the iglidur® plain bearings at the recommended shaft surface roughness and low load, $p = 0,75$ MPa



Graph 12: Frictional values of iglidur® materials under different loads

Wear Resistance

The wear of components depends on many different factors, therefore it is difficult to make general statements about the wear behaviour. In many experiments and tests, the measurement of the wear is a primary factor. In testing, it has become clear what variances are possible between different material pairings. For given loads and surface speeds, the wear resistance can easily vary by a factor of 10 between materials pairings that run well together.

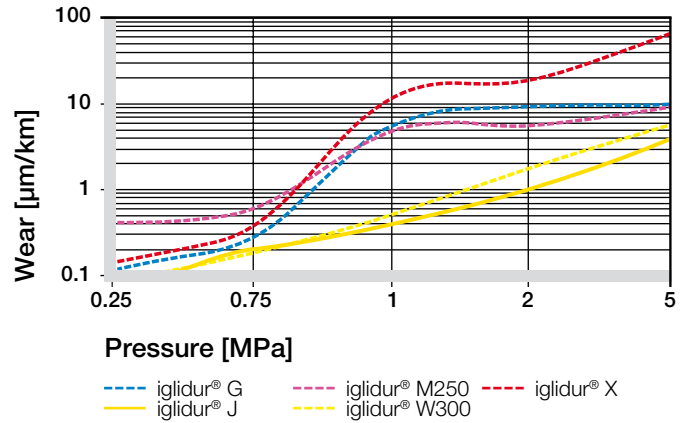
► Shaft Materials, page 51

Wear and Pressure

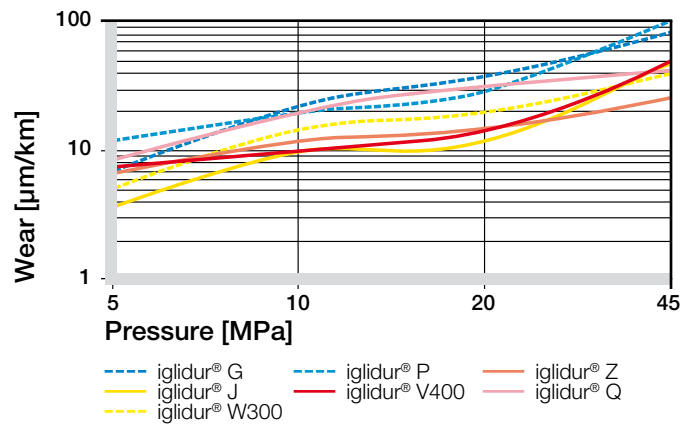
Different loads greatly influence the bearing wear. Among the iglidur plain bearings, certain materials are optimized for low loads, while others are better suited for high or extremely high loads.

Wear and Temperature

Within wide temperature ranges, the wear resistance of the iglidur® plain bearings shows little change. In the maximum temperature range, however, the temperature increases and the wear of the plain bearing increases. The table on the following page compares the “wear limits”. One particular exception is represented by iglidur® X. The wear resistance of iglidur® X increases greatly as temperature increases and reaches the optimum wear resistance at a temperature of + 160 °C. Then resistance decreases again, gradually.



Graph 13: Wear of iglidur® plain bearings under low pressures



Graph 14: Wear of iglidur® plain bearings, shaft: Cf53, v = 0,1 m/s

Material	Wear limit [°C]	Material	Wear limit [°C]
iglidur® G	+120	iglidur® UW500	+190
iglidur® J	+70	iglidur® H	+120
iglidur® M250	+80	iglidur® H1	+170
iglidur® W300	+120	iglidur® H370	+150
iglidur® X	+210	iglidur® H2	+120
iglidur® K	+90	iglidur® A180	+70
iglidur® P	+100	iglidur® A200	+80
iglidur® GLW	+100	iglidur® A350	+120
iglidur® J260	+80	iglidur® A500	+190
iglidur® J3	+70	iglidur® A290	+120
iglidur® J350	+140	iglidur® T220	+90
iglidur® L250	+120	iglidur® F	+130
iglidur® R	+70	iglidur® H4	+120
iglidur® D	+70	iglidur® UW	+70
iglidur® J200	+70	iglidur® Q	+80
iglidur® X6	+210	iglidur® B	+70
iglidur® V400	+130	iglidur® C	+70
iglidur® Z	+200		

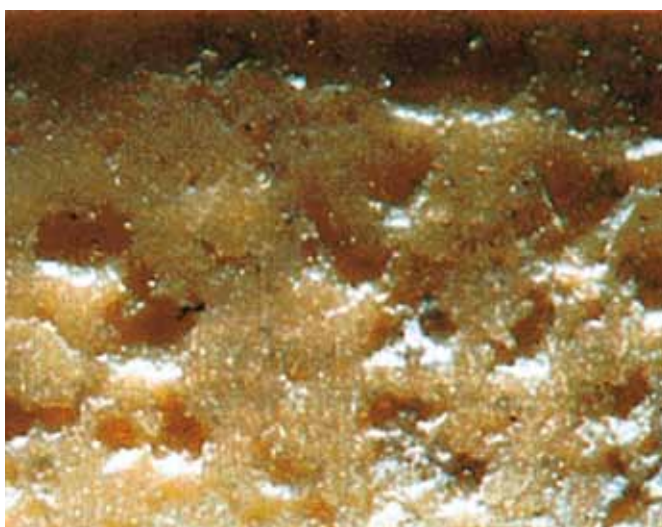
Table 06: Wear limits of iglidur® plain bearings



High wear resistance: Plain bearing in contact with sand



Wear experiments with aluminum shafts



Erosion damage due to shafts that are too smooth

Wear During Abrasive Dirt Accumulation

Special wear problems frequently occur if abrasive dirt particles get into the bearing. iglidur® plain bearings can clearly improve the operating time of machines and systems in these situations. The high wear resistance of the materials and the self lubrication process result in the highest service life time. As no oil or grease is on the bearing, dirt particles can not penetrate as easily into the bearing. Most debris simply falls away from the bearing thus limiting potential damage. If however, a hard particle penetrates into the bearing area, then an iglidur® plain bearing can absorb this particle. The foreign body becomes embedded in the wall of the bearing. Up to a certain point, operation can be maintained at optimal levels even when there is extreme dirt accumulation.

However, it is not just hard particles that can damage bearings and shafts. Soft dirt particles such as for example, textile or paper fibres, are frequently the cause for increased wear. In this instance, the dry run capability and the dust resistance of the iglidur® plain bearings go into action. In the past, this helped save costs in many applications.

Wear and Surfaces

Shaft surfaces are important for the wear of bearing systems. Similar to the considerations for coefficients of friction, a shaft can be too rough in regard to the bearing wear, but it can also be too smooth. A shaft that is too rough acts like a file and during movement separates small particles from the bearing surface. For shafts that are too smooth, however, higher wear can also occur. An extreme increase in friction results due to adhesion. The forces that act on the surfaces of the sliding face can be so large that regular material blow-outs occur. It is significant to note that wear by erosion is non linear. Moreover, it is random and can not be accurately predicted.

Wear and Shaft Materials

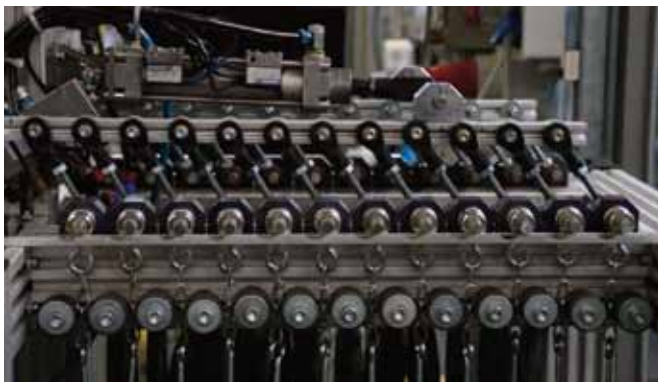
The shaft is, next to the plain bearing itself, the most important parameter in a bearing system. It is in direct contact with the bearing, and like the bearing, it is affected by relative motion. Fundamentally, the shaft is also worn, however, modern bearing systems are designed in a way that the wear of the shafts is so small that it can not be detected with traditional methods of measurement technology. Shafts can be distinguished and classified according to their hardness and according to the surface roughness.

- ▶ Coefficient of Friction, [page 48](#)
- ▶ Wear Resistance, [page 49](#)

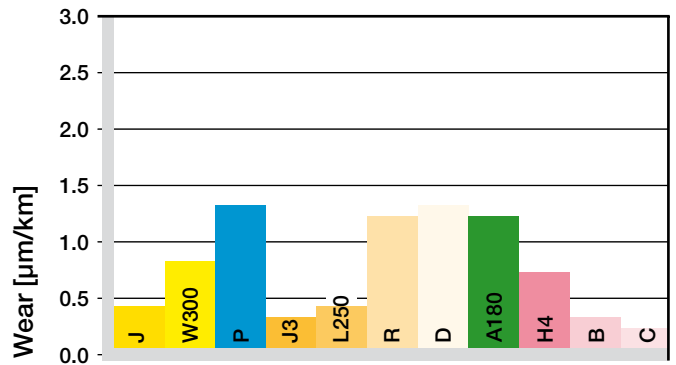
The hardness of the shaft also plays an important role. When the shafts are less hard, the shaft is worn smooth during the break-in phase. Abrasive points are worn off and the surface is rebuilt. For some materials, this effect has positive influences, and the wear resistance of the polymer bearing increases.

In the following graphs, the most common shaft materials are listed and the iglidur® materials that are best suited are compared.

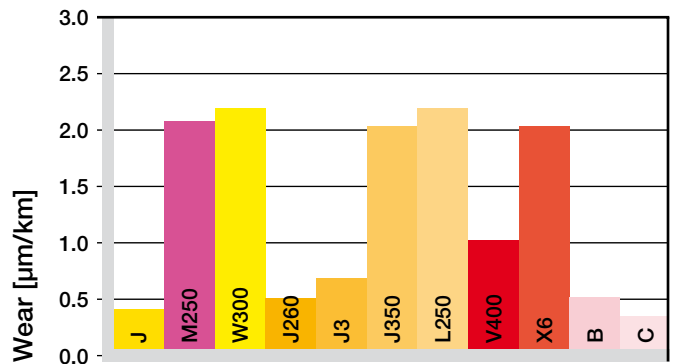
For easier comparison, the scaling of the wear axis is the same in all graphs. The small wear results of the systems with hard-chromed shafts are especially impressive. This very hard, but also smooth shaft gives excellent results on the wear behaviour in many bearing pairs. The wear of many iglidur® plain bearings is lower on this shaft than on any other shaft material tested. However, it should be pointed out that because of the typically small surface roughness, the danger of stick slip on hard chromed shafts is especially high.



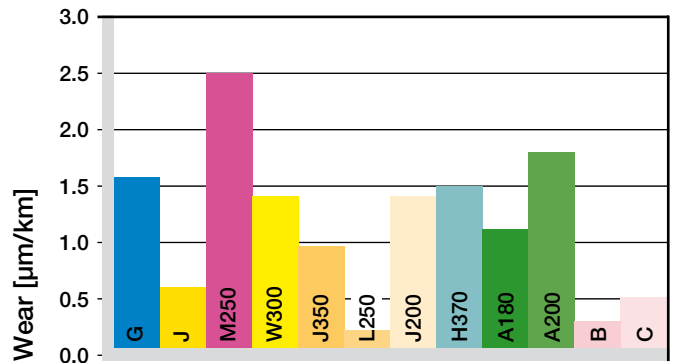
Oscillating wear test rig for testing the wear in oscillating movements at low loads



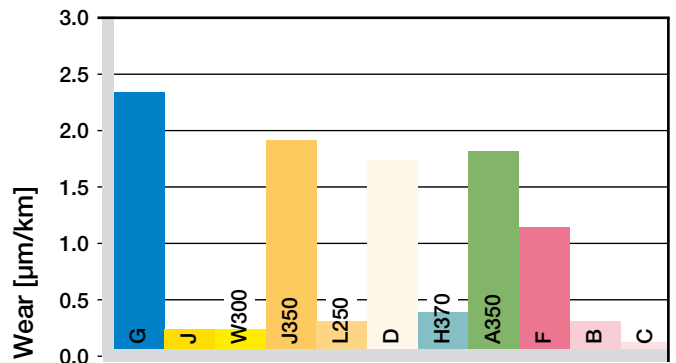
Graph 15: Wear with shaft Cf53,
p = 0.75 MPa, v = 0.50 m/s Ra = 0.20 µm



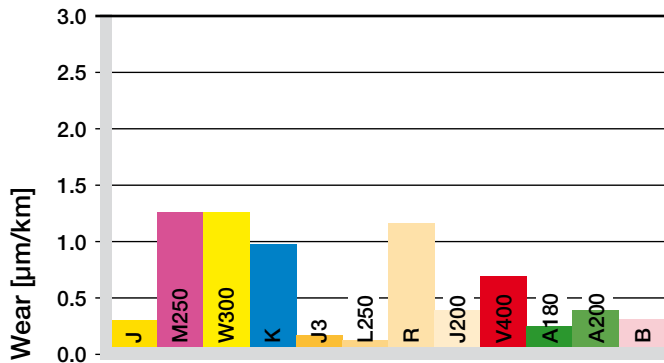
Graph 16: Wear with shaft V2A,
p = 0.75 MPa, v = 0.50 m/s Ra = 0,20 µm



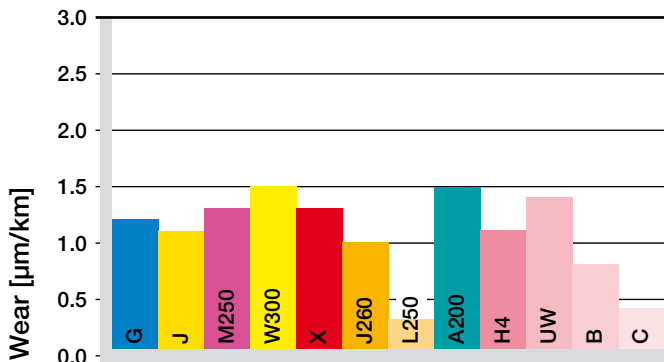
Graph 17: Wear with shaft St37,
p = 0.75 MPa, v = 0,50 m/s Ra = 0.20 µm



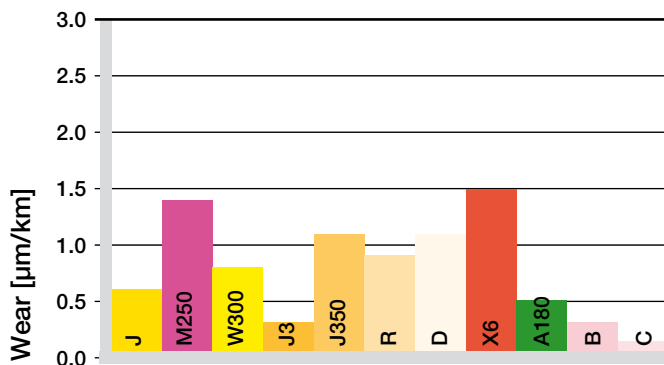
Graph 18: Wear with hard chromed shaft,
p = 0.75 MPa, v = 0.50 m/s Ra = 0.20 µm



Graph 19: Wear with a silver steel shaft, $p = 0.75$ MPa, $v = 0.50$ m/s $Ra = 0.20$ µm



Graph 20: Wear with a machine steel shaft, $p = 0.75$ MPa, $v = 0.50$ m/s $Ra = 0.20$ µm



Graph 21: Wear with shaft X90, $p = 0.75$ MPa, $v = 0.50$ m/s $Ra = 0.20$ µm

With high-grade stainless steel 1.4112, a similarly good result is obtained. Case-hardened steel shafts (material key 1.1213) give very good results, too. With other shaft materials, the wear results vary considerably. For example, in tests with soft stainless steel (1.4301) at low load, good to very good results can be found with the right bearing material. It must be said on the other side, that no other shaft material shows a bigger variation of wear results with different bearing materials. Therefore, the choice of the most suitable bearing material is particularly important with the shaft materials soft stainless steel (1.4301) and soft standard steel (1.0037).

The test results give only a sample of the existing data. All of the results shown were made with same loads and speeds.



Oscillating wear test rig for testing the wear in oscillating movements at medium loads

Chemical Resistance

iglidur® plain bearings can come into contact with many chemicals during their use. This contact can lead to changes of the structural properties. The behaviour of plastics towards a certain chemical is dependent on the temperature, the length of exposure, and the type and amount of the mechanical loading. If iglidur® plain bearings are resistant against a chemical, they can be used in these media. Sometimes, the surrounding media can even take on the role of a lubricant.

With the most resistant iglidur® material iglidur® X the lubricant can even be hydrochloric acid. All iglidur® plain bearings can be used in diluted acids and diluted alkalines. Differences can result at higher concentrations or higher temperatures. For all iglidur® plain bearings, the resistance against traditional lubricants applies in the same way. Therefore plain bearings may also be used lubricated. However, in dirty environments, a traditional lubricant can decrease the wear resistance when compared to running dry. The following overview should quickly assist you: If it is not completely clear in a design application which of the different chemicals can occur or in which concentration, plain bearings made out of iglidur® X should be used. This has the best resistance and is only attacked by a few concentrated acids. You'll find a detailed list of chemical resistances in the rear of the catalogue.

► Table of Chemicals, **page 974**

Applications in the Food Industry

The iglidur® program with 5 specially developed bearing materials is prepared for the special requirements in machines and equipment for the food industry. iglidur® A180, A200, A350 and A500 materials are made according to the requirements of the American Food and Drugs Administration (FDA). iglidur® A290 material is according to the requirements of the BfR.

Material	Hydro-carbon	Greases, oils without additives	Weak acids	Weak alkaline
Standards				
iglidur® G	+	+	0 to –	+
iglidur® J	+	+	0 to –	+
iglidur® M250	+	+	0 to –	+
iglidur® W300	+	+	0 to –	+
iglidur® X	+	+	+	+
General purpose				
iglidur® P	–	+	0	–
iglidur® K	+	+	0 to –	+
iglidur® GLW	+	+	0 to –	+
Long service life				
iglidur® J260	+	0 to –	–	+ to 0
iglidur® J3	+	+	0 to –	+
iglidur® J350	+ to 0	+	+	+
iglidur® L250	+	+	0 to –	+
iglidur® R	+	+	0 to –	+
iglidur® D	+	+	0 to –	+
iglidur® J200	+	+	0 to –	+
High temperatures				
iglidur® V400	+	+	+	+
iglidur® X6	+	+	+	+
iglidur® Z	+	+	+	+
iglidur® UW500	+	+	+	+
High media resistance				
iglidur® H	+	+	+ to 0	+
iglidur® H1	+	+	+ to 0	+
iglidur® H370	+	+	+ to 0	+
iglidur® H2	+	+	+ to 0	+
Application with food contact				
iglidur® A180	+	+	0 to –	+
iglidur® A200	+	+	0 to –	+
iglidur® A350	+ to 0	+	+	+
iglidur® A500	+	+	+	+
iglidur® A290	+	+	0 to –	+
iglidur® T220	–	+	0	–
Special application areas				
iglidur® F	+	+	0 to –	+
iglidur® H4	+	+	+ to 0	+
iglidur® Q	+	+	0 to –	+
iglidur® UW	+	+	0 to –	+
iglidur® B	–	–	0 to –	–
iglidur® C	+	+	0 to –	+

+ resistant 0 conditionally resistant – not resistant
All data given concerns the chemical resistance at room temperature [+20 °C]

Table 07: Chemical resistance of iglidur®

Material	Radiation resistance
iglidur® X, Z, UW500	1 · 10 ⁵ Gy
iglidur® X6, A500	2 · 10 ⁵ Gy
iglidur® M250, J3, A200	1 · 10 ⁴ Gy
iglidur® L250	3 · 10 ⁴ Gy
iglidur® V400, C	2 · 10 ⁴ Gy
iglidur® K, P	5 · 10 ² Gy
iglidur® G, J, W300, J260, J200, R, D, A180, A290, T220, F, Q, UW, B, GLW	3 · 10 ² Gy
iglidur® J350, H, H1, H370, H2, H4, A350	2 · 10 ² Gy

Table 08: Radiation resistance of iglidur® plain bearings

Material	UV resistance	Material	UV resistance
iglidur® G	+++++	iglidur® UW500	+++++
iglidur® J	+++	iglidur® H	++
iglidur® M250	++++	iglidur® H1	++
iglidur® W300	+++	iglidur® H370	+++++
iglidur® X	+++++	iglidur® H2	+
iglidur® K	++++	iglidur® A180	+++
iglidur® P	+++++	iglidur® A200	++++
iglidur® GLW	+++++	iglidur® A350	++++
iglidur® J260	+	iglidur® A500	+++
iglidur® J3	+++	iglidur® A290	++++
iglidur® J350	++	iglidur® T220	++
iglidur® L250	+++	iglidur® F	+++++
iglidur® R	++++	iglidur® H4	+
iglidur® D	+++++	iglidur® UW	+++
iglidur® J200	+++	iglidur® Q	++
iglidur® V400	+++	iglidur® B	+
iglidur® X6	+++++	iglidur® C	+
iglidur® Z	+++		

Table 09: UV resistance of iglidur® plain bearings

+ low resistance +++++ high resistance

Material	Surface resistance [Ω]
iglidur® X	< 10 ³
iglidur® X6	< 10 ⁵
iglidur® UW500	< 10 ⁹
iglidur® H	< 10 ²
iglidur® H370	< 10 ⁵
iglidur® F	< 10 ²
iglidur® UW	< 10 ⁵

Table 10: Electrical properties of conductive iglidur® plain bearings

Radioactive Radiation

A comparison of the resistance to radioactive radiation is shown in table 08. By a wide margin iglidur® X, UW500, A500 and Z are the most resistant materials.

UV Resistance

Plain bearings can be exposed to constant weathering when they are used outside. The UV resistance is an important measurement and indicates whether a material is attacked by UV radiation. The effects can extend from slight changes in colour to brittleness of the material. A comparison of the materials to each other is shown in the following table. The results show that iglidur® plain bearings are suitable for outside use. Only for a few iglidur® materials are any changes expected.

Vacuum

iglidur® plain bearings can be used in a vacuum to a limited extent. Only a small amount of outgassing takes place. In most iglidur® plain bearings, the outgassing does not change the material properties.

Electrical Properties

In the product range of the maintenance-free, self lubricating iglidur plain bearings, there are both insulating as well as electrically conductive materials. The most important electrical properties are given in detail in the individual material descriptions. The adjacent table compares the most important electrical properties of conductive iglidur® plain bearings. The iglidur® plain bearings not mentioned here are usually electrically insulating. Please observe that for some materials the properties can be changed by the absorption of moisture. In experiments, it should be tested whether the desired properties are also stable when the conditions are changing.

iglidur® | Tolerances and Measurement System

Tolerances and Measurement System

The installation dimensions and tolerances of the iglidur® plain bearings are a function of the material and wall thicknesses. For each material, the moisture absorption and the thermal expansion are imperative. Plain bearings with low moisture absorption can be designed with a minimal amount of tolerance. For wall thickness, the rule is: The thicker the bearings are, the larger the tolerances must be. Thus, different tolerance classes exist for iglidur® plain bearings: Within these tolerances, iglidur® plain bearings can operate in the permissible temperature range and in humidity conditions up to 70% according to the installation recommendations. Should higher air moisture levels be present, or the bearing is used under water, we provide advice with regard to applications, in order to help you use your bearings correctly.

Testing Methods

iglidur® plain bearings are pressfit bearings for bores machined to our recommendations. This pressfitting of the bearing fixes the bearing in the housing, and the inner diameter of the plain bearing is also formed upon pressfit. The bearing test is performed when the bearing is installed in a bore with the minimum specified dimension; both using an 3 point probe and a Go No-Go gauge.

- The "Go-Side" of the Go-No-Go gauge, pressed into the bore, must pass easily through the bearing
- With the 3 point probe, the inner diameter of the bearing after pressfit must lie within the prescribed tolerance on the measurement plane.

Troubleshooting

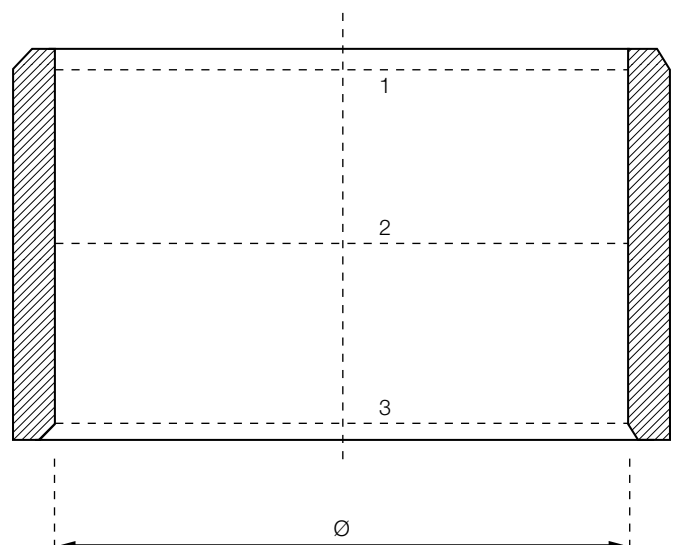
In spite of careful manufacturing and assembly of the bearings, differences and questions regarding the recommended installation dimensions and tolerances can result. For this reason, we have compiled a list of the most frequent reasons for differences. In many cases, with this troubleshooter, the reasons for the differences can be found quickly.

- The bore is not chamfered correctly, so the bearing material is removed upon press-fitting. The correct chamfer should be 25 to 30 degrees, not 45 degrees.
- A centering pin was used which expanded the inside diameter of the bearing during pressfit.
- The bore does not meet the recommended housing bore specifications (usually H7).
- The housing is made out of a soft material that was expanded by the bearing installation.

- The shaft is not within recommended tolerances.
- The bearing is being measured by a different method than the igus® standard.



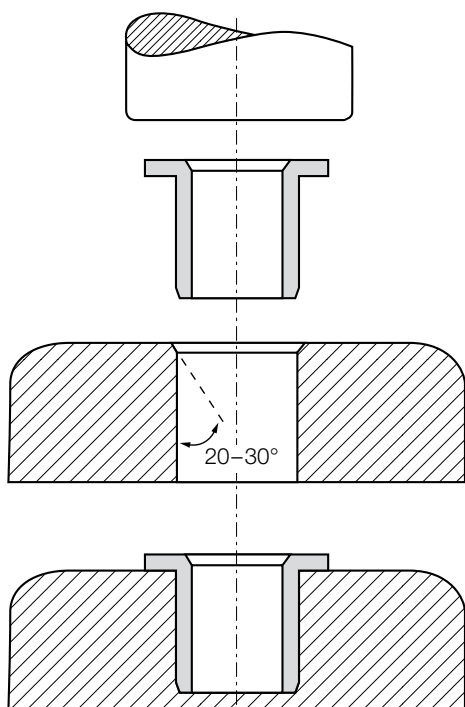
Measurement of the inner diameter of a pressfit plain bearings



Graph 21: Positions of the measurement planes



The bearing should be press fitted using a flat press.



Graph 22: Section view: pressfit of the bearing

Process	Turning	Boring	Milling
Tool material	SS	SS	SS
Feed [mm]	0.1...0.5	0.1...0.5	to 0.5
Tool relief angle	5...15	10...12	3
Tool rake angle	0...10	3...5	
Cutting speed [m/min]	200...500	50...100	to 1,000

Table 11: Guidelines for machining

Installation

iglidur® plain bearings are produced oversized as standard. The inner diameter adjusts only after pressfit in the proper housing bore with a recommended tolerance. The before pressfit oversized dimension can be up to 2 % of the inner diameter. In this manner, the secure pressfitting of the bearing is achieved. Axial or radial shifts in the housing are also prevented. The bore in the housing should be finished in the recommended tolerance (usually H7) for all bearings and be as smooth, flat, and chamfered when possible with an angle of 25 to 30 degrees.

The bearing should be press fitted using a flat press. The use of centering or calibrating pins can cause damage to the bearing and create a larger amount of clearance.

Adhesion

Using an adhesive to fit an iglidur bearing is not usually necessary. If the pressfit of the bearing could be lost because of high temperatures, the use of a plain bearing having a higher temperature resistance is recommended. If however, the securing of the bearing by adhesives is planned, individual tests are necessary in each case. The transfer of successful results to other application cases is not possible.

Machining

iglidur® plain bearings are delivered ready to fit. The extensive product line makes it possible to use a standard dimension in most cases. If for some reason, a subsequent machining of the plain bearing is necessary, table 11 shows the machining standard values. The subsequent machining of the running surfaces is to be avoided if possible. Higher wear rate is most often the result. An exception is the iglidur® M250 which is very suitable for secondary machining. In other iglidur® plain bearings, disadvantages of a sliding surface machining can be counteracted by lubrication during installation. Please also remember that iglidur® manufacture a range of stock bar materials which are designed for machining.



iglidur® G – The General Purpose Bearing:
most popular iglidur®
material worldwide

▶ from page 61



iglidur® J – The Fast and Slow Motion Specialist:
used in long-life applications,
also with soft shafts

▶ from page 89



iglidur® M250 – Thick and Tough:
excellent vibration
dampening

▶ from page 107



iglidur® W300 – The Marathon Runner:
long service life,
also for soft shafts

▶ from page 131


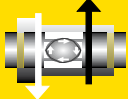


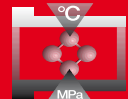














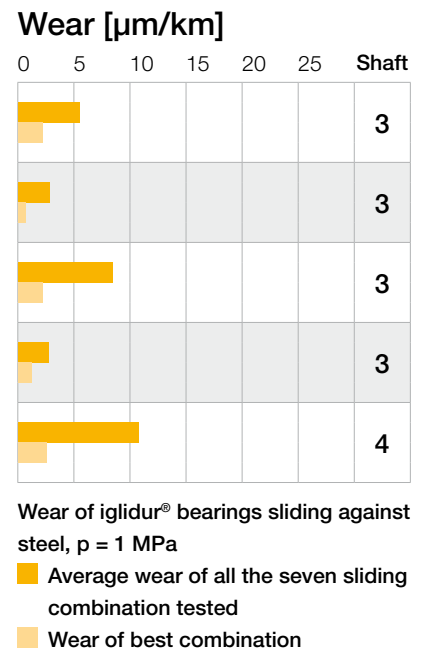
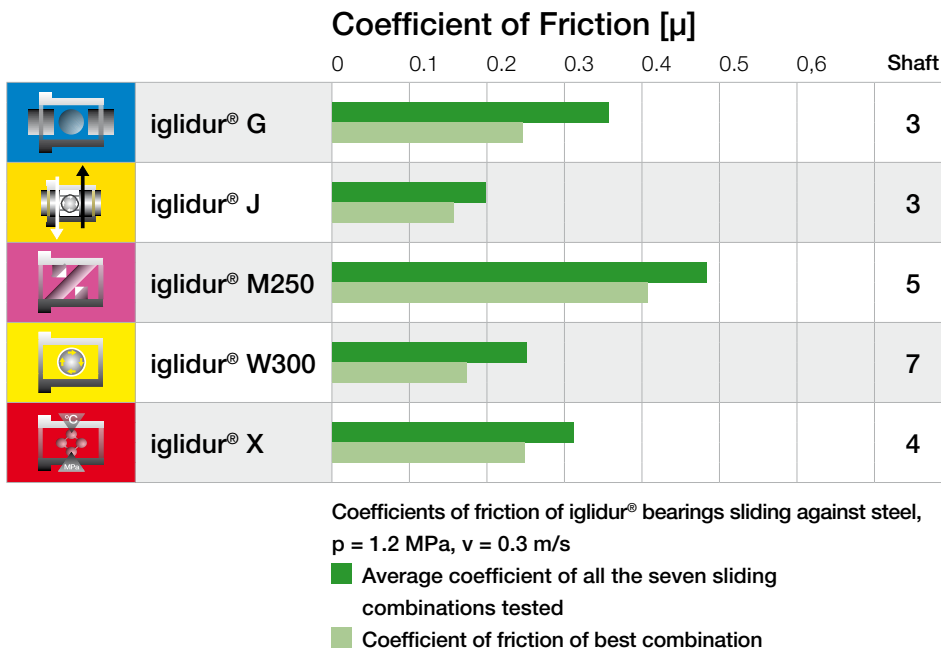
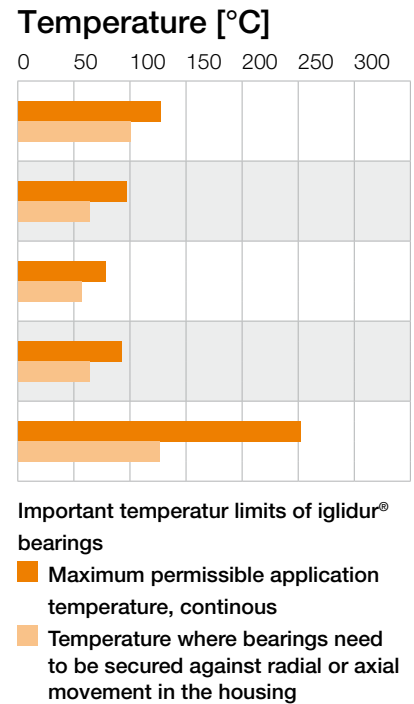
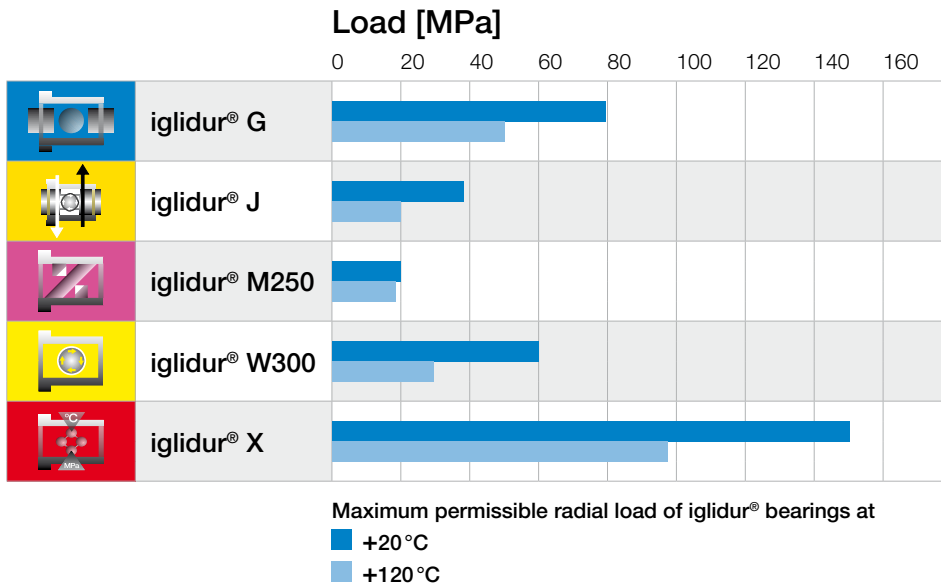
iglidur® X – The High-Tech Problem Solver:
chemical- and temperature-
resistant up to +250°C

▶ from page 153

iglidur® Standards | Selection According to Main Criteria

Standard
Plain bearings,
available
from stock

					
	iglidur® G	iglidur® J	iglidur® M250	iglidur® W300	iglidur® X
 Long life dry running	●	●	●	●	●
 For high loads	●				●
 For high temperatures					●
 Low friction/high speed		●		●	
 Dirt resistant	●		●	●	
 Chemicals resistant					●
 Low water absorption		●			●
 Food-suitable					
 Vibration-dampening			●		
 Edge pressure		●	●	●	
 For under water use					●
 Cost-effective	●	●	●	●	
from page	61	89	107	131	153



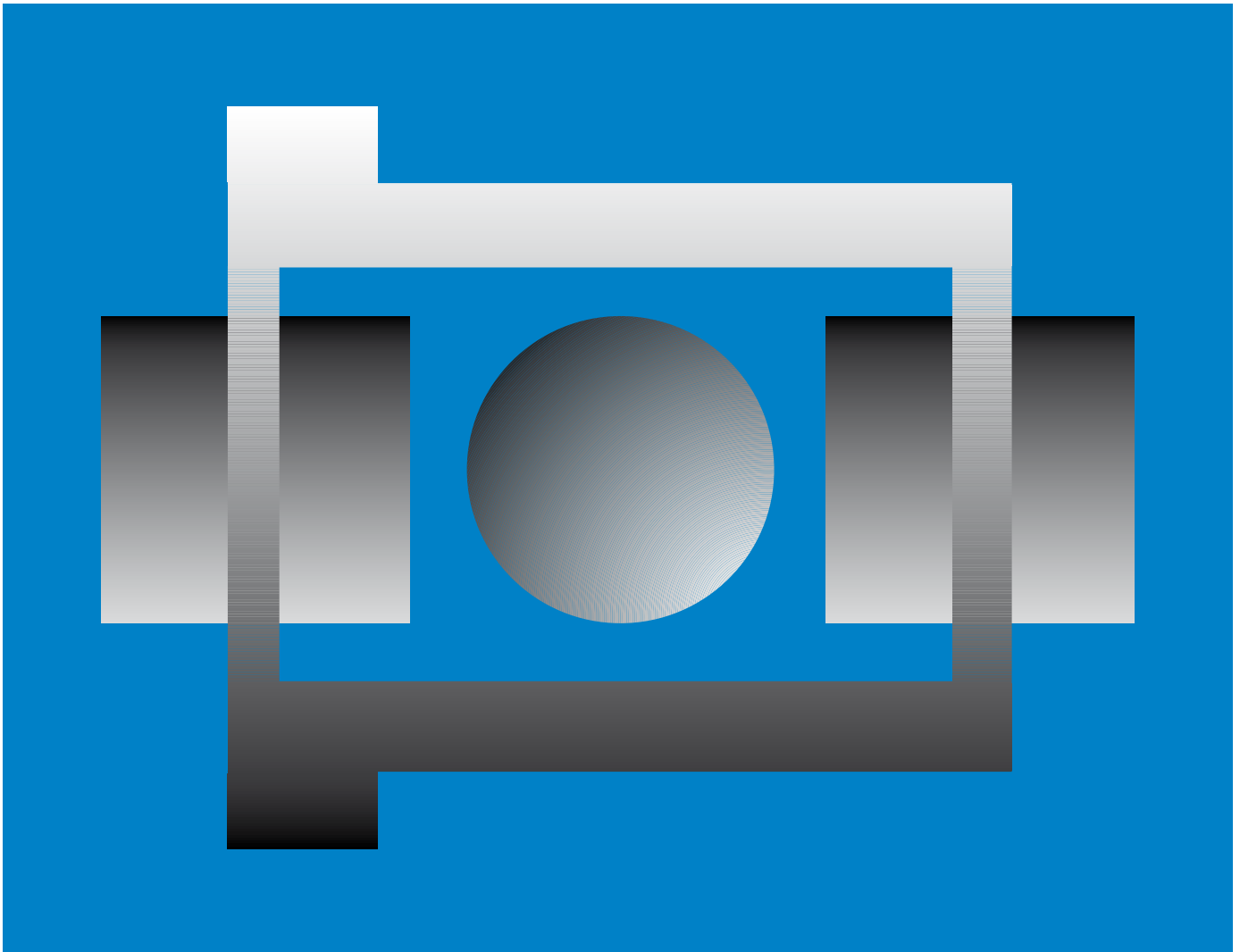
Shaft material:

- | | |
|---------------------------|----------------------|
| 1 = Cf53 | 5 = HR carbon steel |
| 2 = hard chromed | 6 = 304 SS |
| 3 = Aluminum, hc | 7 = High grade steel |
| 4 = Automatic screw steel | |

Material data						
General properties	Unit	iglidur® G	iglidur® J	iglidur® M250	iglidur® W300	iglidur® X
Density	g/cm ³	1.46	1.49	1.14	1.24	1.44
Colour		dark grey	yellow	anthracite	yellow	black
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.7	0.3	1.4	1.3	0.1
Max. moisture absorption	% weight	4.0	1.3	7.6	6.5	0.5
Coefficient of sliding friction, dynamic against steel	μ	0.08–0.15	0.06–0.18	0.18–0.40	0.08–0.23	0.09–0.27
pv value, max. (dry)	MPa · m/s	0.42	0.34	0.12	0.23	1.32
Mechanical properties						
Modulus of elasticity	MPa	7,800	2,400	2,700	3,500	8,100
Tensile strength at +20 °C	MPa	210	73	112	125	170
Compressive strength	MPa	78	60	52	61	100
Max. recommended surface pressure (+20 °C)	MPa	80	35	20	60	150
Shore D hardness		81	74	79	77	85
Physical and thermal properties						
Max. long term application temperature	°C	+130	+90	+80	+90	+250
Max. short term application temperature	°C	+220	+120	+170	+180	+315
Min. application temperature	°C	-40	-50	-40	-40	-100
Thermal conductivity	W/m · K	0.24	0.25	0.24	0.24	0.6
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	9	10	10	9	5
Electrical properties						
Specific volume resistance	Ωcm	> 10 ¹³	> 10 ¹³	> 10 ¹³	> 10 ¹³	< 10 ⁵
Surface resistance	Ω	> 10 ¹¹	> 10 ¹²	> 10 ¹¹	> 10 ¹²	< 10 ³

Material resistance (at +20 °C)					
Chemical resistance	iglidur® G	iglidur® J	iglidur® M250	iglidur® W300	iglidur® X
Alcohol	+ to 0	+	+ to 0	+ to 0	+
Hydrocarbons	+	+	+	+	+
Greases, oils without additives	+	+	+	+	+
Fuels	+	+	+	+	+
Diluted acids	0 to -	0 to -	0 to -	0 to -	+
Strong acids	-	-	-	-	+
Diluted alkalines	+	+	+	+	+
Strong alkalines	0	+ to 0	0	0	+
Radiation resistance [Gy] to	3 · 10 ²	3 · 10 ²	1 · 10 ⁴	3 · 10 ²	1 · 10 ⁵

+ resistant 0 conditionally resistant - not resistant



iglidur® G – The General Purpose Bearing: most popular iglidur® material worldwide



Over 650 sizes available ex stock

Maintenance-free, dry running

High wear resistance

Resistance to dust and dirt

Cost-effective

iglidur® G | The General Purpose Bearing

Most popular iglidur® material worldwide. iglidur® G bearings cover an extremely wide range of different requirements – they are truly “all round”. Typical applications cover medium to high loads, medium sliding speeds and medium temperatures.



When to use it?

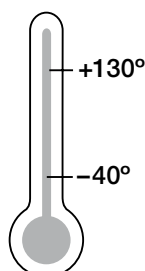
- Economical all-round performance bearing
- Maintenance-free, dry running
- Vibration dampening
- High wear resistance
- Resistance to dust and dirt
- Over 900 sizes available from stock
- Cost-effective
- For above average loads
- For low to average running speeds
- When the bearing needs to run on different shaft materials
- For oscillating and rotational movements



When not to use it?

- When mechanical reaming of the wall surface is necessary
 - ▶ **iglidur® M250, page 107**
- When the highest wear resistance is required
 - ▶ **iglidur® W300, page 131**
- If temperatures are constantly greater than +130 °C
 - ▶ **iglidur® H, page 325**
 - ▶ **iglidur® X, page 153**
 - ▶ **iglidur® H370, page 347**
- For underwater use
 - ▶ **iglidur® H370, page 347**

Temperature



Product range

3 types
> 650 dimensions
Ø 1–150 mm



iglidur® G | Application Examples



Typical sectors of industry and application areas

- Agricultural machines
- Construction machinery
- Machine building
- Sports and leisure
- Automotive etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/hay-spreader



► www.igus.co.uk/vehicle-construction



► www.igus.co.uk/swing-arm

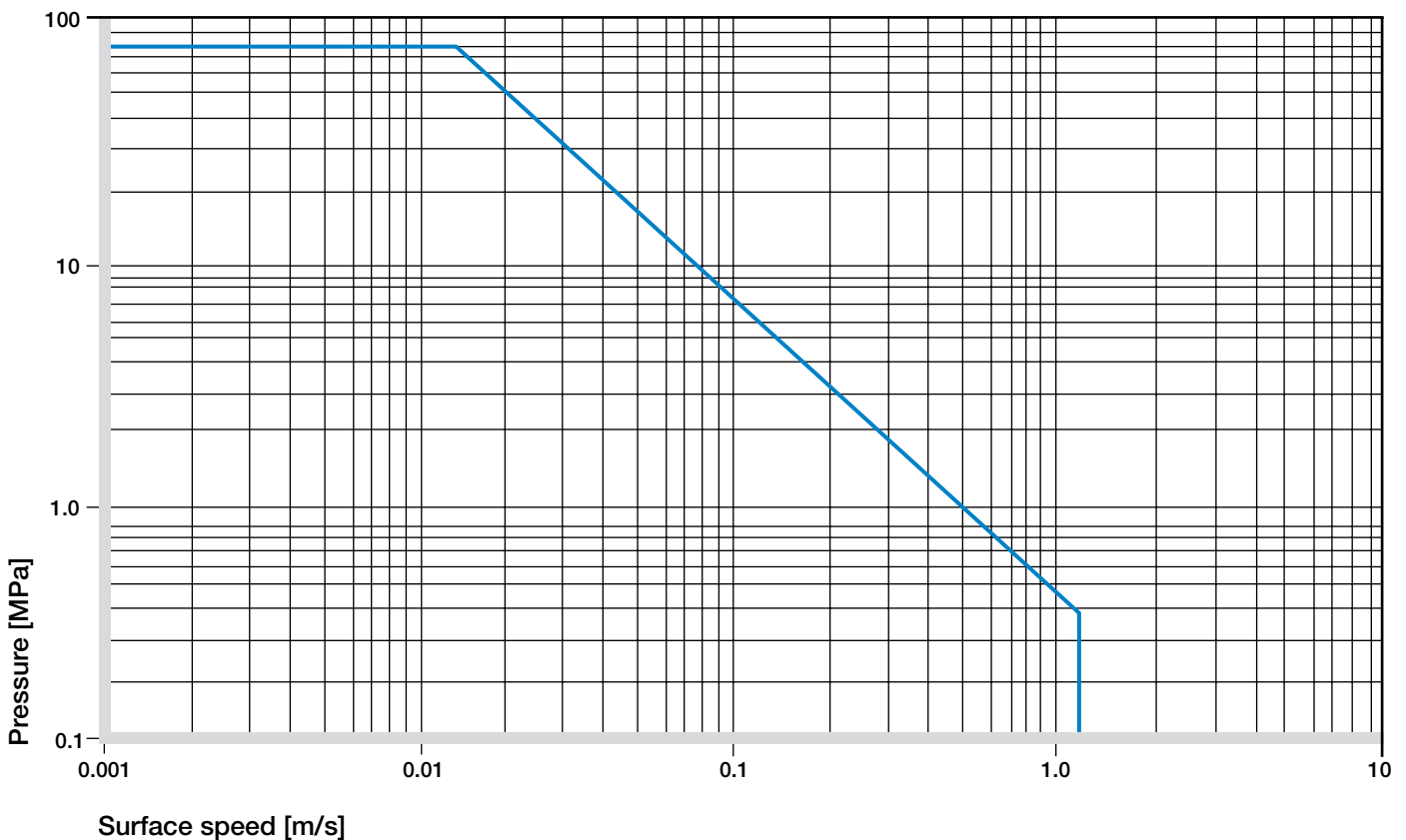


► www.igus.co.uk/veneer-assembling

Material data

General properties	Unit	iglidur® G	Testing method
Density	g/cm ³	1.46	
Colour		dark grey	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.7	DIN 53495
Max. moisture absorption	% weight	4.0	
Coefficient of sliding friction, dynamic against steel	μ	0.08–0.15	
pv value, max. (dry)	MPa · m/s	0.42	
Mechanical properties			
Modulus of elasticity	MPa	7,800	DIN 53457
Tensile strength at +20 °C	MPa	210	DIN 53452
Compressive strength	MPa	78	
Max. recommended surface pressure (+20 °C)	MPa	80	
Shore D hardness		81	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+130	
Max. short term application temperature	°C	+220	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	9	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹³	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

Table 01: Material data

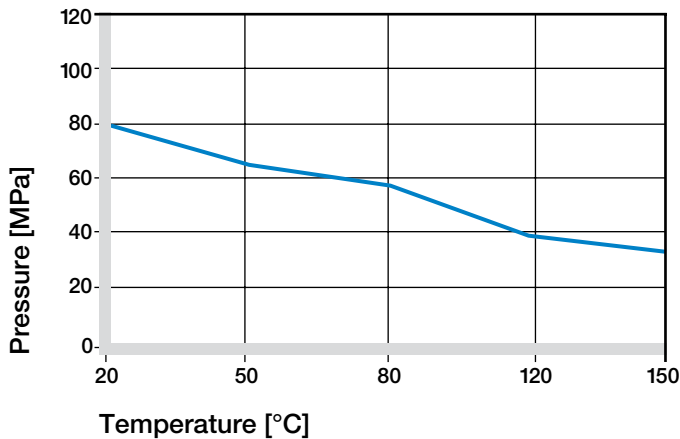


Graph 01: Permissible pv values for iglidur® G with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® G | Technical Data

Mechanical Properties

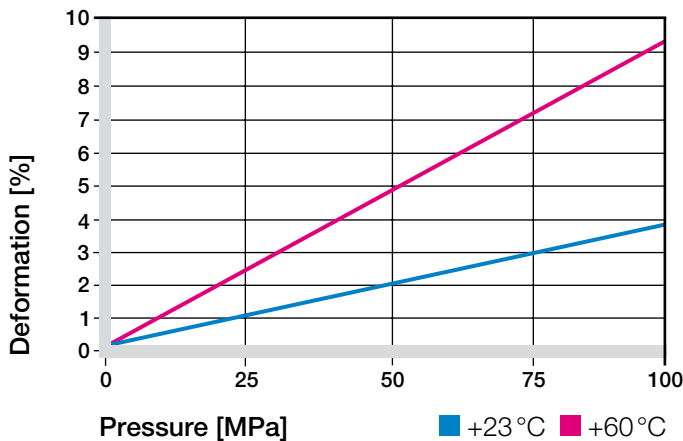
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® G plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +130°C the permissible surface pressure is almost 40 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (80 MPa at +20°C)

Graph 03 shows the elastic deformation of iglidur® G during radial loading. At the recommended maximum surface pressure of 80 MPa the deformation is less than 5%. The plastic deformation is minimal up to a pressure of approximately 100 MPa. However, it is also dependant on the cycle time.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® G has been developed for low to medium surface speeds.

The maximum values shown in table 02 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached due to varying application conditions.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	4
Short term	2	1.4	5

Table 02: Maximum running speed

Temperatures

Application temperatures greatly affect the properties of plain bearings.

The short term maximum temperature is +220°C, this allows the use of iglidur® G plain bearings in heat treating applications in which the bearings are not subjected to additional loading.

The temperature in an application also has an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +120°C.

► Application Temperatures, page 46

iglidur® G	Application temperature
Minimum	-40°C
Max. long term	+130°C
Max. short term	+220°C
Add. securing is required from	+100°C

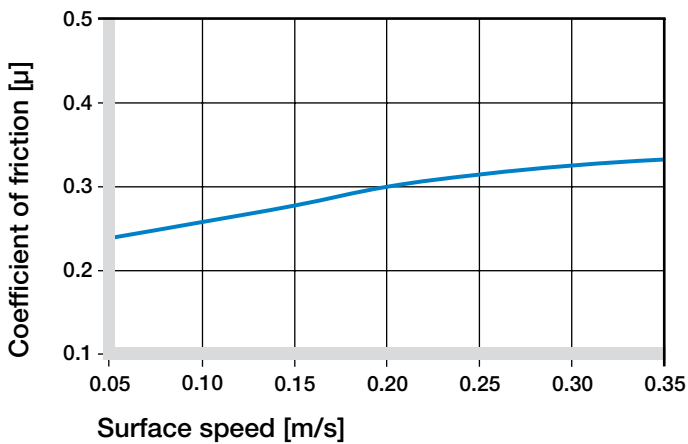
Table 03: Temperature limits

Friction and Wear

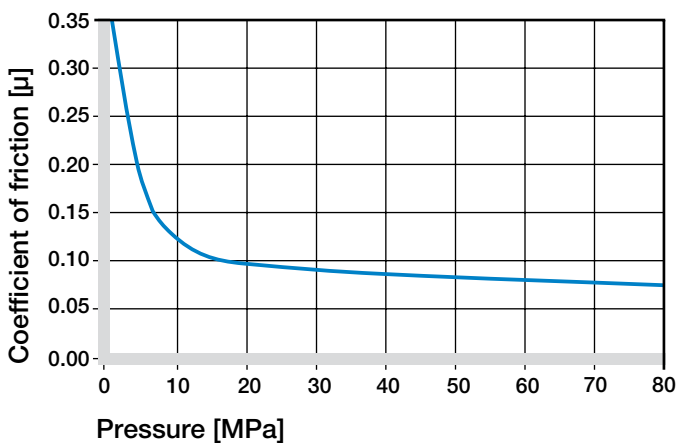
Similar to wear resistance, the coefficient of friction μ also changes with the load. The coefficient of friction decreases with increasing pressures, whereas an increase in surface speed causes an increase of the coefficient of friction. This relationship explains the excellent results of iglidur® G plain bearings for high loads and low speeds (Graphs 04 und 05).

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75$ MPa



Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01$ m/s

Shaft Materials

The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglidur® G a ground surface with an average roughness $R_a = 0.8 \mu\text{m}$ is recommended (Graph 06).

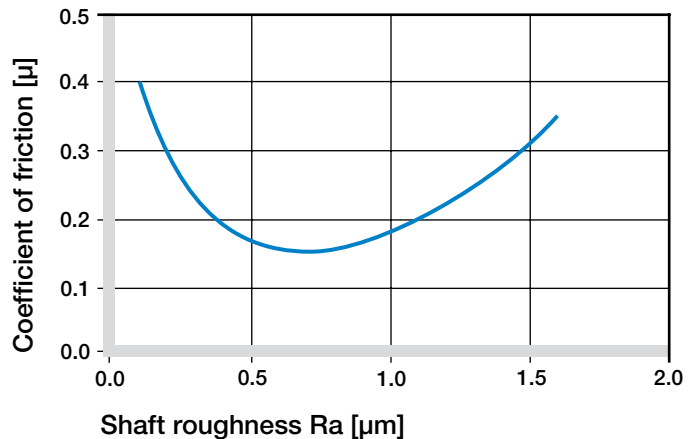
Graphs 07 to 09 show results of testing different shaft materials with plain bearings made of iglidur® G. In Graph 07 it shows that iglidur® G can be combined with various shaft materials. The simple shaft materials of free-cutting steel and HR carbon steel have proven best at low loads. This helps to design cost-effective systems, since both iglidur® G and the shaft are economically priced. It is important to notice that with increasing loads, the recommended hardness of the shaft increases. The “soft” shafts tend to wear more easily and thus increase the wear of the overall system. If the loads exceed 2 MPa it is important to recognize that the wear rate (the gradient of the curves) clearly decreases with the hard shaft materials. The comparison of rotational movements to oscillating movements shows that iglidur® G provides advantages in oscillating movements. The wear of the bearing is smaller for equivalent conditions. The higher the load, the greater the difference.

If the shaft material you plan on using is not shown in these test results, please contact us.

► Shaft Materials, **page 51**

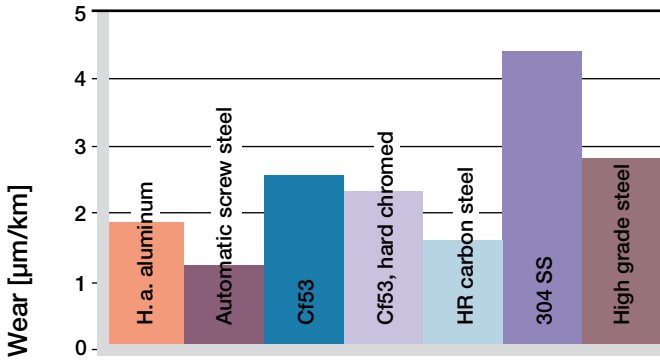
iglidur® G	Dry	Greases	Oil	Water
C.o.f. μ	0.08–0.15	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ($R_a = 1 \mu\text{m}$, 50 HRC)

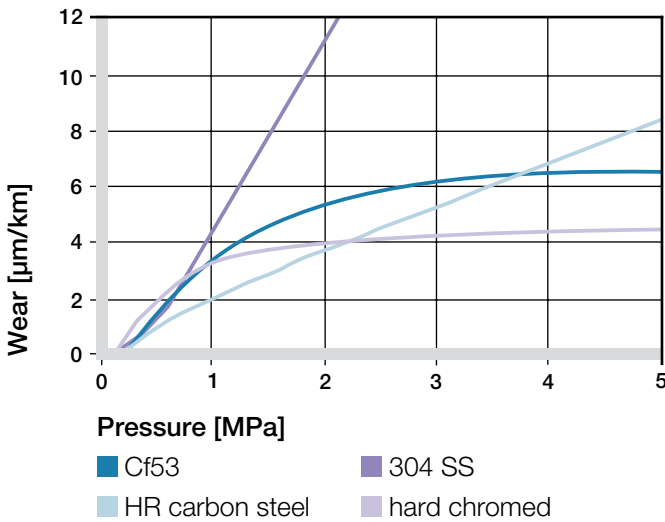


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

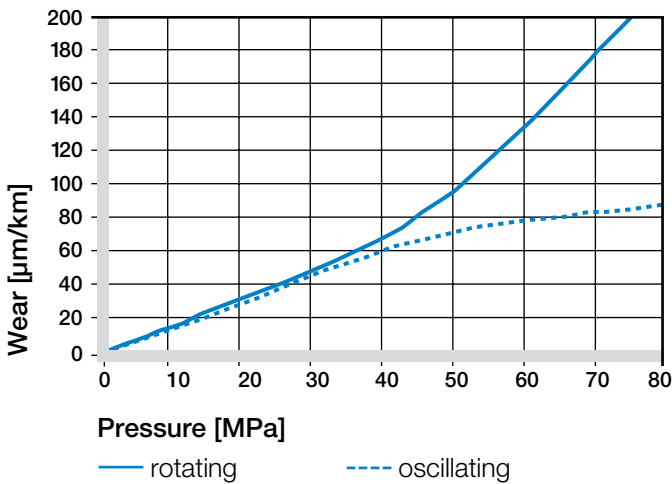
iglidur® G | Technical Data



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Additional Properties

Chemical Resistance

iglidur® G plain bearings have strong resistance to chemicals. They are also resistant to most lubricants. iglidur® G plain bearings are not attacked by most weak organic or inorganic acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to -
Strong acids	-
Diluted alkalines	+
Strong alkalines	0

+ resistant 0 conditionally resistant - not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® G are resistant to radiation up to an intensity of $3 \cdot 10^2 \text{ Gy}$.

UV Resistance

iglidur® G plain bearings are permanently resistant to UV radiation.

Vacuum

iglidur® G plain bearings outgas in a vacuum. Use in a vacuum environment is only possible with dehumidified bearings.

Electrical Properties

iglidur® G plain bearings are electrically insulating.

Volume resistance	$> 10^{13} \Omega \text{cm}$
Surface resistance	$> 10^{11} \Omega$

Moisture Absorption

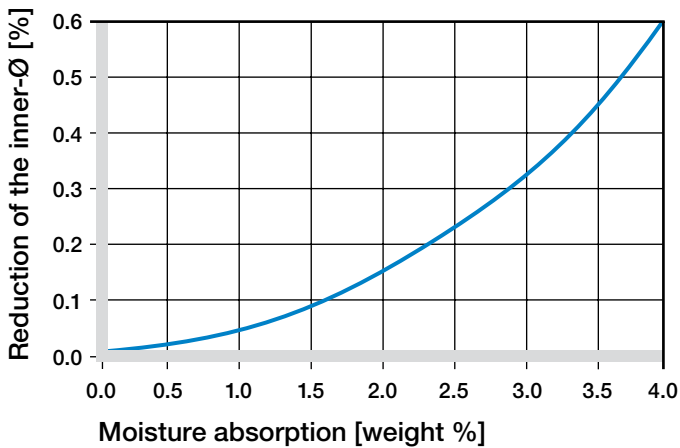
The moisture absorption of iglidur® G plain bearings is approximately 1 % in standard atmosphere. The saturation limit submerged in water is 4 %. This must be taken into account for these types of applications.

Maximum moisture absorption

At +23 °C/50 % r.h. 0.7 % weight

Max. moisture absorption 4.0 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® G plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

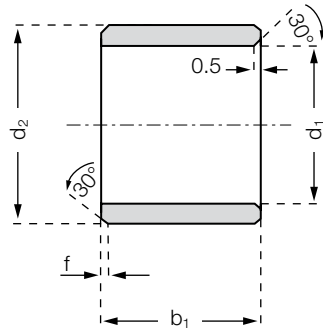
► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® G E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

iglidur® G | Product Range

Sleeve Bearing



Order key

GSM-0103-02



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® G

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
GSM-0103-02	1.5	+0.014 +0.054	3.0	2.0
GSM-0203-03	2.0	+0.014 +0.054	3.5	3.0
GSM-02504-05	2.5	+0.014 +0.054	4.5	5.0
GSM-0304-03	3.0	+0.014 +0.054	4.5	3.0
GSM-0304-05	3.0	+0.014 +0.054	4.5	5.0
GSM-0304-06	3.0	+0.014 +0.054	4.5	6.0
GSM-0405-04	4.0	+0.020 +0.068	5.5	4.0
GSM-0405-06	4.0	+0.020 +0.068	5.5	6.0
GSM-0406-08	4.5	+0.020 +0.068	6.0	8.0
GSM-0407-05	4.0	+0.020 +0.068	7.0	5.5
GSM-0506-05	5.0	+0.010 +0.040	6.0	5.0
GSM-0506-07	5.0	+0.010 +0.040	6.0	7.0
GSM-0507-05	5.0	+0.020 +0.068	7.0	5.0
GSM-0507-08	5.0	+0.020 +0.068	7.0	8.0
GSM-0507-10	5.0	+0.020 +0.068	7.0	10.0
GSM-0607-06	6.0	+0.010 +0.040	7.0	6.0
GSM-0607-17.5	6.0	+0.010 +0.040	7.0	17.5
GSM-0608-015	6.0	+0.020 +0.068	8.0	1.5
GSM-0608-025	6.0	+0.020 +0.068	8.0	2.5
GSM-0608-04	6.0	+0.020 +0.068	8.0	4.0
GSM-0608-05	6.0	+0.020 +0.068	8.0	5.0
GSM-0608-055	6.0	+0.020 +0.068	8.0	5.5
GSM-0608-06	6.0	+0.020 +0.068	8.0	6.0
GSM-0608-08	6.0	+0.020 +0.068	8.0	8.0
GSM-0608-09	6.0	+0.020 +0.068	8.0	9.5

Part number	d1	d1-Tolerance*	d2	b1 h13
GSM-0608-10	6.0	+0.020 +0.068	8.0	10.0
GSM-0608-11	6.0	+0.020 +0.068	8.0	11.8
GSM-0608-13	6.0	+0.020 +0.068	8.0	13.8
GSM-0708-10	7.0	+0.013 +0.049	8.0	10.0
GSM-0708-19	7.0	+0.013 +0.049	8.0	19.0
GSM-0709-08	7.0	+0.025 +0.083	9.0	8.0
GSM-0709-09	7.0	+0.025 +0.083	9.0	9.0
GSM-0709-10	7.0	+0.025 +0.083	9.0	10.0
GSM-0709-12	7.0	+0.025 +0.083	9.0	12.0
GSM-0809-05	8.0	+0.013 +0.049	9.0	5.0
GSM-0809-06	8.0	+0.013 +0.049	9.0	6.0
GSM-0809-08	8.0	+0.013 +0.049	9.0	8.0
GSM-0809-12	8.0	+0.013 +0.049	9.0	12.0
GSM-0810-05	8.0	+0.025 +0.083	10.0	5.0
GSM-0810-06	8.0	+0.025 +0.083	10.0	6.0
GSM-0810-07	8.0	+0.025 +0.083	10.0	6.8
GSM-0810-08	8.0	+0.025 +0.083	10.0	8.0
GSM-0810-10	8.0	+0.025 +0.083	10.0	10.0
GSM-0810-12	8.0	+0.025 +0.083	10.0	12.0
GSM-0810-13	8.0	+0.025 +0.083	10.0	13.8
GSM-0810-15	8.0	+0.025 +0.083	10.0	15.0
GSM-0810-16	8.0	+0.025 +0.083	10.0	16.0
GSM-0810-20	8.0	+0.025 +0.083	10.0	20.0
GSM-0810-22	8.0	+0.025 +0.083	10.0	22.0
GSM-0911-06	9.0	+0.025 +0.083	11.0	6.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/g



order part number
example GSM-0103-02



Sleeve Bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
GSM-1011-06	10.0	+0.013 +0.049	11.0	6.0
GSM-1011-10	10.0	+0.013 +0.049	11.0	10.0
GSM-1011-25	10.0	+0.013 +0.049	11.0	25.0
GSM-1011-30	10.0	+0.013 +0.049	11.0	30.0
GSM-1012-04	10.0	+0.025 +0.083	12.0	4.0
GSM-1012-045	10.0	+0.025 +0.083	12.0	4.5
GSM-1012-05	10.0	+0.025 +0.083	12.0	5.0
GSM-1012-06	10.0	+0.025 +0.083	12.0	6.0
GSM-1012-07	10.0	+0.025 +0.083	12.0	7.0
GSM-1012-08	10.0	+0.025 +0.083	12.0	8.0
GSM-1012-09	10.0	+0.025 +0.083	12.0	9.0
GSM-1012-10	10.0	+0.025 +0.083	12.0	10.0
GSM-1012-12	10.0	+0.025 +0.083	12.0	12.0
GSM-1012-14	10.0	+0.025 +0.083	12.0	14.0
GSM-1012-15	10.0	+0.025 +0.083	12.0	15.0
GSM-1012-17	10.0	+0.025 +0.083	12.0	17.0
GSM-1012-20	10.0	+0.025 +0.083	12.0	20.0
GSM-1213-12	12.0	+0.016 +0.059	13.0	12.0
GSM-1213-15	12.0	+0.016 +0.059	13.0	15.0
GSM-1214-04	12.0	+0.032 +0.102	14.0	4.0
GSM-1214-05	12.0	+0.032 +0.102	14.0	5.0
GSM-1214-06	12.0	+0.032 +0.102	14.0	6.0
GSM-1214-08	12.0	+0.032 +0.102	14.0	8.0
GSM-1214-10	12.0	+0.032 +0.102	14.0	10.0
GSM-1214-12	12.0	+0.032 +0.102	14.0	12.0
GSM-1214-14	12.0	+0.032 +0.102	14.0	14.0
GSM-1214-15	12.0	+0.032 +0.102	14.0	15.0
GSM-1214-20	12.0	+0.032 +0.102	14.0	20.0
GSM-1214-25	12.0	+0.032 +0.102	14.0	25.0
GSM-1215-06	12.0	+0.032 +0.102	15.0	6.0
GSM-1215-22	12.0	+0.032 +0.102	15.0	22.0
GSM-1216-10	12.0	+0.050 +0.160	16.0	10.0
GSM-1216-20	12.0	+0.050 +0.160	16.0	20.0
GSM-1315-070	13.0	+0.032 +0.102	15.0	7.0
GSM-1315-075	13.0	+0.032 +0.102	15.0	7.5
GSM-1315-10	13.0	+0.032 +0.102	15.0	10.0
GSM-1315-15	13.0	+0.032 +0.102	15.0	15.0
GSM-1315-20	13.0	+0.032 +0.102	15.0	20.0
GSM-1315-25	13.0	+0.032 +0.102	15.0	25.0
GSM-1416-03	14.0	+0.032 +0.102	16.0	3.0
GSM-1416-06	14.0	+0.032 +0.102	16.0	6.0
GSM-1416-08	14.0	+0.032 +0.102	16.0	8.0

Part number	d1	d1-Tolerance*	d2	b1 h13
GSM-1416-10	14.0	+0.032 +0.102	16.0	10.0
GSM-1416-12	14.0	+0.032 +0.102	16.0	12.0
GSM-1416-15	14.0	+0.032 +0.102	16.0	15.0
GSM-1416-20	14.0	+0.032 +0.102	16.0	20.0
GSM-1416-25	14.0	+0.032 +0.102	16.0	25.0
GSM-1516-15	15.0	+0.016 +0.059	16.0	15.0
GSM-1517-04	15.0	+0.032 +0.102	17.0	4.0
GSM-1517-10	15.0	+0.032 +0.102	17.0	10.0
GSM-1517-12	15.0	+0.032 +0.102	17.0	12.0
GSM-1517-15	15.0	+0.032 +0.102	17.0	15.0
GSM-1517-20	15.0	+0.032 +0.102	17.0	20.0
GSM-1517-25	15.0	+0.032 +0.102	17.0	25.0
GSM-1618-055	16.0	+0.032 +0.102	18.0	5.5
GSM-1618-08	16.0	+0.032 +0.102	18.0	8.0
GSM-1618-10	16.0	+0.032 +0.102	18.0	10.0
GSM-1618-12	16.0	+0.032 +0.102	18.0	12.0
GSM-1618-13.5	16.0	+0.032 +0.102	18.0	13.5
GSM-1618-15	16.0	+0.032 +0.102	18.0	15.0
GSM-1618-20	16.0	+0.032 +0.102	18.0	20.0
GSM-1618-25	16.0	+0.032 +0.102	18.0	25.0
GSM-1618-30	16.0	+0.032 +0.102	18.0	30.0
GSM-1618-50	16.0	+0.032 +0.102	18.0	50.0
GSM-1820-10	18.0	+0.032 +0.102	20.0	10.0
GSM-1820-12	18.0	+0.032 +0.102	20.0	12.0
GSM-1820-15	18.0	+0.032 +0.102	20.0	15.0
GSM-1820-20	18.0	+0.032 +0.102	20.0	20.0
GSM-1820-25	18.0	+0.032 +0.102	20.0	25.0
GSM-1820-45	18.0	+0.032 +0.102	20.0	45.0
GSM-1922-06	19.0	+0.040 +0.124	22.0	6.0
GSM-1922-28	19.0	+0.040 +0.124	22.0	28.0
GSM-1922-35	19.0	+0.040 +0.124	22.0	35.0
GSM-2021-20	20.0	+0.020 +0.072	21.0	20.0
GSM-2022-03	20.0	+0.040 +0.124	22.0	3.0
GSM-2022-08	20.0	+0.040 +0.124	22.0	8.0
GSM-2022-105	20.0	+0.040 +0.124	22.0	10.5
GSM-2022-15	20.0	+0.040 +0.124	22.0	15.0
GSM-2022-20	20.0	+0.040 +0.124	22.0	20.0
GSM-2022-22	20.0	+0.040 +0.124	22.0	22.0
GSM-2022-30	20.0	+0.040 +0.124	22.0	30.0
GSM-2023-10	20.0	+0.040 +0.124	23.0	10.0
GSM-2023-15	20.0	+0.040 +0.124	23.0	15.0
GSM-2023-20	20.0	+0.040 +0.124	23.0	20.0

* after pressfit. Testing methods ► page 55



Sleeve Bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*		d2	b1 h13
GSM-2023-23	20.0	+0.040	+0.124	23.0	23.0
GSM-2023-24	20.0	+0.040	+0.124	23.0	24.0
GSM-2023-25	20.0	+0.040	+0.124	23.0	25.0
GSM-2023-30	20.0	+0.040	+0.124	23.0	30.0
GSM-2224-10	22.0	+0.040	+0.124	24.0	10.0
GSM-2224-15	22.0	+0.040	+0.124	24.0	15.0
GSM-2224-17	22.0	+0.040	+0.124	24.0	17.0
GSM-2224-20	22.0	+0.040	+0.124	24.0	20.0
GSM-2224-30	22.0	+0.040	+0.124	24.0	30.0
GSM-2225-15	22.0	+0.040	+0.124	25.0	15.0
GSM-2225-20	22.0	+0.040	+0.124	25.0	20.0
GSM-2225-25	22.0	+0.040	+0.124	25.0	25.0
GSM-2225-30	22.0	+0.040	+0.124	25.0	30.0
GSM-2427-06	24.0	+0.040	+0.124	27.0	6.0
GSM-2427-15	24.0	+0.040	+0.124	27.0	15.0
GSM-2427-20	24.0	+0.040	+0.124	27.0	20.0
GSM-2427-25	24.0	+0.040	+0.124	27.0	25.0
GSM-2427-30	24.0	+0.040	+0.124	27.0	30.0
GSM-2526-25	25.0	+0.020	+0.072	26.0	25.0
GSM-2528-15	25.0	+0.040	+0.124	28.0	15.0
GSM-2528-20	25.0	+0.040	+0.124	28.0	20.0
GSM-2528-24	25.0	+0.040	+0.124	28.0	24.0
GSM-2528-25	25.0	+0.040	+0.124	28.0	25.0
GSM-2528-30	25.0	+0.040	+0.124	28.0	30.0
GSM-2528-35	25.0	+0.040	+0.124	28.0	35.0
GSM-2528-50	25.0	+0.040	+0.124	28.0	50.0
GSM-2630-16	26.0	+0.040	+0.124	30.0	16.0
GSM-2730-05	27.0	+0.040	+0.124	30.0	5.0
GSM-2832-105	28.0	+0.040	+0.124	32.0	10.5
GSM-2832-12	28.0	+0.040	+0.124	32.0	12.0
GSM-2832-15	28.0	+0.040	+0.124	32.0	15.0
GSM-2832-20	28.0	+0.040	+0.124	32.0	20.0
GSM-2832-23	28.0	+0.040	+0.124	32.0	23.0
GSM-2832-25	28.0	+0.040	+0.124	32.0	25.0
GSM-2832-30	28.0	+0.040	+0.124	32.0	30.0
GSM-3031-12	30.0	+0.020	+0.072	31.0	12.0
GSM-3031-30	30.0	+0.020	+0.072	31.0	30.0
GSM-3034-15	30.0	+0.040	+0.124	34.0	15.0
GSM-3034-20	30.0	+0.040	+0.124	34.0	20.0

Part number	d1	d1-Tolerance*		d2	b1 h13
GSM-3034-24	30.0	+0.040	+0.124	34.0	24.0
GSM-3034-25	30.0	+0.040	+0.124	34.0	25.0
GSM-3034-30	30.0	+0.040	+0.124	34.0	30.0
GSM-3034-35	30.0	+0.040	+0.124	34.0	35.0
GSM-3034-40	30.0	+0.040	+0.124	34.0	40.0
GSM-3034-525	30.0	+0.040	+0.124	34.0	52.5
GSM-3236-20	32.0	+0.050	+0.150	36.0	20.0
GSM-3236-30	32.0	+0.050	+0.150	36.0	30.0
GSM-3236-40	32.0	+0.050	+0.150	36.0	40.0
GSM-3539-14	35.0	+0.050	+0.150	39.0	14.0
GSM-3539-20	35.0	+0.050	+0.150	39.0	20.0
GSM-3539-25	35.0	+0.050	+0.150	39.0	25.0
GSM-3539-30	35.0	+0.050	+0.150	39.0	30.0
GSM-3539-40	35.0	+0.050	+0.150	39.0	40.0
GSM-3539-50	35.0	+0.050	+0.150	39.0	50.0
GSM-3640-20	36.0	+0.050	+0.150	40.0	20.0
GSM-3741-20	37.0	+0.050	+0.150	41.0	20.0
GSM-4044-10	40.0	+0.050	+0.150	44.0	10.0
GSM-4044-16	40.0	+0.050	+0.150	44.0	16.5
GSM-4044-20	40.0	+0.050	+0.150	44.0	20.0
GSM-4044-30	40.0	+0.050	+0.150	44.0	30.0
GSM-4044-40	40.0	+0.050	+0.150	44.0	40.0
GSM-4044-50	40.0	+0.050	+0.150	44.0	50.0
GSM-4246-40	42.0	+0.050	+0.150	46.0	40.0
GSM-4550-22	45.0	+0.050	+0.150	50.0	22.0
GSM-4550-235	45.0	+0.050	+0.150	50.0	23.5
GSM-4550-30	45.0	+0.050	+0.150	50.0	30.0
GSM-4550-38	45.0	+0.050	+0.150	50.0	38.0
GSM-4550-40	45.0	+0.050	+0.150	50.0	40.0
GSM-4550-50	45.0	+0.050	+0.150	50.0	50.0
GSM-5055-20	50.0	+0.050	+0.150	55.0	20.0
GSM-5055-25	50.0	+0.050	+0.150	55.0	25.0
GSM-5055-30	50.0	+0.050	+0.150	55.0	30.0
GSM-5055-40	50.0	+0.050	+0.150	55.0	40.0
GSM-5055-50	50.0	+0.050	+0.150	55.0	50.0
GSM-5257-20	52.0	+0.060	+0.180	57.0	20.0
GSM-5560-20	55.0	+0.060	+0.180	60.0	20.0
GSM-5560-40	55.0	+0.060	+0.180	60.0	40.0
GSM-5560-50	55.0	+0.060	+0.180	60.0	50.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/g



order part number
example GSM-2023-23



Sleeve Bearing

Dimensions [mm]

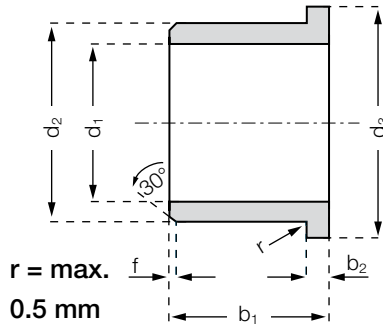
Part number	d1	d1-Tolerance*	d2	b1 h13
GSM-5560-60	55.0	+0.060 +0.180	60.0	60.0
GSM-6065-30	60.0	+0.060 +0.180	65.0	30.0
GSM-6065-40	60.0	+0.060 +0.180	65.0	40.0
GSM-6065-50	60.0	+0.060 +0.180	65.0	50.0
GSM-6065-60	60.0	+0.060 +0.180	65.0	60.0
GSM-6267-35	62.0	+0.060 +0.180	67.0	35.0
GSM-6570-30	65.0	+0.060 +0.180	70.0	30.0
GSM-6570-50	65.0	+0.060 +0.180	70.0	50.0
GSM-7075-60	70.0	+0.060 +0.180	75.0	60.0
GSM-7277-76	72.0	+0.060 +0.180	77.0	76.0
GSM-7580-40	75.0	+0.060 +0.180	80.0	40.0
GSM-7580-60	75.0	+0.060 +0.180	80.0	60.0
GSM-8085-60	80.0	+0.060 +0.180	85.0	60.0
GSM-8085-100	80.0	+0.060 +0.180	85.0	100.0

Part number	d1	d1-Tolerance*	d2	b1 h13
GSM-8590-100	85.0	+0.072 +0.212	90.0	100.0
GSM-9095-100	90.0	+0.072 +0.212	95.0	100.0
GSM-95100-100	95.0	+0.072 +0.212	100.0	100.0
GSM-100105-30	100.0	+0.072 +0.212	105.0	30.0
GSM-100105-100	100.0	+0.072 +0.212	105.0	100.0
GSM-110115-100	110.0	+0.072 +0.212	115.0	100.0
GSM-120125-100	120.0	+0.072 +0.212	125.0	100.0
GSM-125130-100	125.0	+0.085 +0.245	130.0	100.0
GSM-130135-100	130.0	+0.085 +0.245	135.0	100.0
GSM-135140-80	135.0	+0.085 +0.245	140.0	80.0
GSM-140145-100	140.0	+0.085 +0.245	145.0	100.0
GSM-150155-100	150.0	+0.085 +0.245	155.0	100.0

* after pressfit. Testing methods ► page 55

iglidur® G | Product Range

Flange Bearing



Order key

GFM-0304-02



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form F)
Material iglidur® G

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
GFM-0304-02	3.0	+0.014 +0.054	4.5	7.5	2.0	0.5
GFM-0304-0275	3.0	+0.014 +0.054	4.5	7.5	2.7	0.75
GFM-0304-03	3.0	+0.014 +0.054	4.5	7.5	3.0	0.75
GFM-0304-05	3.0	+0.014 +0.054	4.5	7.5	5.0	0.75
GFM-030407-05	3.0	+0.014 +0.054	4.5	7.0	5.0	0.75
GFM-0405-03	4.0	+0.020 +0.068	5.5	9.5	3.0	0.75
GFM-0405-04	4.0	+0.020 +0.068	5.5	9.5	4.0	0.75
GFM-0405-06	4.0	+0.020 +0.068	5.5	9.5	6.0	0.75
GFM-04050-04	4.0	+0.010 +0.040	5.0	9.5	4.0	0.5
GFM-04050-06	4.0	+0.010 +0.040	5.0	9.5	6.0	0.5
GFM-040508-10	4.0	+0.020 +0.068	5.5	8.0	10.0	1.0
GFM-0506-035	5.0	+0.010 +0.040	6.0	10.0	3.5	0.5
GFM-0506-04	5.0	+0.010 +0.040	6.0	10.0	4.0	0.5
GFM-0506-05	5.0	+0.010 +0.040	6.0	10.0	5.0	0.5
GFM-0506-06	5.0	+0.010 +0.040	6.0	10.0	6.0	0.5
GFM-0506-15	5.0	+0.010 +0.040	6.0	10.0	15.0	0.5
GFM-0507-03	5.0	+0.020 +0.068	7.0	11.0	3.5	1.0
GFM-0507-04	5.0	+0.020 +0.068	7.0	11.0	4.0	1.0
GFM-0507-05	5.0	+0.020 +0.068	7.0	11.0	5.0	1.0
GFM-0507-30	5.0	+0.020 +0.068	7.0	11.0	30.0	1.0
GFM-050709-05	5.0	+0.020 +0.068	7.0	9.5	5.0	1.0
GFM-050715-04	5.0	+0.020 +0.068	7.0	15.0	4.0	1.0
GFM-0607-024	6.0	+0.010 +0.040	7.0	11.0	2.4	0.5
GFM-0607-045	6.0	+0.010 +0.040	7.0	11.0	4.5	0.5
GFM-0607-06	6.0	+0.010 +0.040	7.0	11.0	6.0	0.5

* after pressfit. Testing methods ► page 55



delivery available
time from stock



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order part number
example GFM-0304-02



Flange Bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
GFM-0607-10	6.0	+0.010 +0.040	7.0	11.0	10.0	0.5
GFM-0608-025	6.0	+0.020 +0.068	8.0	12.0	2.5	1.0
GFM-0608-04	6.0	+0.020 +0.068	8.0	12.0	4.0	1.0
GFM-0608-048	6.0	+0.020 +0.068	8.0	12.0	4.8	1.0
GFM-0608-05	6.0	+0.020 +0.068	8.0	12.0	5.0	1.0
GFM-0608-06	6.0	+0.020 +0.068	8.0	12.0	6.0	1.0
GFM-0608-07	6.0	+0.020 +0.068	8.0	12.0	7.0	1.0
GFM-0608-08	6.0	+0.020 +0.068	8.0	12.0	8.0	1.0
GFM-0608-10	6.0	+0.020 +0.068	8.0	12.0	10.0	1.0
GFM-0608-25	6.0	+0.020 +0.068	8.0	12.0	25.0	1.0
GFM-0608-35	6.0	+0.020 +0.068	8.0	12.0	35.0	1.0
GFM-060814-12	6.0	+0.020 +0.068	8.0	14.0	12.0	1.0
GFM-060814-028	6.0	+0.020 +0.068	8.0	14.0	2.8	1.0
GFM-0708-03	7.0	+0.013 +0.049	8.0	12.0	3.0	0.5
GFM-0708-08	7.0	+0.013 +0.049	8.0	12.0	8.0	0.5
GFM-0709-06	7.0	+0.025 +0.083	9.0	15.0	6.0	1.0
GFM-0709-10	7.0	+0.025 +0.083	9.0	15.0	10.0	1.0
GFM-0709-12	7.0	+0.025 +0.083	9.0	15.0	12.0	1.0
GFM-0709-035	7.0	+0.025 +0.083	9.0	15.0	3.5	1.0
GFM-070919-10	7.0	+0.025 +0.083	9.0	19.0	10.0	1.0
GFM-0809-03	8.0	+0.013 +0.049	9.0	15.0	3.0	0.5
GFM-0809-055	8.0	+0.013 +0.049	9.0	13.0	5.5	0.5
GFM-0809-08	8.0	+0.013 +0.049	9.0	13.0	8.0	0.5
GFM-0809-12	8.0	+0.013 +0.049	9.0	13.0	12.0	0.5
GFM-0810-03	8.0	+0.025 +0.083	10.0	15.0	3.0	1.0
GFM-0810-04	8.0	+0.025 +0.083	10.0	15.0	4.0	1.0
GFM-0810-05	8.0	+0.025 +0.083	10.0	15.0	5.5	1.0
GFM-0810-065	8.0	+0.025 +0.083	10.0	15.0	6.5	1.0
GFM-0810-07	8.0	+0.025 +0.083	10.0	15.0	7.5	1.0
GFM-0810-09	8.0	+0.025 +0.083	10.0	15.0	9.5	1.0
GFM-0810-10	8.0	+0.025 +0.083	10.0	15.0	10.0	1.0
GFM-0810-15	8.0	+0.025 +0.083	10.0	15.0	15.0	1.0
GFM-0810-25	8.0	+0.025 +0.083	10.0	15.0	25.0	1.0
GFM-0810-30	8.0	+0.025 +0.083	10.0	15.0	30.0	1.0
GFM-081012-125	8.0	+0.025 +0.083	10.0	12.0	12.5	1.0
GFM-081013-08	8.0	+0.025 +0.083	10.0	13.0	8.0	1.0
GFM-081014-06	8.0	+0.025 +0.083	10.0	14.0	6.0	1.0
GFM-081014-08	8.0	+0.025 +0.083	10.0	14.0	8.0	1.0
GFM-081014-10	8.0	+0.025 +0.083	10.0	14.0	10.0	1.0
GFM-081016-11	8.0	+0.025 +0.083	10.0	16.0	11.5	1.5
GFM-081016-15	8.0	+0.025 +0.083	10.0	16.0	15.5	1.5
GFM-081017-15	8.0	+0.025 +0.083	10.0	17.0	15.0	1.0

* after pressfit. Testing methods ► page 55



Flange Bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
GFM-0910-17	9.0	+0.013 +0.049	10.0	15.0	17.5	0.5
GFM-0910-065	9.0	+0.013 +0.049	10.0	15.0	6.5	0.5
GFM-1011-026	10.0	+0.013 +0.049	11.0	15.0	2.6	0.5
GFM-1011-044	10.0	+0.013 +0.049	11.0	15.0	4.4	0.5
GFM-1011-10	10.0	+0.013 +0.049	11.0	15.0	10.0	0.5
GFM-1012-035	10.0	+0.025 +0.083	12.0	18.0	3.5	1.0
GFM-1012-04	10.0	+0.025 +0.083	12.0	18.0	4.0	1.0
GFM-1012-05	10.0	+0.025 +0.083	12.0	18.0	5.0	1.0
GFM-1012-06	10.0	+0.025 +0.083	12.0	18.0	6.0	1.0
GFM-1012-07	10.0	+0.025 +0.083	12.0	18.0	7.0	1.0
GFM-1012-09	10.0	+0.025 +0.083	12.0	18.0	9.0	1.0
GFM-1012-10	10.0	+0.025 +0.083	12.0	18.0	10.0	1.0
GFM-1012-12	10.0	+0.025 +0.083	12.0	18.0	12.0	1.0
GFM-1012-15	10.0	+0.025 +0.083	12.0	18.0	15.0	1.0
GFM-1012-17	10.0	+0.025 +0.083	12.0	18.0	17.0	1.0
GFM-101214-07	10.0	+0.025 +0.083	12.0	14.0	7.0	1.0
GFM-101215-12	10.0	+0.025 +0.083	12.0	15.0	12.0	1.0
GFM-101216-06	10.0	+0.025 +0.083	12.0	16.0	6.0	1.0
GFM-101216-09	10.0	+0.025 +0.083	12.0	16.0	9.0	1.0
GFM-101216-15	10.0	+0.025 +0.083	12.0	16.0	15.0	1.0
GFM-1213-03	12.0	+0.016 +0.059	13.0	17.0	3.0	0.5
GFM-1213-12	12.0	+0.016 +0.059	13.0	17.0	12.0	0.5
GFM-1214-03	12.0	+0.032 +0.102	14.0	20.0	3.0	1.0
GFM-1214-06	12.0	+0.032 +0.102	14.0	20.0	6.0	1.0
GFM-1214-07	12.0	+0.032 +0.102	14.0	20.0	7.0	1.0
GFM-1214-09	12.0	+0.032 +0.102	14.0	20.0	9.0	1.0
GFM-1214-10	12.0	+0.032 +0.102	14.0	20.0	10.0	1.0
GFM-1214-11	12.0	+0.032 +0.102	14.0	20.0	11.0	1.0
GFM-1214-12	12.0	+0.032 +0.102	14.0	20.0	12.0	1.0
GFM-1214-15	12.0	+0.032 +0.102	14.0	20.0	15.0	1.0
GFM-1214-17	12.0	+0.032 +0.102	14.0	20.0	17.0	1.0
GFM-1214-20	12.0	+0.032 +0.102	14.0	20.0	20.0	1.0
GFM-1214-24	12.0	+0.032 +0.102	14.0	20.0	24.0	1.0
GFM-121418-04	12.0	+0.032 +0.102	14.0	18.0	4.0	1.0
GFM-121418-08	12.0	+0.032 +0.102	14.0	18.0	8.0	1.0
GFM-121418-10	12.0	+0.032 +0.102	14.0	18.0	10.0	1.0
GFM-121418-12	12.0	+0.032 +0.102	14.0	18.0	12.0	1.0
GFM-121418-15	12.0	+0.032 +0.102	14.0	18.0	15.0	1.0
GFM-121418-20	12.0	+0.032 +0.102	14.0	18.0	20.0	1.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
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order part number
example GFM-0910-17



Flange Bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
GFM-1315-06	13.0	+0.032 +0.102	15.0	22.0	6.0	1.0
GFM-1416-03	14.0	+0.032 +0.102	16.0	22.0	3.0	1.0
GFM-1416-04	14.0	+0.032 +0.102	16.0	22.0	4.0	1.0
GFM-1416-06	14.0	+0.032 +0.102	16.0	22.0	6.0	1.0
GFM-1416-08	14.0	+0.032 +0.102	16.0	22.0	8.0	1.0
GFM-1416-10	14.0	+0.032 +0.102	16.0	22.0	10.0	1.0
GFM-1416-12	14.0	+0.032 +0.102	16.0	22.0	12.0	1.0
GFM-1416-17	14.0	+0.032 +0.102	16.0	22.0	17.0	1.0
GFM-1416-21	14.0	+0.032 +0.102	16.0	22.0	21.0	1.0
GFM-1516-02	15.0	+0.016 +0.059	16.0	20.0	2.0	0.5
GFM-1516-025	15.0	+0.016 +0.059	16.0	20.0	2.5	0.5
GFM-1516-03	15.0	+0.016 +0.059	16.0	20.0	3.0	0.5
GFM-1516-15	15.0	+0.016 +0.059	16.0	20.0	15.0	0.5
GFM-1517-04	15.0	+0.032 +0.102	17.0	23.0	4.0	1.0
GFM-1517-045	15.0	+0.032 +0.102	17.0	23.0	4.5	1.0
GFM-1517-05	15.0	+0.032 +0.102	17.0	23.0	5.0	1.0
GFM-1517-09	15.0	+0.032 +0.102	17.0	23.0	9.0	1.0
GFM-1517-12	15.0	+0.032 +0.102	17.0	23.0	12.0	1.0
GFM-1517-17	15.0	+0.032 +0.102	17.0	23.0	17.0	1.0
GFM-1517-20	15.0	+0.032 +0.102	17.0	23.0	20.0	1.0
GFM-151824-32	15.0	+0.032 +0.102	18.0	24.0	32.0	1.5
GFM-1618-04	16.0	+0.032 +0.102	18.0	24.0	4.0	1.0
GFM-1618-06	16.0	+0.032 +0.102	18.0	24.0	6.0	1.0
GFM-1618-09	16.0	+0.032 +0.102	18.0	24.0	9.0	1.0
GFM-1618-12	16.0	+0.032 +0.102	18.0	24.0	12.0	1.0
GFM-1618-17	16.0	+0.032 +0.102	18.0	24.0	17.0	1.0
GFM-1618-21	16.0	+0.032 +0.102	18.0	24.0	21.0	1.0
GFM-1719-09	17.0	+0.032 +0.102	19.0	25.0	9.0	1.0
GFM-1719-25	17.0	+0.032 +0.102	19.0	25.0	25.0	1.0
GFM-1820-04	18.0	+0.032 +0.102	20.0	26.0	4.0	1.0
GFM-1820-06	18.0	+0.032 +0.102	20.0	26.0	6.0	1.0
GFM-1820-09	18.0	+0.032 +0.102	20.0	26.0	9.0	1.0
GFM-1820-11	18.0	+0.032 +0.102	20.0	26.0	11.0	1.0
GFM-1820-12	18.0	+0.032 +0.102	20.0	26.0	12.0	1.0
GFM-1820-17	18.0	+0.032 +0.102	20.0	26.0	17.0	1.0
GFM-1820-22	18.0	+0.032 +0.102	20.0	26.0	22.0	1.0
GFM-1820-30	18.0	+0.032 +0.102	20.0	26.0	30.0	1.0
GFM-1820-32	18.0	+0.032 +0.102	20.0	26.0	32.0	1.0
GFM-182022-06	18.0	+0.032 +0.102	20.0	22.0	6.0	1.0
GFM-1822-28	18.0	+0.032 +0.102	22.0	26.0	28.0	2.0
GFM-2021-20	20.0	+0.020 +0.072	21.0	25.0	20.0	0.5
GFM-2023-07	20.0	+0.040 +0.124	23.0	30.0	7.0	1.5

* after pressfit. Testing methods ► page 55



Flange Bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
GFM-2023-11	20.0	+0.040 +0.124	23.0	30.0	11.5	1.5
GFM-2023-16	20.0	+0.040 +0.124	23.0	30.0	16.5	1.5
GFM-2023-21	20.0	+0.040 +0.124	23.0	30.0	21.5	1.5
GFM-202326-21	20.0	+0.040 +0.124	23.0	26.0	21.5	1.5
GFM-202328-15	20.0	+0.040 +0.124	23.0	28.0	15.0	1.5
GFM-222535-315	22.0	+0.040 +0.124	25.0	35.0	31.5	1.5
GFM-2427-07	24.0	+0.040 +0.124	27.0	32.0	7.0	1.5
GFM-2427-10	24.0	+0.040 +0.124	27.0	32.0	10.0	1.5
GFM-2526-25	25.0	+0.020 +0.072	26.0	30.0	25.0	0.5
GFM-2527-48	25.0	+0.040 +0.124	27.0	32.0	48.0	1.0
GFM-2528-11	25.0	+0.040 +0.124	28.0	35.0	11.5	1.5
GFM-2528-16	25.0	+0.040 +0.124	28.0	35.0	16.5	1.5
GFM-2528-21	25.0	+0.040 +0.124	28.0	35.0	21.5	1.5
GFM-2830-10	28.0	+0.040 +0.124	30.0	36.0	10.0	1.0
GFM-2830-36	28.0	+0.040 +0.124	30.0	35.0	36.0	1.0
GFM-283239-20	28.0	+0.040 +0.124	32.0	39.0	20.0	2.0
GFM-3031-20	30.0	+0.040 +0.124	31.0	36.0	20.0	0.5
GFM-3031-30	30.0	+0.040 +0.124	31.0	35.0	30.0	0.5
GFM-3032-04	30.0	+0.040 +0.124	32.0	37.0	4.0	1.0
GFM-3032-12	30.0	+0.040 +0.124	32.0	37.0	12.0	1.0
GFM-3032-17	30.0	+0.040 +0.124	32.0	37.0	17.5	1.0
GFM-3032-22	30.0	+0.040 +0.124	32.0	37.0	22.0	1.0
GFM-3034-09	30.0	+0.040 +0.124	34.0	42.0	9.0	2.0
GFM-3034-16	30.0	+0.040 +0.124	34.0	42.0	16.0	2.0
GFM-3034-20	30.0	+0.040 +0.124	34.0	42.0	20.0	2.0
GFM-3034-26	30.0	+0.040 +0.124	34.0	42.0	26.0	2.0
GFM-3034-37	30.0	+0.040 +0.124	34.0	42.0	37.0	2.0
GFM-3236-16	32.0	+0.050 +0.150	36.0	40.0	16.0	2.0
GFM-3236-26	32.0	+0.050 +0.150	36.0	40.0	26.0	2.0
GFM-343850-35	34.0	+0.050 +0.150	38.0	50.0	35.0	2.0
GFM-3539-058	35.0	+0.050 +0.150	39.0	47.0	5.8	2.0
GFM-3539-07	35.0	+0.050 +0.150	39.0	47.0	7.0	2.0
GFM-3539-16	35.0	+0.050 +0.150	39.0	47.0	16.0	2.0
GFM-3539-26	35.0	+0.050 +0.150	39.0	47.0	26.0	2.0
GFM-3539-36	35.0	+0.050 +0.150	39.0	47.0	36.0	2.0
GFM-3842-22	38.0	+0.050 +0.150	42.0	54.0	22.0	2.0
GFM-4044-07	40.0	+0.050 +0.150	44.0	52.0	7.0	2.0
GFM-4044-14	40.0	+0.050 +0.150	44.0	52.0	14.0	2.0
GFM-4044-20	40.0	+0.050 +0.150	44.0	52.0	20.0	2.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/g



order part number
example GFM-2023-11



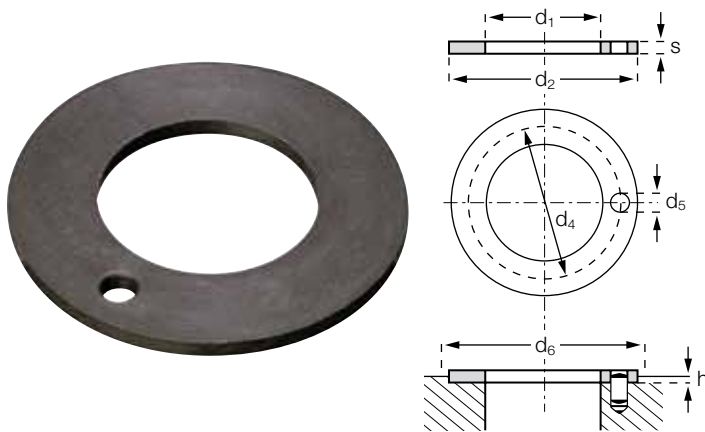
Flange Bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
GFM-4044-30	40.0	+0.050 +0.150	44.0	52.0	30.0	2.0
GFM-4044-40	40.0	+0.050 +0.150	44.0	52.0	40.0	2.0
GFM-4044-50	40.0	+0.050 +0.150	44.0	52.0	50.0	2.0
GFM-4246-19	42.0	+0.050 +0.150	46.0	53.0	19.0	2.0
GFM-4550-25	45.0	+0.050 +0.150	50.0	58.0	25.0	2.0
GFM-4550-30	45.0	+0.050 +0.150	50.0	58.0	30.0	2.0
GFM-4550-50	45.0	+0.050 +0.150	50.0	58.0	50.0	2.0
GFM-5055-07	50.0	+0.050 +0.150	55.0	63.0	7.0	2.0
GFM-5055-10	50.0	+0.050 +0.150	55.0	63.0	10.0	2.0
GFM-5055-25	50.0	+0.050 +0.150	55.0	63.0	25.0	2.0
GFM-5055-40	50.0	+0.050 +0.150	55.0	63.0	40.0	2.0
GFM-5055-50	50.0	+0.050 +0.150	55.0	63.0	50.0	2.0
GFM-6065-22	60.0	+0.060 +0.180	65.0	73.0	22.0	2.0
GFM-6065-30	60.0	+0.060 +0.180	65.0	73.0	30.0	2.0
GFM-6065-50	60.0	+0.060 +0.180	65.0	73.0	50.0	2.0
GFM-606580-62	60.0	+0.060 +0.180	65.0	80.0	62.0	2.0
GFM-6570-50	65.0	+0.060 +0.180	70.0	78.0	50.0	2.0
GFM-7075-50	70.0	+0.060 +0.180	75.0	83.0	50.0	2.0
GFM-7580-50	75.0	+0.060 +0.180	80.0	88.0	50.0	2.0
GFM-8085-100	80.0	+0.060 +0.180	85.0	93.0	100.0	2.5
GFM-8590-100	85.0	+0.072 +0.212	90.0	98.0	100.0	2.5
GFM-9095-100	90.0	+0.072 +0.212	95.0	103.0	100.0	2.5
GFM-95100-100	95.0	+0.072 +0.212	100.0	108.0	100.0	2.5
GFM-100105-100	100.0	+0.072 +0.212	105.0	113.0	100.0	2.5
GFM-100105-425	100.0	+0.072 +0.212	105.0	113.0	42.5	2.5
GFM-110115-100	110.0	+0.072 +0.212	115.0	123.0	100.0	2.5
GFM-120125-100	120.0	+0.072 +0.212	125.0	133.0	100.0	2.5
GFM-125130-100	125.0	+0.085 +0.245	130.0	138.0	100.0	2.5
GFM-130135-100	130.0	+0.085 +0.245	135.0	143.0	100.0	2.5
GFM-140145-100	140.0	+0.085 +0.245	145.0	153.0	100.0	2.5
GFM-150155-40	150.0	+0.085 +0.245	155.0	163.0	40.0	2.5
GFM-150155-100	150.0	+0.085 +0.245	155.0	163.0	100.0	2.5

* after pressfit. Testing methods ► page 55

Thrust Washer



Order key

GTM-1630-015



- Thickness s
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form T)
- Material iglidur® G

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

Part number	d1	d2	s	d4	d5	h	d6
	+0.25	-0.25	-0.05	-0.12 +0.12	+0.375 +0.125	+0.2 -0.2	+0.12
GTM-0509-006	5.0	9.5	0.6	**	**	0.3	9.5
GTM-0615-015	6.0	15.0	1.5	**	**	1.0	15
GTM-0620-015	6.0	20.0	1.5	13.0	1.5	1.0	20
GTM-0713-005	7.0	13.0	0.5	**	**	0.2	13
GTM-0815-005	8.0	15.0	0.5	**	**	0.2	15
GTM-0815-015	8.0	15.0	1.5	**	**	1.0	15
GTM-0818-010	8.0	18.0	1.0	**	**	0.7	18
GTM-0818-015	8.0	18.0	1.5	13.0	1.5	1.0	18
GTM-0918-015	9.0	18.0	1.5	13.5	1.5	1.0	18
GTM-1018-010	10.0	18.0	1.0	**	**	0.7	18
GTM-1018-020	10.0	18.0	2.0	**	**	1.5	18
GTM-1224-015	12.0	24.0	1.5	18.0	1.5	1.0	24
GTM-1420-015	14.0	20.0	1.5	**	**	1.0	20
GTM-1426-015	14.0	26.0	1.5	20.0	2.0	1.0	26
GTM-1522-008	15.0	22.0	0.8	**	**	0.5	22
GTM-1524-015	15.0	24.0	1.5	19.5	1.5	1.0	24
GTM-1524-0275	15.0	24.0	2.75	**	**	2.0	24
GTM-1630-015	16.0	30.0	1.5	22.0	2.0	1.0	30
GTM-1832-015	18.0	32.0	1.5	25.0	2.0	1.0	32
GTM-2036-015	20.0	36.0	1.5	28.0	3.0	1.0	36
GTM-2238-015	22.0	38.0	1.5	30.0	3.0	1.0	38
GTM-2442-015	24.0	42.0	1.5	33.0	3.0	1.0	42
GTM-2644-015	26.0	44.0	1.5	35.0	3.0	1.0	44
GTM-2835-005	28.5	35.8	0.5	**	**	0.2	35.8

** Design without fixing bore



delivery available
time from stock



prices price list online
www.igus.co.uk/en/g



order part number
example GTM-0509-006



Thrust Washer

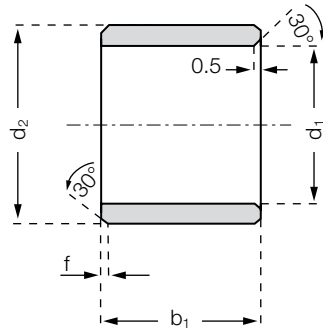
Dimensions [mm]

Part number	d1 +0.25	d2 -0.25	s -0.05	d4 -0.12 +0.12	d5 +0.375 +0.125	h +0.2 -0.2	d6 +0.12
GTM-2848-015	28.0	48.0	1.5	38.0	4.0	1.0	48
GTM-3254-015	32.0	54.0	1.5	43.0	4.0	1.0	54
GTM-3862-015	38.0	62.0	1.5	50.0	4.0	1.0	62
GTM-4266-015	42.0	66.0	1.5	54.0	4.0	1.0	66
GTM-4874-020	48.0	74.0	2.0	61.0	4.0	1.5	74
GTM-5278-020	52.0	78.0	2.0	65.0	4.0	1.5	78
GTM-6290-020	62.0	90.0	2.0	76.0	4.0	1.5	90
GTM-6881-020	68.0	81.0	2.0	**	**	1.5	81

** Design without fixing bore

iglidur® G | Product Range | Inch

Sleeve Bearing



Order key

GSI-0203-03



Length b1
Outer diameter d2
Inner diameter d1
Inch
Type (Form S)
Material iglidur® G

Chamfer in relation to the d1

d1 [Inch]:	Ø 0.040–0.236	Ø 0.236–0.472	Ø 0.472–1.18	Ø > 1.18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing Bore		Shaft Size	
				max.	min.	max.	min.	max.	min.
GSI-0203-03	1/8	3/16	3/16	.1269	.1251	.1878	.1873	.1243	.1236
GSI-0203-04	1/8	3/16	1/4	.1269	.1251	.1878	.1873	.1243	.1236
GSI-0203-06	1/8	3/16	3/8	.1269	.1251	.1878	.1873	.1243	.1236
GSI-0304-04	3/16	1/4	1/4	.1892	.1873	.2503	.2497	.1865	.1858
GSI-0304-06	3/16	1/4	3/8	.1892	.1873	.2503	.2497	.1865	.1858
GSI-0304-08	3/16	1/4	1/2	.1892	.1873	.2503	.2497	.1865	.1858
GSI-0405-04	1/4	5/16	1/4	.2521	.2498	.3128	.3122	.2490	.2481
GSI-0405-05	1/4	5/16	5/16	.2521	.2498	.3128	.3122	.2490	.2481
GSI-0405-06	1/4	5/16	3/8	.2521	.2498	.3128	.3122	.2490	.2481
GSI-0405-08	1/4	5/16	1/2	.2521	.2498	.3128	.3122	.2490	.2481
GSI-0405-10	1/4	5/16	5/8	.2521	.2498	.3128	.3122	.2490	.2481
GSI-0405-12	1/4	5/16	3/4	.2521	.2498	.3128	.3122	.2490	.2481
GSI-0506-04	5/16	3/8	1/4	.3148	.3125	.3753	.3747	.3115	.3106
GSI-0506-06	5/16	3/8	3/8	.3148	.3125	.3753	.3747	.3115	.3106
GSI-0506-08	5/16	3/8	1/2	.3148	.3125	.3753	.3747	.3115	.3106
GSI-0506-12	5/16	3/8	3/4	.3148	.3125	.3753	.3747	.3115	.3106
GSI-0607-04	3/8	15/32	1/4	.3773	.3750	.4691	.4684	.3740	.3731
GSI-0607-06	3/8	15/32	3/8	.3773	.3750	.4691	.4684	.3740	.3731
GSI-0607-08	3/8	15/32	1/2	.3773	.3750	.4691	.4684	.3740	.3731
GSI-0607-12	3/8	15/32	3/4	.3773	.3750	.4691	.4684	.3740	.3731
GSI-0608-08	3/8	8/16	1/2	.3783	.3760	.5015	.5010	.3750	.3741
GSI-0608-12	3/8	8/16	3/4	.3773	.3750	.5015	.5010	.3750	.3741
GSI-0708-04	7/16	17/32	1/4	.4406	.4379	.5316	.5309	.4365	.4355
GSI-0708-08	7/16	17/32	1/2	.4406	.4379	.5316	.5309	.4365	.4355
GSI-0809-03	1/2	19/32	3/16	.5030	.5003	.5941	.5934	.4990	.4980

* after pressfit. Testing methods ► page 55



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order part number
example GSI-0203-03



Sleeve Bearing

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing Bore		Shaft Size	
				max.	min.	max.	min.	max.	min.
GSI-0809-04	1/2	19/32	1/4	.5030	.5003	.5941	.5934	.4990	.4980
GSI-0809-06	1/2	19/32	3/8	.5030	.5003	.5941	.5934	.4990	.4980
GSI-0809-08	1/2	19/32	1/2	.5030	.5003	.5941	.5934	.4990	.4980
GSI-0809-10	1/2	19/32	5/8	.5030	.5003	.5941	.5934	.4990	.4980
GSI-0809-16	1/2	19/32	1	.5030	.5003	.5941	.5934	.4990	.4980
GSI-0810-08	1/2	5/8	1/2	.5040	.5013	.6260	.6250	.5000	.4990
GSI-0810-12	1/2	5/8	3/4	.5040	.5013	.6260	.6250	.5000	.4990
GSI-0910-06	9/16	21/32	3/8	.5655	.5627	.6566	.6559	.5615	.5605
GSI-0910-08	9/16	21/32	1/2	.5655	.5627	.6566	.6559	.5615	.5605
GSI-0910-10	9/16	21/32	5/8	.5655	.5627	.6566	.6559	.5615	.5605
GSI-1011-06	5/8	23/32	3/8	.6280	.6253	.7192	.7184	.6240	.6230
GSI-1011-08	5/8	23/32	1/2	.6280	.6253	.7192	.7184	.6240	.6230
GSI-1011-10	5/8	23/32	5/8	.6280	.6253	.7192	.7184	.6240	.6230
GSI-1011-12	5/8	23/32	3/4	.6280	.6253	.7192	.7184	.6240	.6230
GSI-1011-16	5/8	23/32	1	.6280	.6253	.7192	.7184	.6240	.6230
GSI-1011-20	5/8	23/32	1 1/4	.6280	.6253	.7192	.7184	.6240	.6230
GSI-1011-30	5/8	23/32	1 7/8	.6280	.6253	.7192	.7184	.6240	.6230
GSI-1012-08	5/8	3/4	1/2	.6290	.6263	.7510	.7500	.6250	.6240
GSI-1012-16	5/8	3/4	1	.6290	.6263	.7510	.7500	.6250	.6240
GSI-1112-14	11/16	25/32	7/8	.6906	.6879	.7817	.7809	.6865	.6855
GSI-1214-02	3/4	7/8	1/8	.7541	.7505	.8755	.8747	.7491	.7479
GSI-1214-06	3/4	7/8	3/8	.7541	.7505	.8755	.8747	.7491	.7479
GSI-1214-08	3/4	7/8	1/2	.7541	.7505	.8755	.8747	.7491	.7479
GSI-1214-12	3/4	7/8	3/4	.7541	.7505	.8755	.8747	.7491	.7479
GSI-1214-16	3/4	7/8	1	.7541	.7505	.8755	.8747	.7491	.7479
GSI-1214-20	3/4	7/8	1 1/4	.7541	.7505	.8755	.8747	.7491	.7479
GSI-1214-24	3/4	7/8	1 1/2	.7541	.7505	.8755	.8747	.7491	.7479
GSI-1416-06	7/8	1	3/8	.8791	.8757	1.0005	.9997	.8741	.8729
GSI-1416-08	7/8	1	1/2	.8791	.8757	1.0005	.9997	.8741	.8729
GSI-1416-10	7/8	1	5/8	.8791	.8757	1.0005	.9997	.8741	.8729
GSI-1416-12	7/8	1	3/4	.8791	.8757	1.0005	.9997	.8741	.8729
GSI-1416-16	7/8	1	1	.8791	.8757	1.0005	.9997	.8741	.8729
GSI-1416-24	7/8	1	1 1/2	.8791	.8757	1.0005	.9997	.8741	.8729
GSI-1618-08	1	1 1/8	1/2	1.0041	1.0007	1.1255	1.1247	.9991	.9979
GSI-1618-12	1	1 1/8	3/4	1.0041	1.0007	1.1255	1.1247	.9991	.9979
GSI-1618-16	1	1 1/8	1	1.0041	1.0007	1.1255	1.1247	.9991	.9979
GSI-1618-20	1	1 1/8	1 1/4	1.0041	1.0007	1.1255	1.1247	.9991	.9979
GSI-1618-24	1	1 1/8	1 1/2	1.0041	1.0007	1.1255	1.1247	.9991	.9979
GSI-1618-33	1	1 1/8	2 1/16	1.0041	1.0007	1.1255	1.1247	.9991	.9979
GSI-1820-12	1 1/8	1 9/32	3/4	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
GSI-1820-24	1 1/8	1 9/32	1 1/2	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
GSI-2022-12	1 1/4	1 13/32	3/4	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472

* after pressfit. Testing methods ► page 55



Sleeve Bearing

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing Bore		Shaft Size	
				max.	min.	max.	min.	max.	min.
GSI-2022-14	1 1/4	1 13/32	7/8	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
GSI-2022-16	1 1/4	1 13/32	1	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
GSI-2022-20	1 1/4	1 13/32	1 1/4	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
GSI-2022-24	1 1/4	1 13/32	1 1/2	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
GSI-2224-16	1 3/8	1 17/32	1	1.3798	1.3758	1.5318	1.5308	1.3738	1.3722
GSI-2224-24	1 3/8	1 17/32	1 1/2	1.3798	1.3758	1.5318	1.5308	1.3738	1.3722
GSI-2224-26	1 3/8	1 17/32	1 5/8	1.3798	1.3758	1.5318	1.5308	1.3738	1.3722
GSI-2426-06	1 1/2	1 21/32	3/8	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
GSI-2426-07	1 1/2	1 21/32	7/16	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
GSI-2426-08	1 1/2	1 21/32	1/2	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
GSI-2426-12	1 1/2	1 21/32	3/4	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
GSI-2426-16	1 1/2	1 21/32	1	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
GSI-2426-24	1 1/2	1 21/32	1 1/2	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
GSI-2629-20	1 5/8	1 25/32	1 1/4	1.6297	1.6258	1.7818	1.7808	1.6238	1.6222
GSI-2831-16	1 3/4	1 15/16	1	1.7547	1.7505	1.9381	1.9371	1.7487	1.7471
GSI-2831-24	1 3/4	1 15/16	1 1/2	1.7547	1.7505	1.9381	1.9371	1.7487	1.7471
GSI-2831-32	1 3/4	1 15/16	2	1.7547	1.7505	1.9381	1.9371	1.7487	1.7471
GSI-2831-40	1 3/4	1 15/16	2 1/2	1.7547	1.7505	1.9381	1.9371	1.7487	1.7471
GSI-2831-48	1 3/4	1 15/16	3	1.7547	1.7505	1.9381	1.9371	1.7487	1.7471
GSI-3235-16	2	2 3/16	1	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
GSI-3235-24	2	2 3/16	1 1/2	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
GSI-3235-32	2	2 3/16	2	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
GSI-3639-32	2 1/4	2 7/16	2	2.2577	2.2531	2.4377	2.4365	2.2507	2.2489
GSI-4043-32	2 2/4	2 11/16	2	2.5082	2.5035	2.6881	2.6869	2.5000	2.4999
GSI-4447-32	2 3/4	2 15/16	2	2.7570	2.7523	2.9370	2.9358	2.7500	2.7490
GSI-4851-32	3	3 3/16	2	3.0070	3.0023	3.1870	3.1858	3.0000	2.9990

* after pressfit. Testing methods ► page 55



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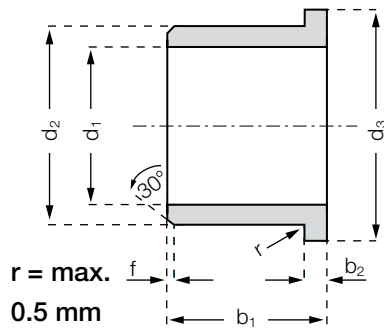


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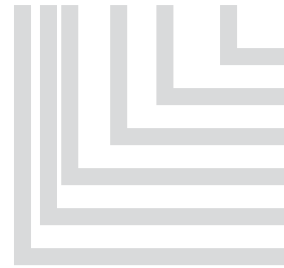
order part number
example GSI-2022-14

Flange Bearing



Order key

GFI-0203-02



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form F)
- Material iglidur® G

Chamfer in relation to the d1

d1 [Inch]:	Ø 0.040–0.236	Ø 0.236–0.472	Ø 0.472–1.18	Ø > 1.18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing Bore		Shaft Size	
						max.	min.	max.	min.	max.	min.
GFI-0203-02	1/8	3/16	1/8	.312	.032	.1269	.1251	.1878	.1873	.1243	.1236
GFI-0203-03	1/8	3/16	3/16	.312	.032	.1269	.1251	.1878	.1873	.1243	.1236
GFI-0203-04	1/8	3/16	1/4	.312	.032	.1269	.1251	.1878	.1873	.1243	.1236
GFI-0203-06	1/8	3/16	3/8	.312	.032	.1269	.1251	.1878	.1873	.1243	.1236
GFI-0304-04	3/16	1/4	1/4	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
GFI-0304-06	3/16	1/4	3/8	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
GFI-0304-08	3/16	1/4	1/2	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
GFI-0405-04	1/4	5/16	1/4	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
GFI-0405-05	1/4	5/16	5/16	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
GFI-0405-06	1/4	5/16	3/8	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
GFI-0405-08	1/4	5/16	1/2	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
GFI-0405-12	1/4	5/16	3/4	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
GFI-0506-04	5/16	3/8	1/4	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
GFI-0506-06	5/16	3/8	3/8	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
GFI-0506-08	5/16	3/8	1/2	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
GFI-0506-12	5/16	3/8	3/4	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
GFI-0607-04	3/8	15/32	1/4	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
GFI-0607-05	3/8	15/32	5/16	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
GFI-0607-06	3/8	15/32	3/8	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
GFI-0607-08	3/8	15/32	1/2	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
GFI-0607-12	3/8	15/32	3/4	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
GFI-0607-14	3/8	15/32	7/8	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
GFI-0708-04	7/16	17/32	1/4	.750	.046	.4406	.4379	.5316	.5309	.4365	.4355
GFI-0708-08	7/16	17/32	1/2	.750	.046	.4406	.4379	.5316	.5309	.4365	.4355
GFI-0809-04	1/2	19/32	1/4	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980

* after pressfit. Testing methods ► page 55



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order part number
example GFI-0203-02



Flange Bearing

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing Bore		Shaft Size	
						max.	min.	max.	min.	max.	min.
GFI-0809-05	1/2	19/32	5/16	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
GFI-0809-06	1/2	19/32	3/8	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
GFI-0809-08	1/2	19/32	1/2	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
GFI-0809-12	1/2	19/32	3/4	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
GFI-0809-16	1/2	19/32	1	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
GFI-1011-06	5/8	23/32	3/8	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
GFI-1011-08	5/8	23/32	1/2	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
GFI-1011-12	5/8	23/32	3/4	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
GFI-1011-14	5/8	23/32	7/8	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
GFI-1011-16	5/8	23/32	1	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
GFI-1011-24	5/8	23/32	1 1/2	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
GFI-1214-02	3/4	7/8	1/8	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
GFI-1214-06	3/4	7/8	3/8	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
GFI-1214-08	3/4	7/8	1/2	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
GFI-1214-10	3/4	7/8	5/8	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
GFI-1214-12	3/4	7/8	3/4	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
GFI-1214-16	3/4	7/8	1	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
GFI-1214-24	3/4	7/8	1 1/2	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
GFI-1416-08	7/8	1	1/2	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
GFI-1416-12	7/8	1	3/4	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
GFI-1416-16	7/8	1	1	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
GFI-1416-20	7/8	1	1 1/4	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
GFI-1416-24	7/8	1	1 1/2	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
GFI-1618-08	1	1 1/8	1/2	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
GFI-1618-12	1	1 1/8	3/4	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
GFI-1618-16	1	1 1/8	1	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
GFI-1618-20	1	1 1/8	1 1/4	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
GFI-1618-24	1	1 1/8	1 1/2	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
GFI-1820-12	1 1/8	1 9/32	3/4	1.562	.078	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
GFI-1820-24	1 1/8	1 9/32	1 1/2	1.562	.078	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
GFI-2022-06	1 1/4	1 13/32	3/8	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
GFI-2022-12	1 1/4	1 13/32	3/4	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
GFI-2022-14	1 1/4	1 13/32	7/8	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
GFI-2022-16	1 1/4	1 13/32	1	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
GFI-2022-20	1 1/4	1 13/32	1 1/4	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
GFI-2022-24	1 1/4	1 13/32	1 1/2	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
GFI-2224-16	1 3/8	1 17/32	1	1.875	.078	1.3798	1.3758	1.5318	1.5308	1.3738	1.3722
GFI-2426-12	1 1/2	1 21/32	3/4	2.000	.078	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
GFI-2426-16	1 1/2	1 21/32	1	2.000	.078	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
GFI-2426-24	1 1/2	1 21/32	1 1/2	2.000	.078	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
GFI-2831-16	1 3/4	1 15/16	1	2.375	.093	1.7547	1.7505	1.9381	1.9371	1.7487	1.7471
GFI-2831-24	1 3/4	1 15/16	1 1/2	2.375	.093	1.7547	1.7505	1.9381	1.9371	1.7487	1.7471

* after pressfit. Testing methods ► page 55



Flange Bearing

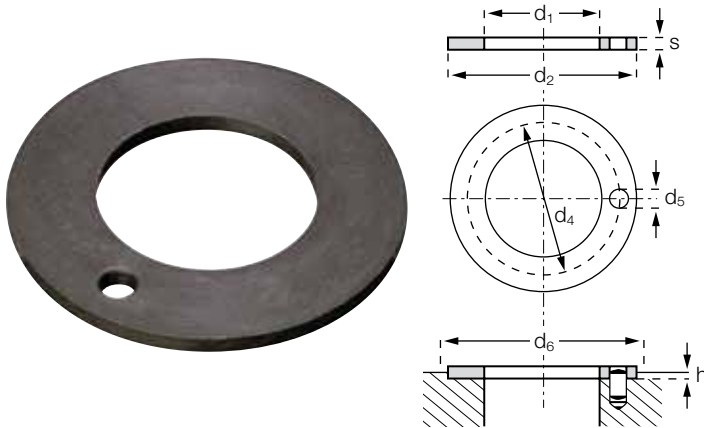
Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing Bore		Shaft Size	
						max.	min.	max.	min.	max.	min.
GFI-2831-32	1 3/4	1 15/16	2	2.375	.093	1.7547	1.7505	1.9381	1.9371	1.7487	1.7471
GFI-3235-16	2	2 3/16	1	2.625	.093	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
GFI-3235-24	2	2 3/16	1 1/2	2.625	.093	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
GFI-3235-32	2	2 3/16	2	2.625	.093	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
GFI-3639-32	2 1/4	2 7/16	2	2.750	.093	2.2577	2.2531	2.4377	2.4365	2.2507	2.2489
GFI-4043-32	2 1/2	2 11/16	2	3.125	.093	2.5082	2.5035	2.6881	2.6869	2.5000	2.4999
GFI-4447-32	2 3/4	2 15/16	2	3.375	.093	2.7570	2.7523	2.9370	2.9358	2.7500	2.7490

* after pressfit. Testing methods ► page 55

iglidur® G | Product Range | Inch

Thrust Washer



Order key

GTI-0814-01



Thickness s
Outer diameter d2
Inner diameter d1
Inch
Type (Form T)
Material iglidur® G

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [Inch]

Part number	d1 +.010	d2 -.010	s -.0020	d4 ±.005	d5 .015 + .005	h +.008	d6 +.005
GTI-0814-01	.500	.875	.0585	.692	.067	.040	.875
GTI-1018-01	.625	1.125	.0585	.880	.099	.040	1,125
GTI-1220-01	.750	1.250	.0585	1,005	.099	.040	1,250
GTI-1424-01	.875	1.500	.0585	1,192	.130	.040	1,500
GTI-1628-01	1.000	1.750	.0585	1,380	.130	.040	1,750
GTI-2034-01	1.250	2.125	.0585	1,692	.161	.040	2,125
GTI-2440-01	1.500	2.500	.0585	2,005	.192	.040	2,500
GTI-2844-01	1.750	2.750	.0585	2,255	.192	.040	2,750
GTI-3248-01	2.000	3.000	.0895	2,505	.192	.070	3,000

* after pressfit. Testing methods ► page 55



delivery available
time from stock

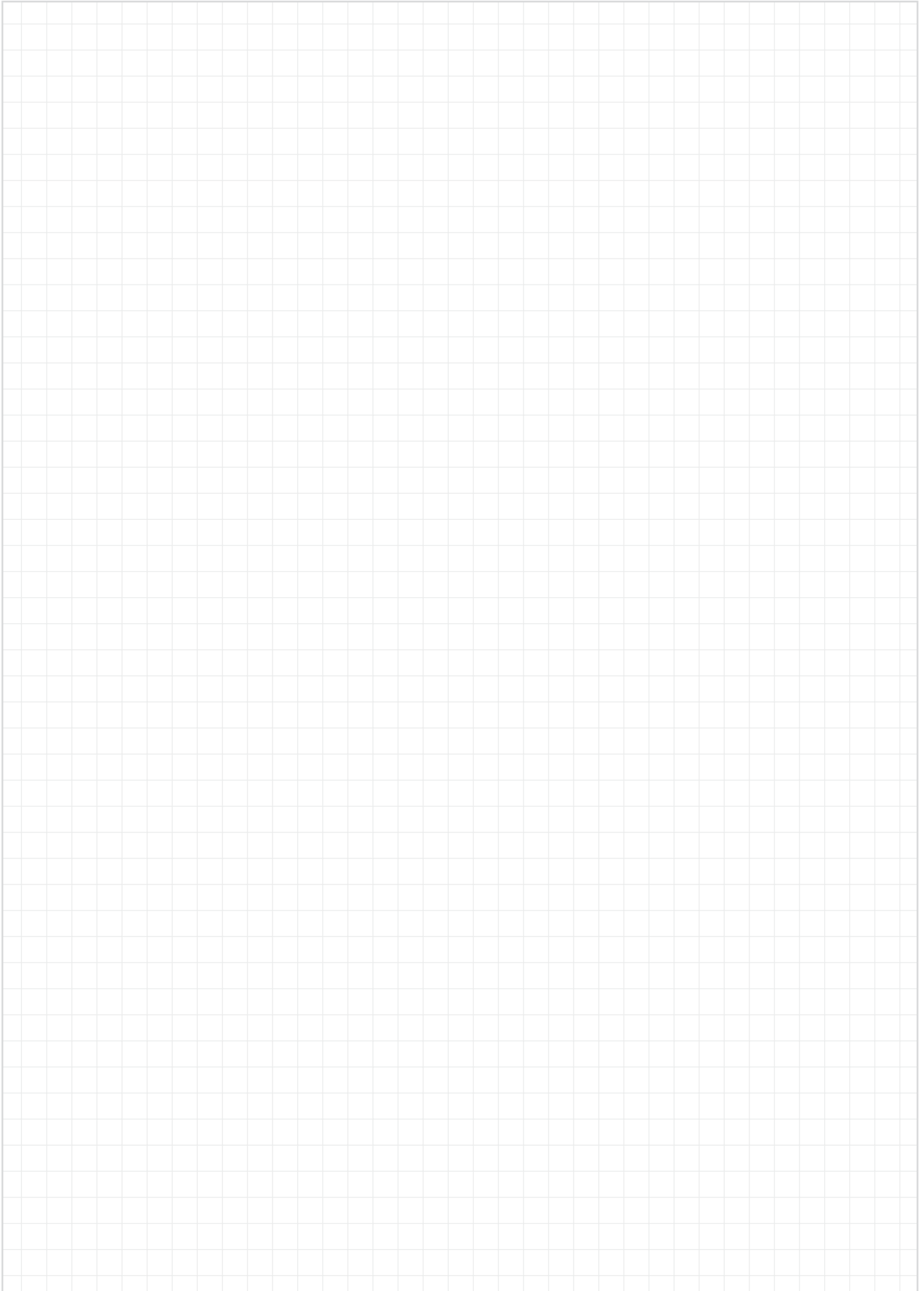


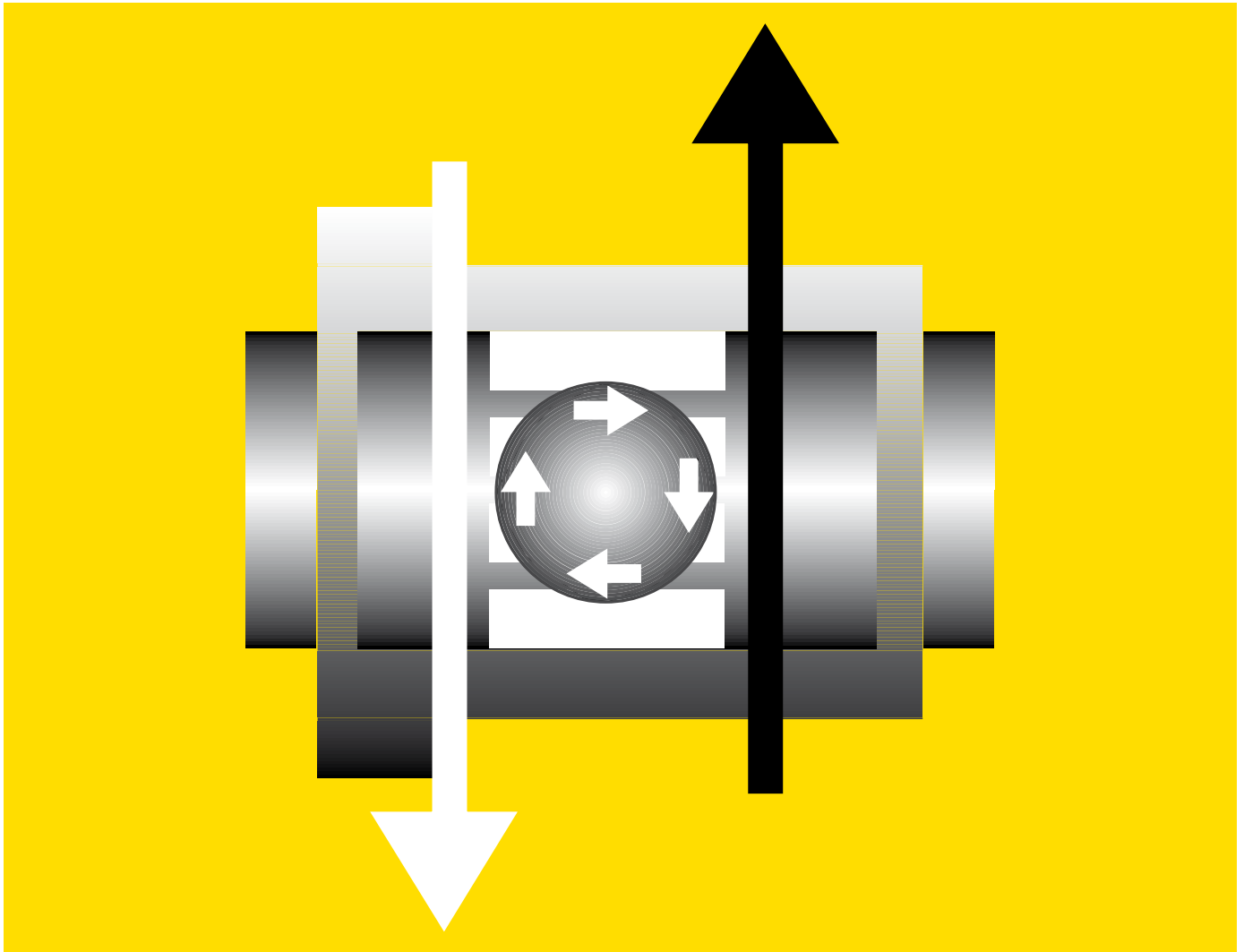
prices price list online
www.igus.co.uk/en/g



order part number
example GTI-0814-01

My Sketches





iglidur® J – The Fast and Slow Motion Specialist: used in long-life applications, also with soft shafts



Over 250 sizes available from stock

Low wear against different shaft materials

Low coefficients of friction running dry

Vibration dampening

Good chemical resistance

Best material to use with soft shaft materials

Low moisture absorption

iglidur® J | The Fast and Slow Motion Specialist

Used in long-life applications, also with soft shafts. The iglidur® J plain bearings are designed for the lowest coefficients of friction while running dry and low stick slip tendency. With a maximum permissible surface pressure of 35 MPa iglidur® J plain bearings are not suitable for extreme loads.



When to use it?

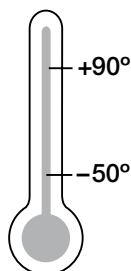
- For high speeds
- For highest wear resistance at low to medium pressures
- Low wear against different shafts
- Low coefficient of friction in dry run
- Vibration dampening
- Good chemical resistance
- Best performance with soft shaft materials
- Low moisture absorption



When not to use it?

- When high pressures occur
 - ▶ iglidur® G, page 61
 - ▶ iglidur® W300, page 131
- When short term temperatures occur that are greater +120°C
 - ▶ iglidur® G, page 61
 - ▶ iglidur® Z, page 299
- When a low-cost bearing for occasional movements is necessary
 - ▶ iglidur® G, page 61

Temperature



Product range

3 types
> 250 dimensions
Ø 2–100 mm



iglidur® J | Application Examples



Typical sectors of industry and application areas

- Automation ● Printing industry
- Beverage technology ● Aerospace engineering ● Cleanroom etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/mountainbike



► www.igus.co.uk/powderpress



► www.igus.co.uk/pullback-star

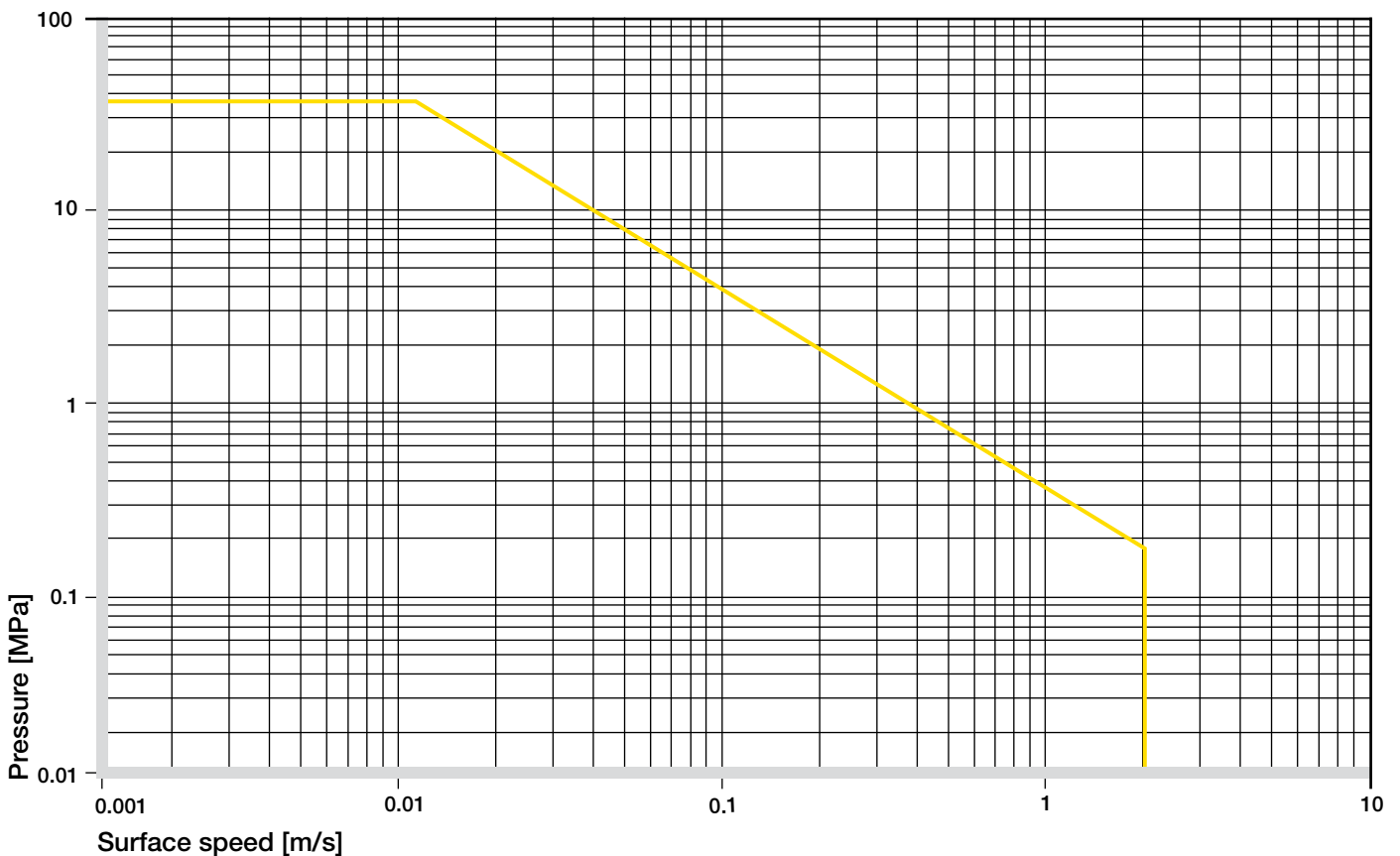


► www.igus.co.uk/sawmill

Material table

General properties	Unit	iglidur® J	Testing method
Density	g/cm ³	1.49	
Colour		yellow	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.3	DIN 53495
Max. moisture absorption	% weight	1.3	
Coefficient of sliding friction, dynamic against steel	μ	0.06–0.18	
pv value, max. (dry)	MPa · m/s	0.34	
Mechanical properties			
Modulus of elasticity	MPa	2,400	DIN 53457
Tensile strength at +20°C	MPa	73	DIN 53452
Compressive strength	MPa	60	
Max. static surface pressure (+20°C)	MPa	35	
Shore D hardness		74	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+90	
Max. short term application temperature	°C	+120	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0,25	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	10	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹³	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

Table 01: Material data

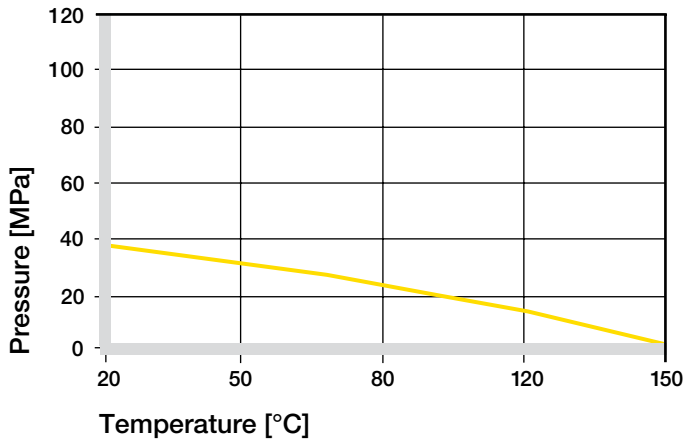


Graph 01: Permissible pv values for iglidur® J with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

iglidur® J | Technical Data

Mechanical Properties

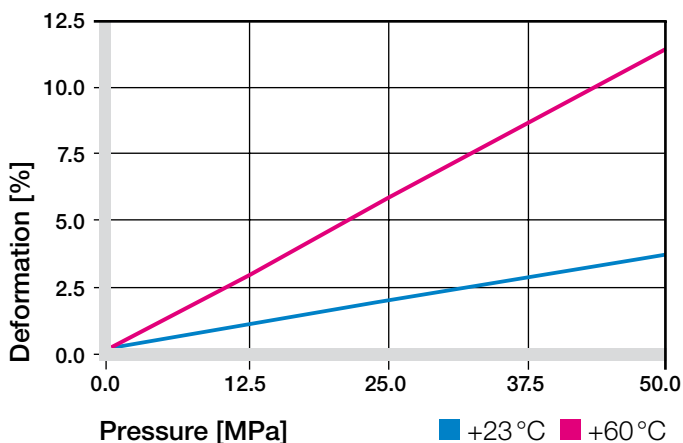
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® J plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 20 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (35 MPa at +20 °C)

One main advantage of iglidur® J plain bearings is the combination of a low coefficient of friction when running dry, the low stick-slip tendency, and the excellent wear rate at low pressure. With a recommended maximum surface pressure of 35 MPa, iglidur® J plain bearings are not suitable for extreme loads. Graph 03 shows the elastic deformation of iglidur® J for radial loads. At the recommended maximum surface pressure of 35 MPa the deformation is less than 2.5%.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

The low coefficient of friction and the extremely low stick-slip tendency of iglidur® J plain bearings are especially important at very low speeds. However, iglidur® J material can also be used for high speeds of over 1 m/s. In both cases the static friction is very low and stick-slip does not occur.

The maximum values given in Table 02 can only be achieved at the lowest pressure loads. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1.5	1.1	8
Short term	3	1.1	10

Table 02: Maximum surface speeds

Temperatures

iglidur® J plain bearings can be used between -50 °C and +90 °C; the short-term maximum permissible temperature is +120 °C. Also, the wear increases significantly above +80 °C.

► Application Temperatures, page 46

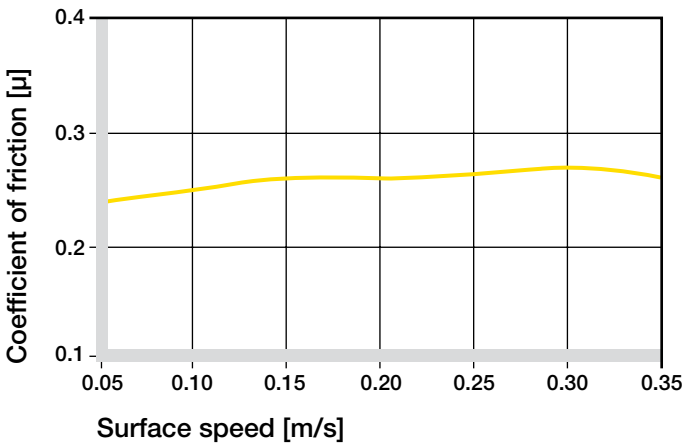
iglidur® J	Application temperature
Minimum	-50 °C
Max., long term	+90 °C
Max., short term	+120 °C
Add. securing is required from	+60 °C

Table 03: Temperature limits

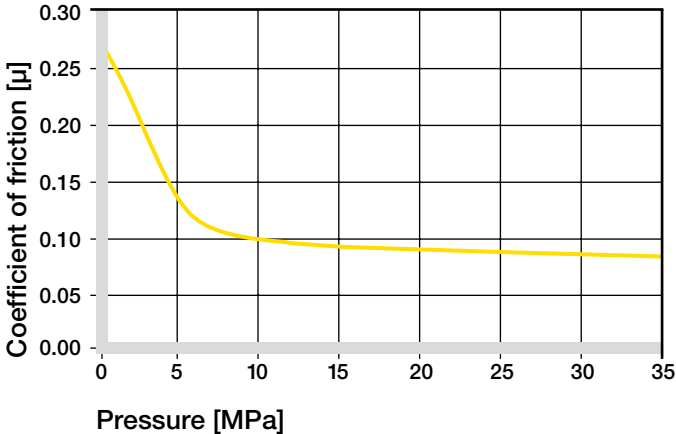
Friction and Wear

Similar to wear resistance, the coefficient of friction μ also changes with the load. Graph 05 shows the coefficients of friction for different loads. The level of the coefficient of friction is very good for all loads with iglidur® J.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

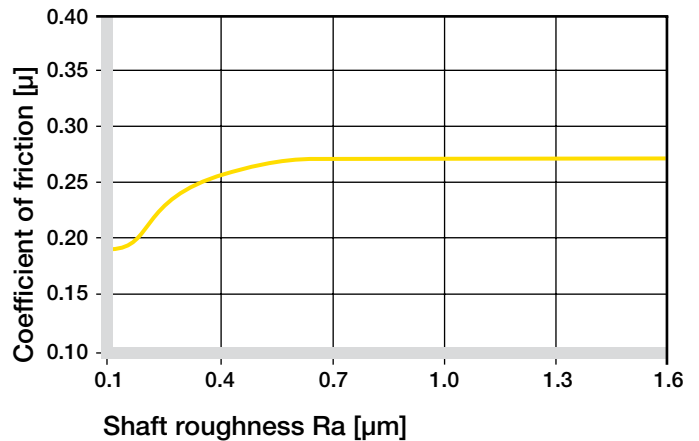
Friction and wear are also dependent, to a large extent, on the shaft material. With increasing shaft roughness, the coefficient of friction also increases. The best case is a ground surface with an average roughness $R_a = 0.1\text{--}0.3 \mu\text{m}$ (Graph 06).

Graphs 07 to 09 show results of testing different shaft materials with plain bearings made of iglidur® J.

If iglidur® J plain bearings are used in rotational applications with pressures under 2 MPa, several shaft materials are suitable. A Hard Chromed shaft provides the lowest wear in this range. When compared to most iglidur® materials, iglidur® J has very low wear results at low loads compared with all shaft materials tested. Also, for increasing pressures up to 5 MPa, the wear resistance of iglidur® J is excellent. Especially suitable is the combination with 303 stainless steel.

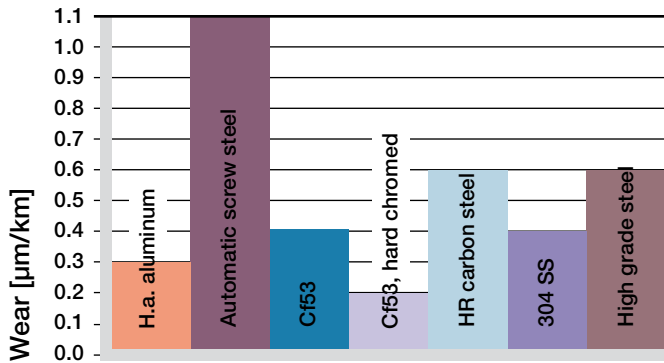
In oscillating operation with Cf53 Steel and HR Carbon Steel, the wear of iglidur® J is slightly higher than for rotation. For oscillating movements with loads of 2 MPa, iglidur® J is best combined with Cf53 Steel shaft. As Graph 09 shows, the difference in wear between rotation and oscillating movements is most significant for 303 stainless steel shafts. If the shaft material you plan to use is not contained in this list, please contact us.

- ▶ Shaft Materials, **page 51**

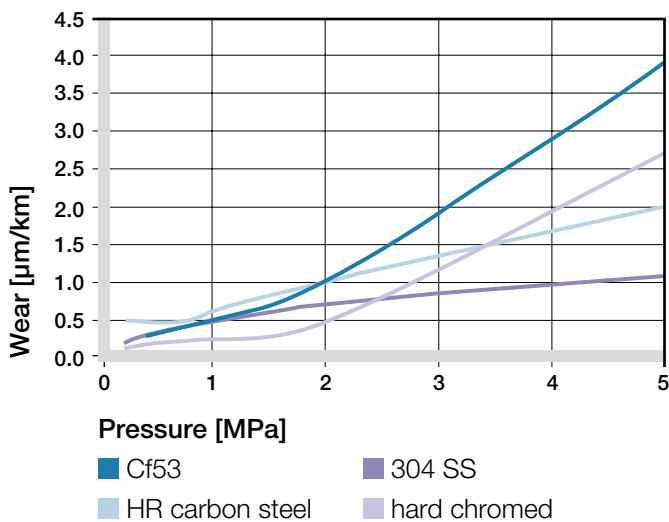


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

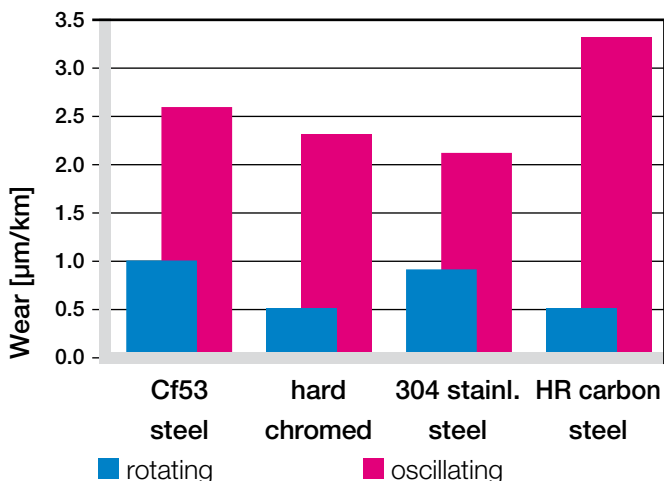
iglidur® J | Technical Data



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, $p = 2 \text{ MPa}$

iglidur® J	Dry	Grease	Oil	Water
C.o.f. μ	0.06–0.18	0.09	0.04	0.04

Table 04: Coefficients of friction against steel ($R_a = 1 \text{ }\mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® J plain bearings are resistant to diluted alkaline and very weak acids, as well as fuels and all types of lubricants. The low moisture absorption also permits use in wet or damp environments.

Plain bearings made of iglidur® J are resistant to common cleaning agents used in the food industry.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	+ to 0

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [$+20 \text{ }^\circ\text{C}$]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® J are resistant to radiation up to an intensity of $3 \cdot 10^2 \text{ Gy}$.

UV Resistance

iglidur® J plain bearings become discoloured under UV radiation. However, hardness, compressive strength and the wear resistance of the material do not change.

Vacuum

When used in a vacuum environment, the iglidur® J plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

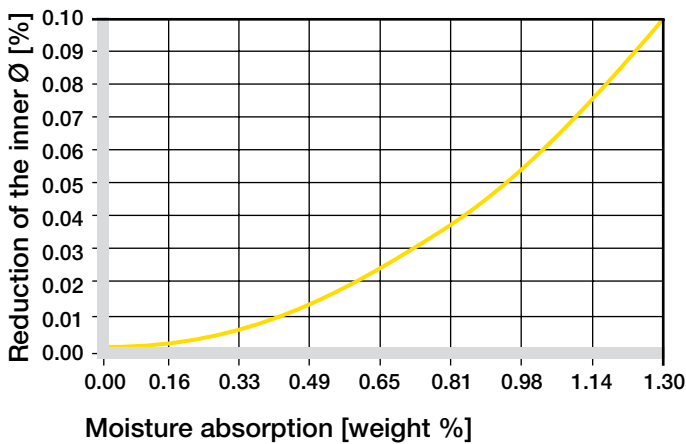
Electrical Properties

iglidur® J plain bearings are electrically insulating.

Specific volume resistance	> 10 ¹³ Ωcm
Surface resistance	> 10 ¹² Ω 10

Moisture Absorption

The moisture absorption of iglidur® J plain bearings is 0.3% in standard atmosphere. The saturation limit in water is 1.3%. These values are so low that design changes due to absorption are only necessary in extreme cases.



Graph 10: Effect of moisture absorption on plain bearings

Maximum moisture absorption

At +23 °C/50 % r.h.	0.3% weight
Max. moisture absorption	1.3% weight

Table 06: Moisture absorption

Installation Tolerances

iglidur® J plain bearings are meant to be oversized before pressfit. The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet our specified tolerances.

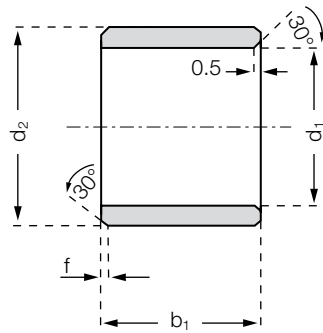
► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® J E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

Table 07: Essential tolerances for plain bearings according to ISO 3547-1 after pressfit

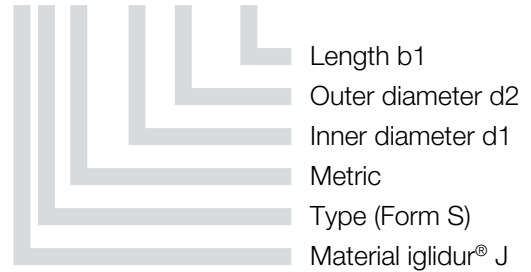
iglidur® J | Product Range

Sleeve bearing



Order key

JSM-0104-02



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
JSM-0104-02	1.5	+0.014 +0.054	4.0	2.0
JSM-0203-07	2.0	+0.014 +0.054	3.5	7.0
JSM-0205-02	2.0	+0.020 +0.080	5.0	2.5
JSM-0206-02	2.5	+0.020 +0.080	6.0	2.5
JSM-0304-05	3.0	+0.014 +0.054	4.5	5.0
JSM-0304-09	3.0	+0.014 +0.054	4.5	9.0
JSM-0305-04	3.0	+0.020 +0.080	5.0	4.0
JSM-0308-04	3.0	+0.020 +0.080	8.0	4.0
JSM-0308-05	3.0	+0.020 +0.080	8.0	5.0
JSM-0405-04	4.0	+0.020 +0.068	5.5	4.0
JSM-0405-08	4.0	+0.020 +0.068	5.5	8.0
JSM-0507-046	5.0	+0.020 +0.068	7.0	4.6
JSM-0507-05	5.0	+0.020 +0.068	7.0	5.0
JSM-0507-10	5.0	+0.020 +0.068	7.0	10.0
JSM-0507-15	5.0	+0.020 +0.080	7.0	15.0
JSM-0607-08	6.0	+0.010 +0.058	7.0	8.0
JSM-0607-12.5	6.0	+0.010 +0.058	7.0	12.5
JSM-0607-14	6.0	+0.010 +0.058	7.0	14.0
JSM-0608-043	6.0	+0.020 +0.068	8.0	4.3
JSM-0608-06	6.0	+0.020 +0.068	8.0	6.0
JSM-0608-08	6.0	+0.020 +0.068	8.0	8.0
JSM-0608-10	6.0	+0.020 +0.068	8.0	10.0
JSM-0609-06	6.0	+0.030 +0.105	9.0	6.0
JSM-0610-10	6.0	+0.030 +0.105	10.0	10.0
JSM-0709-09	7.0	+0.025 +0.083	9.0	9.0

Part number	d1	d1-Tolerance*	d2	b1 h13
JSM-0810-04	8.0	+0.025 +0.083	10.0	4.0
JSM-0810-06	8.0	+0.025 +0.083	10.0	6.0
JSM-0810-08	8.0	+0.025 +0.083	10.0	8.0
JSM-0810-10	8.0	+0.025 +0.083	10.0	10.0
JSM-0810-12	8.0	+0.025 +0.083	10.0	12.0
JSM-0810-16	8.0	+0.025 +0.083	10.0	16.0
JSM-0812-10	8.0	+0.040 +0.130	12.0	10.0
JSM-0812-12	8.0	+0.040 +0.130	12.0	12.0
JSM-1012-05	10.0	+0.025 +0.083	12.0	5.0
JSM-1012-06	10.0	+0.025 +0.083	12.0	6.0
JSM-1012-08	10.0	+0.025 +0.083	12.0	8.0
JSM-1012-10	10.0	+0.025 +0.083	12.0	10.0
JSM-1012-11	10.0	+0.025 +0.083	12.0	11.0
JSM-1012-12	10.0	+0.025 +0.083	12.0	12.0
JSM-1012-15	10.0	+0.025 +0.083	12.0	15.0
JSM-1012-20	10.0	+0.025 +0.083	12.0	20.0
JSM-1014-10	10.0	+0.040 +0.130	14.0	10.0
JSM-1014-16	10.0	+0.040 +0.130	14.0	16.0
JSM-1214-06	12.0	+0.032 +0.102	14.0	6.0
JSM-1214-08	12.0	+0.032 +0.102	14.0	8.0
JSM-1214-09	12.0	+0.032 +0.102	14.0	9.0
JSM-1214-10	12.0	+0.032 +0.102	14.0	10.0
JSM-1214-15	12.0	+0.032 +0.102	14.0	15.0
JSM-1216-12	12.0	+0.050 +0.160	16.0	12.0
JSM-1216-17	12.0	+0.050 +0.160	16.0	17.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/j



order part number
example JSM-0104-02



Sleeve bearing

Dimensions [mm]

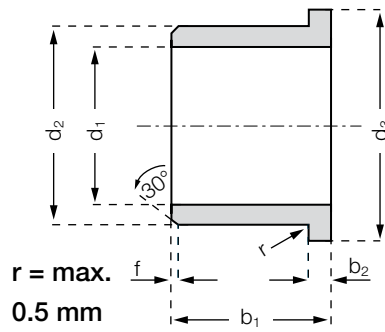
Part number	d1	d1-Tolerance*	d2	b1 h13
JSM-1416-05	14.0	+0.032 +0.102	16.0	5.0
JSM-1416-08	14.0	+0.032 +0.102	16.0	8.0
JSM-1416-10	14.0	+0.032 +0.102	16.0	10.0
JSM-1416-15	14.0	+0.032 +0.102	16.0	15.0
JSM-1416-20	14.0	+0.032 +0.102	16.0	20.0
JSM-1416-25	14.0	+0.032 +0.102	16.0	25.0
JSM-1418-18	14.0	+0.032 +0.102	18.0	18.0
JSM-1517-12	15.0	+0.032 +0.102	17.0	12.0
JSM-1517-20	15.0	+0.032 +0.102	17.0	20.0
JSM-1618-10	16.0	+0.032 +0.102	18.0	10.0
JSM-1618-12	16.0	+0.032 +0.102	18.0	12.0
JSM-1618-15	16.0	+0.032 +0.102	18.0	15.0
JSM-1618-20	16.0	+0.032 +0.102	18.0	20.0
JSM-1620-16	16.0	+0.050 +0.160	20.0	16.0
JSM-1622-16	16.0	+0.050 +0.160	22.0	16.0
JSM-1622-20	16.0	+0.050 +0.160	22.0	20.0
JSM-1820-15	18.0	+0.032 +0.102	20.0	15.0
JSM-1820-20	18.0	+0.032 +0.102	20.0	20.0
JSM-1922-14	19.0	+0.032 +0.102	22.0	14.0
JSM-2022-20	20.0	+0.040 +0.124	22.0	20.0
JSM-2022-30	20.0	+0.040 +0.124	22.0	30.0
JSM-2023-15	20.0	+0.040 +0.124	23.0	15.0
JSM-2023-20	20.0	+0.040 +0.124	23.0	20.0
JSM-2026-06	20.0	+0.065 +0.195	26.0	6.0
JSM-2026-20	20.0	+0.065 +0.195	26.0	20.0
JSM-2026-25	20.0	+0.065 +0.195	26.0	25.0
JSM-2026-30	20.0	+0.065 +0.195	26.0	30.0
JSM-2427-25	24.0	+0.040 +0.124	27.0	25.0
JSM-2427-46	24.0	+0.040 +0.124	27.0	46.0
JSM-2528-12	25.0	+0.040 +0.124	28.0	12.0

Part number	d1	d1-Tolerance*	d2	b1 h13
JSM-2528-20	25.0	+0.040 +0.124	28.0	20.0
JSM-2528-30	25.0	+0.040 +0.124	28.0	30.0
JSM-2532-25	25.0	+0.065 +0.195	32.0	25.0
JSM-2532-32	25.0	+0.065 +0.195	32.0	32.0
JSM-2532-35	25.0	+0.065 +0.195	32.0	35.0
JSM-2630-20	26.0	+0.065 +0.195	30.0	20.0
JSM-3034-20	30.0	+0.040 +0.124	34.0	20.0
JSM-3034-25	30.0	+0.040 +0.124	34.0	25.0
JSM-3034-30	30.0	+0.040 +0.124	34.0	30.0
JSM-3038-40	30.0	+0.065 +0.195	38.0	40.0
JSM-3236-20	32.0	+0.050 +0.150	36.0	20.0
JSM-3236-30	32.0	+0.050 +0.150	36.0	30.0
JSM-3236-40	32.0	+0.050 +0.150	36.0	40.0
JSM-3539-20	35.0	+0.050 +0.150	39.0	20.0
JSM-3539-30	35.0	+0.050 +0.150	39.0	30.0
JSM-3539-40	35.0	+0.050 +0.150	39.0	40.0
JSM-3640-45	36.0	+0.050 +0.150	40.0	45.0
JSM-4044-30	40.0	+0.050 +0.150	44.0	30.0
JSM-4044-35	40.0	+0.050 +0.150	44.0	35.0
JSM-4044-40	40.0	+0.050 +0.150	44.0	40.0
JSM-4246-73	42.0	+0.080 +0.240	46.0	73.0
JSM-5055-30	50.0	+0.050 +0.150	55.0	30.0
JSM-5055-50	50.0	+0.050 +0.150	55.0	50.0
JSM-5560-60	55.0	+0.060 +0.180	60.0	60.0
JSM-6065-60	60.0	+0.060 +0.180	65.0	60.0
JSM-7580-60	75.0	+0.060 +0.180	80.0	60.0
JSM-8085-100	80.0	+0.060 +0.180	85.0	100.0
JSM-8086-60	80.0	+0.060 +0.180	86.0	60.0
JSM-100105-100	100.0	+0.072 +0.212	105.0	100.0
JSM-100115-60	110.0	+0.072 +0.212	115.0	60.0

* after pressfit. Testing methods ► page 55

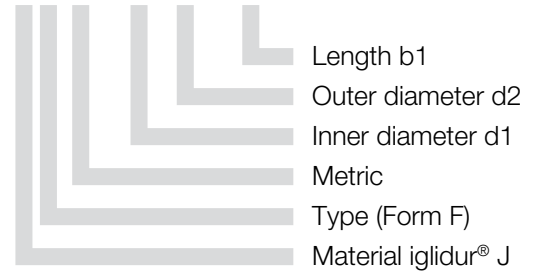
iglidur® J | Product Range

Flange bearing



Order key

JFM-0304-05



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
JFM-0304-05	3.0	+0.014 +0.054	4.5	7.5	5.0	0.75
JFM-0306-10	3.0	+0.020 +0.080	6.0	9.0	10.0	1.5
JFM-0405-03	4.0	+0.020 +0.068	5.5	9.5	3.0	0.75
JFM-0405-06	4.0	+0.020 +0.068	5.5	9.5	6.0	0.75
JFM-0506-05	5.0	+0.020 +0.068	6.0	10.	5.0	0.5
JFM-0507-05	5.0	+0.020 +0.068	7.0	11.0	5.0	1.0
JFM-0608-04	6.0	+0.020 +0.068	8.0	12.0	4.0	1.0
JFM-0608-06	6.0	+0.020 +0.068	8.0	12.0	6.0	1.0
JFM-0608-08	6.0	+0.020 +0.068	8.0	12.0	8.0	1.0
JFM-0608-10	6.0	+0.020 +0.068	8.0	12.0	10.0	1.0
JFM-0610-10	6.0	+0.030 +0.105	10.0	14.0	10.0	2.0
JFM-0810-038	8.0	+0.025 +0.083	10.0	15.0	3.8	1.0
JFM-0810-05	8.0	+0.025 +0.083	10.0	15.0	5.0	1.0
JFM-0810-06	8.0	+0.025 +0.083	10.0	15.0	6.0	1.0
JFM-0810-07	8.0	+0.025 +0.083	10.0	15.0	7.0	1.0
JFM-0810-08	8.0	+0.025 +0.083	10.0	15.0	8.0	1.0
JFM-0810-10	8.0	+0.025 +0.083	10.0	15.0	10.0	1.0
JFM-0810125-10	8.0	+0.025 +0.083	10.0	12.5	10.0	1.0
JFM-081014-10	8.0	+0.025 +0.083	10.0	14.0	10.0	1.0
JFM-081016-11	8.0	+0.025 +0.083	10.0	16.0	11.0	2.0
JFM-0812-06	8.0	+0.025 +0.083	12.0	16.0	6.0	2.0
JFM-1012-05	10.0	+0.025 +0.083	12.0	18.0	5.0	1.0
JFM-1012-09	10.0	+0.025 +0.083	12.0	18.0	9.0	1.0
JFM-1012-10	10.0	+0.025 +0.083	12.0	18.0	10.0	1.0
JFM-1012-12	10.0	+0.025 +0.083	12.0	18.0	12.0	1.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock



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order part number
example JFM-0304-05



Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
JFM-1012-15	10.0	+0.025 +0.083	12.0	18.0	15.0	1.0
JFM-1012-18	10.0	+0.025 +0.083	12.0	18.0	18.0	1.0
JFM-101215-035	10.0	+0.025 +0.083	12.0	15.0	3.5	1.0
JFM-1014-14	10.0	+0.025 +0.083	14.0	18.0	14.0	1.0
JFM-1113-05	11.0	+0.032 +0.102	13.0	18.0	5.0	1.0
JFM-1214-05	12.0	+0.032 +0.102	14.0	20.0	5.0	1.0
JFM-1214-07	12.0	+0.032 +0.102	14.0	20.0	7.0	1.0
JFM-1214-09	12.0	+0.032 +0.102	14.0	20.0	9.0	1.0
JFM-1214-12	12.0	+0.032 +0.102	14.0	20.0	12.0	1.0
JFM-1214-15	12.0	+0.032 +0.102	14.0	20.0	15.0	1.0
JFM-121418-045	12.0	+0.032 +0.102	14.0	18.0	4.5	1.0
JFM-121418-10	12.0	+0.032 +0.102	14.0	18.0	10.0	1.0
JFM-1218-08	12.0	+0.050 +0.160	18.0	24.0	8.0	3.0
JFM-1218-12	12.0	+0.050 +0.160	18.0	24.0	12.0	3.0
JFM-1218-20	12.0	+0.050 +0.160	18.0	22.0	20.0	3.0
JFM-1416-03	14.0	+0.032 +0.102	16.0	22.0	3.0	1.0
JFM-1416-10	14.0	+0.032 +0.102	16.0	22.0	10.0	1.0
JFM-1416-12	14.0	+0.032 +0.102	16.0	22.0	12.0	1.0
JFM-1416-17	14.0	+0.032 +0.102	16.0	22.0	17.0	1.0
JFM-141822-20	14.0	+0.032 +0.102	18.0	22.0	20.0	2.0
JFM-1517-09	15.0	+0.032 +0.102	17.0	23.0	9.0	1.0
JFM-1517-12	15.0	+0.032 +0.102	17.0	23.0	12.0	1.0
JFM-1517-17	15.0	+0.032 +0.102	17.0	23.0	17.0	1.0
JFM-1521-20	15.0	+0.050 +0.160	21.0	27.0	20.0	3.0
JFM-1618-16	16.0	+0.032 +0.102	18.0	24.0	16.0	1.0
JFM-1618-17	16.0	+0.032 +0.102	18.0	24.0	17.0	1.0
JFM-1622-12	16.0	+0.050 +0.160	22.0	28.0	12.0	3.0
JFM-1622-15	16.0	+0.050 +0.160	22.0	28.0	15.0	3.0
JFM-1719-09	17.0	+0.032 +0.102	19.0	25.0	9.0	1.0
JFM-1719-21	17.0	+0.032 +0.102	19.0	25.0	21.0	1.0
JFM-1820-04	18.0	+0.032 +0.102	20.0	26.0	4.0	1.0
JFM-1820-12	18.0	+0.032 +0.102	20.0	26.0	12.0	1.0
JFM-1820-22	18.0	+0.032 +0.102	20.0	26.0	22.0	1.0
JFM-1922-36	19.0	+0.032 +0.102	22.0	26.0	36.0	1.0
JFM-2023-11	20.0	+0.040 +0.124	23.0	30.0	11.5	1.5
JFM-2023-15.5	20.0	+0.040 +0.124	23.0	30.0	15.5	1.5
JFM-2023-21	20.0	+0.040 +0.124	23.0	30.0	21.5	1.5
JFM-202530-15	20.0	+0.065 +0.195	25.0	30.0	15.0	2.0
JFM-2026-15	20.0	+0.065 +0.195	26.0	32.0	15.0	3.0
JFM-2026-20	20.0	+0.065 +0.195	26.0	32.0	20.0	3.0
JFM-2026-25	20.0	+0.065 +0.195	26.0	32.0	25.0	3.0
JFM-222532-08	22.0	+0.040 +0.124	25.0	32.0	8.0	1.5

* after pressfit. Testing methods ► page 55

iglidur® J | Product Range



Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
JFM-2430-30	24.0	+0.040 +0.124	30.0	36.0	30.0	3.0
JFM-2528-06	25.0	+0.040 +0.124	28.0	35.0	6.0	1.5
JFM-2528-14.5	25.0	+0.040 +0.124	28.0	35.0	14.5	1.5
JFM-2528-21	25.0	+0.040 +0.124	28.0	35.0	21.5	1.5
JFM-252839-075	25.0	+0.040 +0.124	28.0	39.0	7.5	1.5
JFM-2532-20	25.0	+0.065 +0.195	32.0	38.0	20.0	4.0
JFM-2532-25	25.0	+0.065 +0.195	32.0	38.0	25.0	4.0
JFM-283235-07	28.0	+0.065 +0.195	32.0	35.0	7.0	2.0
JFM-3034-20	30.0	+0.040 +0.124	34.0	42.0	20.0	2.0
JFM-3034-26	30.0	+0.040 +0.124	34.0	42.0	26.0	2.0
JFM-3038-30	30.0	+0.065 +0.195	38.0	44.0	30.0	4.0
JFM-3539-12	35.0	+0.050 +0.150	39.0	47.0	12.0	2.0
JFM-3539-16	35.0	+0.050 +0.150	39.0	47.0	16.0	2.0
JFM-3539-26	35.0	+0.050 +0.150	39.0	47.0	26.0	2.0
JFM-4044-20	40.0	+0.050 +0.150	44.0	52.0	20.0	2.0
JFM-4044-30	40.0	+0.050 +0.150	44.0	52.0	30.0	2.0
JFM-4044-40	40.0	+0.050 +0.150	44.0	52.0	40.0	2.0
JFM-4550-20	45.0	+0.050 +0.150	50.0	58.0	20.0	2.0
JFM-4550-50	45.0	+0.050 +0.150	50.0	58.0	50.0	2.0
JFM-5055-50	50.0	+0.050 +0.150	55.0	63.0	50.0	2.0
JFM-5560-50	55.0	+0.060 +0.180	60.0	68.0	50.0	2.0
JFM-6065-50	60.0	+0.060 +0.180	65.0	73.0	50.0	2.0
JFM-7075-50	70.0	+0.060 +0.180	75.0	83.0	50.0	2.0
JFM-9095-100	90.0	+0.072 +0.212	95.0	108.0	100.0	2.5
JFM-110115-100	110.0	+0.072 +0.212	115.0	123.0	100.0	2.5

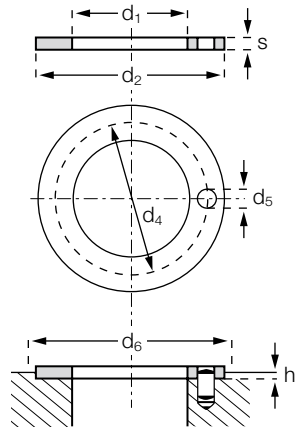
* after pressfit. Testing methods ► page 55


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time from stock

 prices price list online
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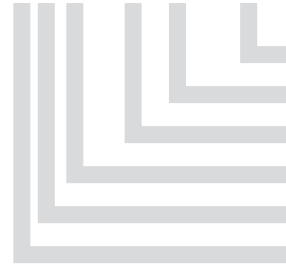
 order part number
example JSM-0103-02

Thrust washer



Order key

JTM-1224-015



- Thickness s
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form T)
- Material iglidur® J

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

Part number	d1 +0.25	d2 -0.25	s -0.05	d4 -0.12 +0.12	d5 +0.375 +0.125	h +0.2 -0.2	d6 +0.12
JTM-1224-015	12.0	24.0	1.5	18.0	1.5	1.0	24.0
JTM-2036-015	20.0	36.0	1.5	28.0	3.0	1.0	36.0
JTM-3039-015	30.0	39.0	1.5	**	**	1.0	39.0
JTM-5670-010	56.0	70.0	1.0	**	**	0.7	70.0
JTM-139188-020	139.0	188.0	2.0	**	**	2.0	188.0

** Design without fixing bore



delivery available
time from stock



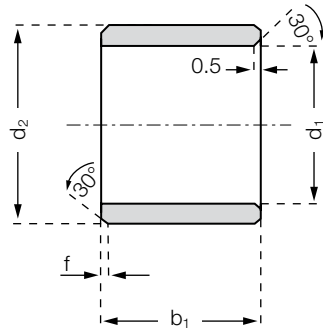
prices price list online
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order part number
example JTM-1224-015

iglidur® J | Product Range | Inch

Sleeve bearing



Order key

JSI-0204-04



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form S)
Material iglidur® J

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [Inch]:	Ø 0,040–0,236	Ø 0,236–0,472	Ø 0,472–1,18	Ø > 1,18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing Bore		Shaft Size	
				max.	min.	max.	min.	max.	min.
JSI-0204-04	1/8	1/4	1/4	.1280	.1262	.2515	.2510	.1250	.1241
JSI-0204-06	1/8	1/4	3/8	.1280	.1262	.2515	.2510	.1250	.1241
JSI-0304-06	3/16	1/4	3/8	.1892	.1873	.2503	.2497	.1865	.1858
JSI-0304-08	3/16	1/4	1/2	.1892	.1873	.2503	.2497	.1865	.1858
JSI-0305-05	3/16	5/16	5/16	.1905	.1887	.3140	.3135	.1875	.1866
JSI-0305-06	3/16	5/16	3/8	.1905	.1887	.3140	.3135	.1875	.1866
JSI-0305-08	3/16	5/16	1/2	.1905	.1887	.3140	.3135	.1875	.1866
JSI-0405-04	1/4	5/16	1/4	.2521	.2498	.3128	.3122	.2490	.2481
JSI-0405-06	1/4	5/16	3/8	.2521	.2498	.3128	.3122	.2490	.2481
JSI-0405-08	1/4	5/16	1/2	.2521	.2498	.3128	.3122	.2490	.2481
JSI-0406-04	1/4	3/8	1/4	.2539	.2516	.3765	.3760	.2500	.2491
JSI-0406-08	1/4	3/8	1/2	.2539	.2516	.3765	.3760	.2500	.2491
JSI-0406-12	1/4	3/8	3/4	.2539	.2516	.3765	.3760	.2500	.2491
JSI-0406-16	1/4	3/8	1	.2539	.2516	.3765	.3760	.2500	.2491
JSI-0506-06	5/16	3/8	3/8	.3148	.3125	.3753	.3747	.3115	.3106
JSI-0506-08	5/16	3/8	1/2	.3148	.3125	.3753	.3747	.3115	.3106
JSI-0506-12	5/16	3/8	3/4	.3148	.3125	.3753	.3747	.3115	.3106
JSI-0507-06	5/16	7/16	3/8	.3164	.3141	.4390	.4385	.3125	.3116
JSI-0507-08	5/16	7/16	1/2	.3164	.3141	.4390	.4385	.3125	.3116
JSI-0507-10	5/16	7/16	5/8	.3164	.3141	.4390	.4385	.3125	.3116
JSI-0607-06	3/8	15/32	3/8	.3773	.3750	.4691	.4684	.3740	.3731
JSI-0608-03	3/8	1/2	3/16	.3773	.3750	.4691	.4684	.3740	.3731
JSI-0608-06	3/8	1/2	3/8	.3773	.3750	.4691	.4684	.3740	.3731
JSI-0608-08	3/8	1/2	1/2	.3773	.3750	.4691	.4684	.3740	.3731
JSI-0608-10	3/8	1/2	5/8	.3773	.3750	.4691	.4684	.3740	.3731

* after pressfit. Testing methods ► page 55



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order part number
example JSI-0204-04



Sleeve bearing

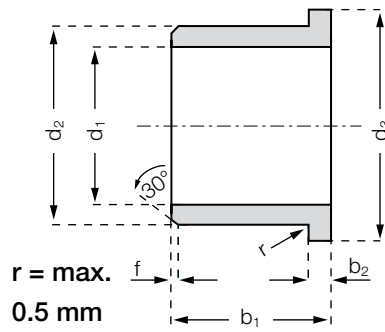
Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing Bore		Shaft Size	
				max.	min.	max.	min.	max.	min.
JSI-0809-06	1/2	19/32	3/8	.5030	.5003	.5941	.5934	.4990	.4980
JSI-0809-08	1/2	19/32	1/2	.5030	.5003	.5941	.5934	.4990	.4980
JSI-0809-12	1/2	19/32	3/4	.5030	.5003	.5941	.5934	.4990	.4980
JSI-0810-08	1/2	5/8	1/2	.5040	.5013	.6260	.6250	.5000	.4990
JSI-0810-12	1/2	5/8	3/4	.5040	.5013	.6260	.6250	.5000	.4990
JSI-1011-08	5/8	23/32	1/2	.6280	.6253	.7192	.7184	.6240	.6230
JSI-1011-12	5/8	23/32	3/4	.6280	.6253	.7192	.7184	.6240	.6230
JSI-1012-04	5/8	3/4	1/4	.6297	.6270	.7510	.7500	.6250	.6240
JSI-1012-06	5/8	3/4	3/8	.6297	.6270	.7510	.7500	.6250	.6240
JSI-1012-08	5/8	3/4	1/2	.6297	.6270	.7510	.7500	.6250	.6240
JSI-1012-12	5/8	3/4	3/4	.6297	.6270	.7510	.7500	.6250	.6240
JSI-1012-16	5/8	3/4	1	.6297	.6270	.7510	.7500	.6250	.6240
JSI-1214-08	3/4	7/8	1/2	.7541	.7505	.8755	.8747	.7491	.7479
JSI-1214-12	3/4	7/8	3/4	.7541	.7505	.8755	.8747	.7491	.7479
JSI-1214-16	3/4	7/8	1	.7541	.7505	.8755	.8747	.7491	.7479
JSI-1216-12	3/4	1	3/4	.7559	.7525	1.0010	1.000	.7500	.7490
JSI-1216-16	3/4	1	1	.7559	.7525	1.0010	1.000	.7500	.7490
JSI-1416-12	7/8	1	3/4	.8791	.8757	1.0005	.9997	.8741	.8729
JSI-1418-12	7/8	11/8	3/4	.8809	.8775	1.1260	1.1250	.8750	.8740
JSI-1418-24	7/8	11/8	11/2	.8809	.8775	1.1260	1.1250	.8750	.8740
JSI-1620-16	1	11/4	1	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
JSI-1620-24	1	11/4	11/2	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
JSI-1822-16	11/8	113/8	1	1.1327	1.1276	1.3760	1.3750	1.1250	1.1240
JSI-2022-14	11/4	113/32	7/8	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
JSI-2024-24	11/4	11/2	11/2	1.2600	1.2532	1.5005	1.4995	1.2500	1.2490
JSI-2428-24	11/2	13/4	11/2	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990

* after pressfit. Testing methods ► page 55

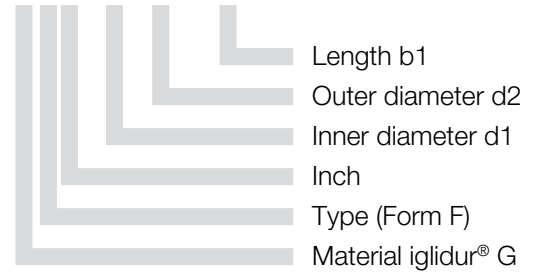
iglidur® J | Product Range | Inch

Flange bearing



Order key

JFI-0204-04



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [Inch]:	Ø 0,040–0,236	Ø 0,236–0,472	Ø 0,472–1,18	Ø > 1,18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing Bore		Shaft Size	
						max.	min.	max.	min.	max.	min.
JFI-0204-06	1/8	1/4	3/8	.360	.047	.1280	.1262	.2515	.2510	.1250	.1241
JFI-0304-02	3/16	1/4	1/8	.375	.032	.1905	.1887	.2515	.2510	.1875	.1866
JFI-0304-04	3/16	1/4	1/4	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
JFI-0304-06	3/16	1/4	3/8	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
JFI-0304-08	3/16	1/4	1/2	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
JFI-0305-06	3/16	5/16	3/8	.370	.047	.1905	.1887	.3140	.3135	.1875	.1866
JFI-0305-08	3/16	5/16	1/2	.370	.047	.1905	.1887	.3140	.3135	.1875	.1866
JFI-0405-04	1/4	5/16	1/4	.437	.032	.2521	.2498	.3128	.3122	.2490	.2481
JFI-0405-06	1/4	5/16	3/8	.437	.032	.2521	.2498	.3128	.3122	.2490	.2481
JFI-0405-12	1/4	5/16	3/4	.437	.032	.2521	.2498	.3128	.3122	.2490	.2481
JFI-0406-03	1/4	3/8	3/16	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491
JFI-0406-04	1/4	3/8	1/4	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491
JFI-0406-08	1/4	3/8	1/2	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491
JFI-0506-04	5/16	3/8	1/4	.500	.032	.3148	.3125	.3753	.3747	.3115	.3106
JFI-0506-06	5/16	3/8	3/8	.500	.032	.3148	.3125	.3753	.3747	.3115	.3106
JFI-0506-08	5/16	3/8	1/2	.500	.032	.3148	.3125	.3753	.3747	.3115	.3106
JFI-0507-08	5/16	7/16	1/2	.560	.062	.3164	.3141	.4390	.4385	.3125	.3116
JFI-0607-06	3/8	15/32	3/8	.687	.046	.3772	.3775	.4691	.4684	.3740	.3731
JFI-0608-03	3/8	1/2	3/16	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
JFI-0608-06	3/8	1/2	3/8	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
JFI-0608-08	3/8	1/2	1/2	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
JFI-0809-04	1/2	19/32	1/4	.875	.046	.5040	.5000	.5941	.5934	.4990	.4980
JFI-0809-06	1/2	19/32	3/8	.875	.046	.5040	.5000	.5941	.5934	.4990	.4980
JFI-0809-08	1/2	19/32	1/2	.875	.046	.5040	.5000	.5941	.5934	.4990	.4980
JFI-0810-04	1/2	5/8	1/4	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/j



order part number
example JFI-0204-06

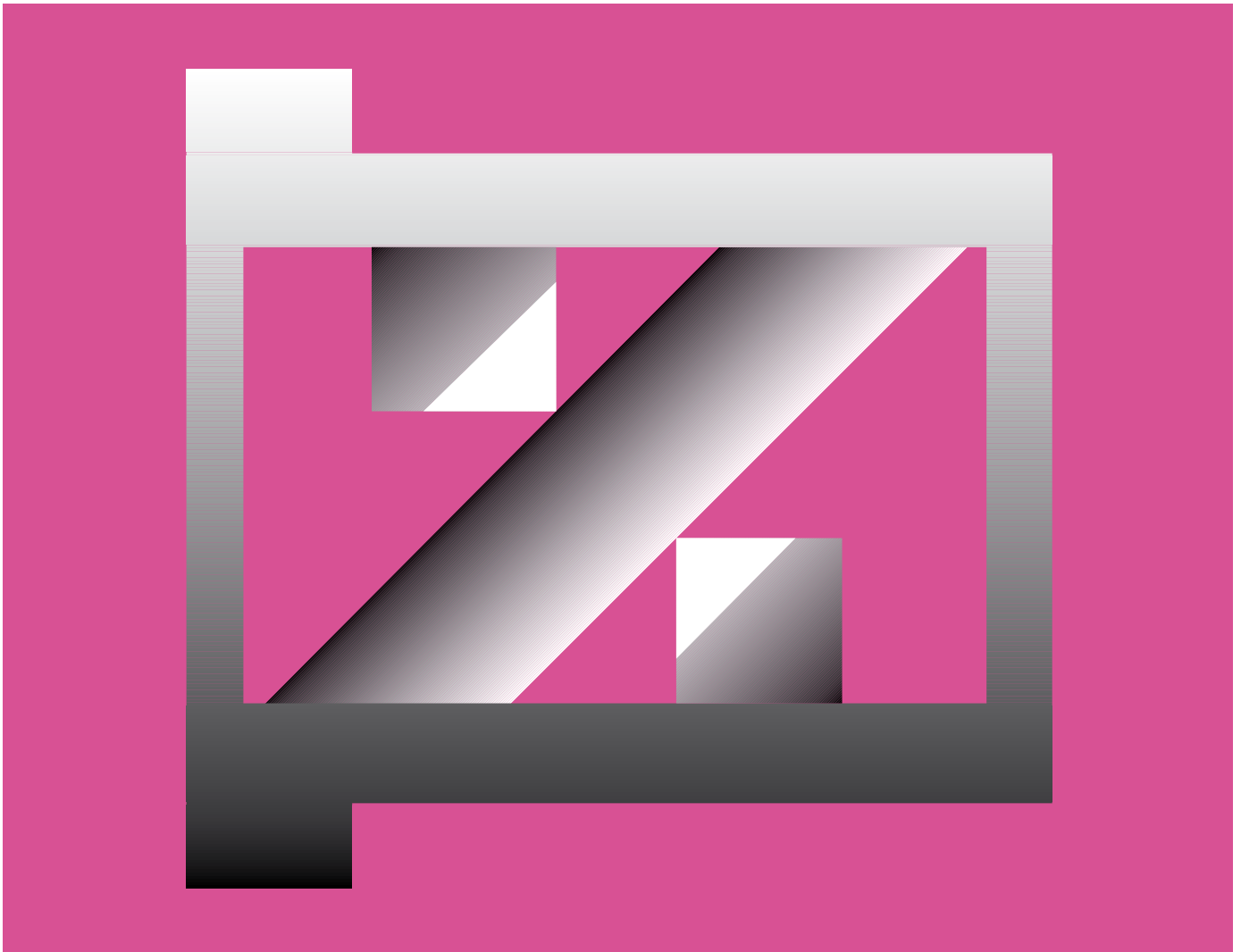


Flange bearing

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing Bore		Shaft Size	
						max.	min.	max.	min.	max.	min.
JFI-0810-08	1/2	5/8	1/2	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990
JFI-0810-10	1/2	5/8	5/8	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990
JFI-0810-12	1/2	5/8	3/4	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990
JFI-1011-08	5/8	23/32	1/2	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
JFI-1011-12	5/8	23/32	3/4	1.000	.046	.6297	.6270	.7192	.7184	.6250	.6240
JFI-1012-08	5/8	3/4	1/2	1.000	.062	.6297	.6270	.7510	.7500	.6250	.6240
JFI-1012-12	5/8	3/4	3/4	1.000	.062	.6297	.6270	.7510	.7500	.6250	.6240
JFI-1012-16	5/8	3/4	1	1.000	.062	.6297	.6270	.7510	.7500	.6250	.6240
JFI-1214-08	3/4	7/8	1/2	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
JFI-1214-10	3/4	7/8	5/8	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
JFI-1214-12	3/4	7/8	3/4	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
JFI-1214-16	3/4	7/8	1	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
JFI-1216-12	3/4	1	3/4	1.250	.156	.7559	.7525	1.0010	1.0000	.7500	.7490
JFI-1216-16	3/4	1	1	1.250	.156	.7559	.7525	1.0010	1.0000	.7500	.7490
JFI-1416-12	7/8	1	3/4	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
JFI-141618-11	7/8	1	11/16	1.125	.062	.8809	.8776	1.0010	1.0000	.8750	.8740
JFI-1618-12	1	11/8	3/4	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
JFI-1618-16	1	11/8	1	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
JFI-1620-12	1	11/4	3/4	1.500	.188	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
JFI-1620-16	1	11/4	1	1.500	.188	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
JFI-1620-24	1	11/4	11/2	1.500	.188	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
JFI-2024-16	11/4	11/2	1	1.750	.188	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
JFI-2024-24	11/4	11/2	11/2	1.750	.188	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
JFI-2428-16	11/2	13/4	1	2.000	.125	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990
JFI-2428-24	11/2	13/4	11/2	2.000	.125	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990
JFI-2630-16	15/8	17/8	1	2.125	.125	1.6350	1.6882	1.8755	1.8745	1.6250	1.6240

* after pressfit. Testing methods ► page 55



iglidur® M250 – Thick and Tough: excellent vibration dampening



Over 450 sizes available from stock

Excellent vibration dampening

Resistant to edge loading

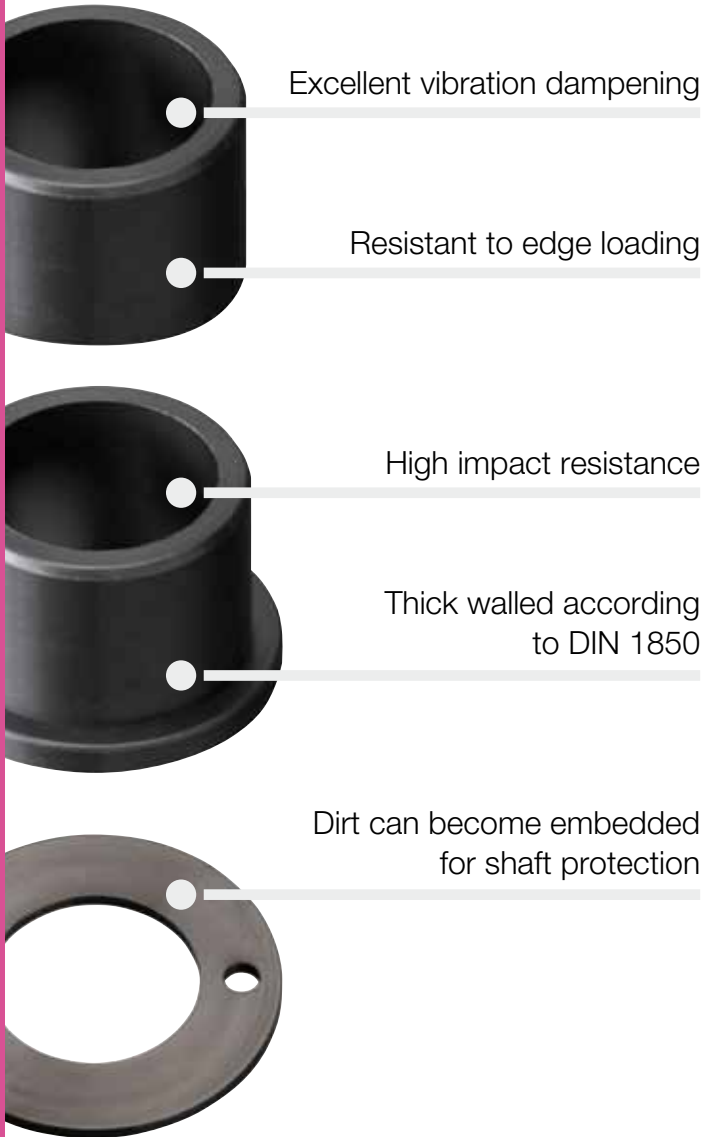
High impact resistance

Thick walled according to DIN 1850

Dirt can become embedded for shaft protection

iglidur® M250 | Thick and Tough

Excellent vibration dampening. The self-lubricating plain bearings made of iglidur® M250 are defined by their impact strength, vibration dampening, and wear resistant properties. They excel in applications in which vibration dampening is necessary, for example, in fitness and packaging machines.



When to use it?

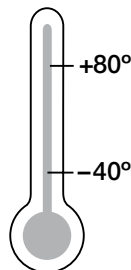
- When the bearings are exposed to high amounts of dirt
- When high vibration dampening is necessary
- For low to average speeds
- When mechanical reaming of the wall surface is necessary
- Resistant to edge loads
- High impact resistance
- Thick-walled according to DIN 1850



When not to use it?

- For applications in wet areas
 - ▶ **iglidur® H, page 325**
- When very high precision is necessary
 - ▶ **iglidur® P, page 185**
- For very smooth shafts
 - ▶ **iglidur® J, page 89**
- When a cost-effective wear resistant bearing is desired
 - ▶ **iglidur® R, page 249**

Temperature



Product range

3 types
> 450 dimensions
Ø 1–75 mm



iglidur® M250 | Application Examples



Typical sectors of industry and application areas

- Agricultural industry
- Furniture/industrial design
- Textile technology ● Doors and gates
- Machine building etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/waterpump



► www.igus.co.uk/lawnmover



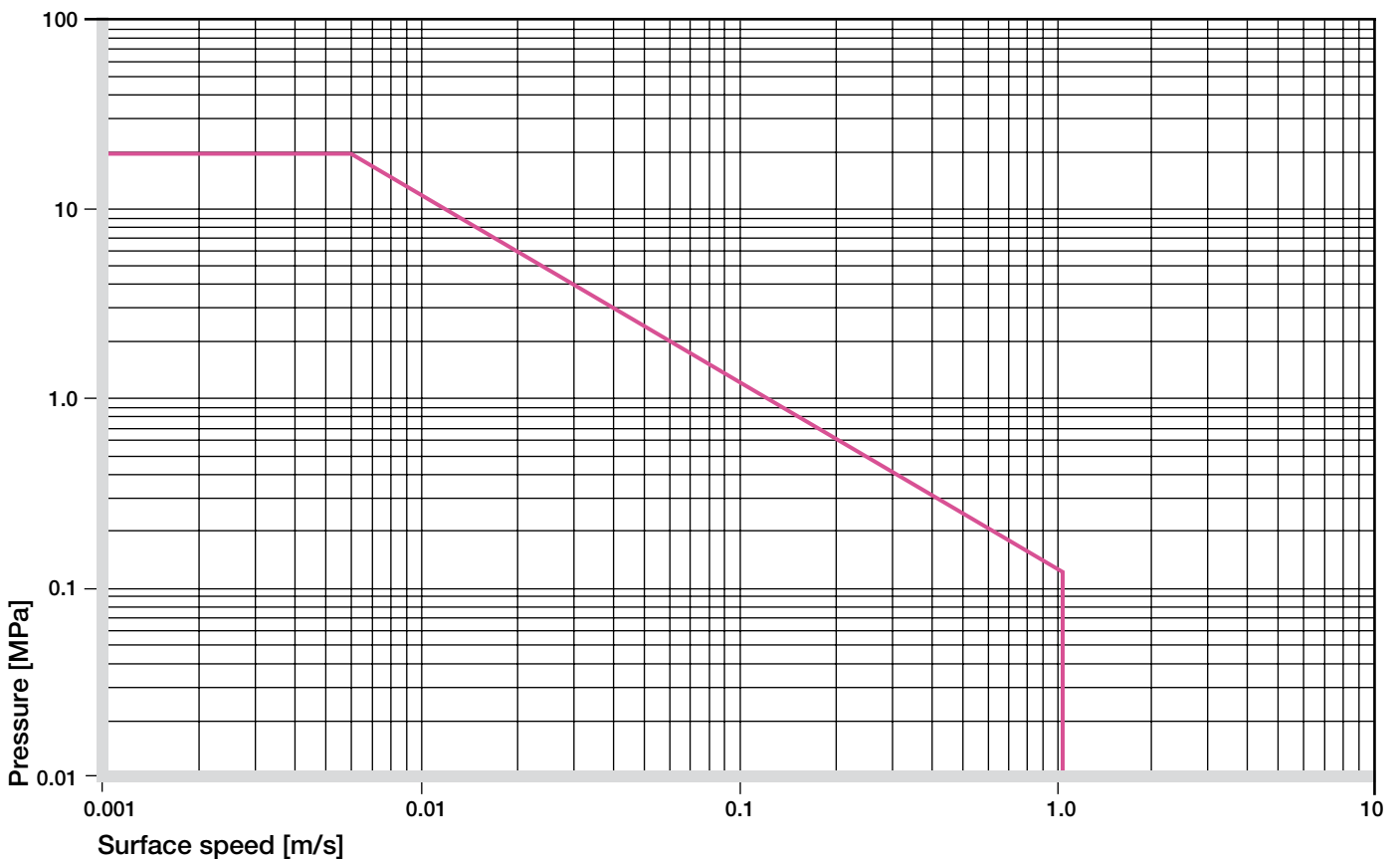
► www.igus.co.uk/camerajib



► www.igus.co.uk/drilling-machine

Material data			
General properties	Unit	iglidur® M250	Testing method
Density	g/cm ³	1.14	
Colour		charcoal	
Max. moisture absorption at +23°C/50% r.h.	% weight	1.4	DIN 53495
Max. moisture absorption	% weight	7.6	
Coefficient of sliding friction, dynamic against steel	μ	0,18–0,40	
pv value, max. (dry)	MPa · m/s	0.12	
Mechanical properties			
Modulus of elasticity	MPa	2,700	DIN 53457
Tensile strength at +20°C	MPa	112	DIN 53452
Compressive strength	MPa	52	
Max. recommended surface pressure (+20°C)	MPa	20	
Shore D hardness		79	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+80	
Max. short term application temperature	°C	+170	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	10	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹³	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

Table 01: Material data



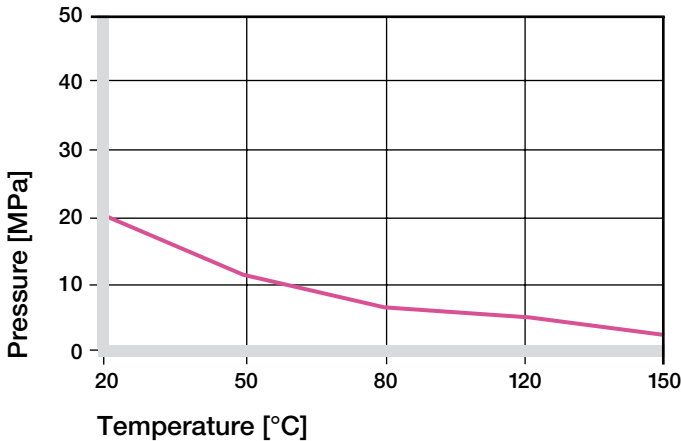
Graph 01: Permissible pv values for iglidur® M250 with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

iglidur[®] M250 | Technical Data

Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur[®] M250 plain bearings decreases.

The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +80 °C the permissible surface pressure is almost 10 MPa.

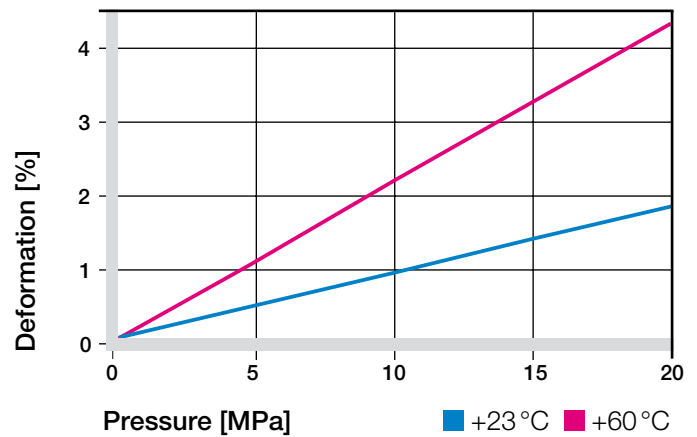


Graph 02: Recommended maximum surface pressure as a function of temperature (20 MPa at +20 °C)

The self lubricating plain bearings made of iglidur[®] M250 are defined by their impact strength, vibration dampening, and wear resistant properties. They excel in applications in which vibration dampening is necessary, for example, in fitness and packaging machines. Since they are additionally able to absorb dirt, they are also suited for agricultural machines and garden appliances.

iglidur[®] M250 bearings can withstand radial loads of a maximum 20 MPa. The material deformation is below 2 % at room temperature. Compared with other iglidur[®] materials iglidur[®] M250 bearings are highly elastic. By this elasticity, they are able to yield very well, but retain their original shape again. A plastic deformation is minimal up to the permissible surface pressure.

► Surface Pressure, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

As standard, iglidur[®] M250 is manufactured as a thick walled bearing. iglidur[®] M250 is best suited for low to medium surface speeds. The maximum permissible speed for dry running applications is 0.8 m/s (rotating) or 2 m/s (linear). In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	0.8	0.6	2.5
Short term	2	1.4	5

Table 02: Maximum running speed

Temperatures

The maximum permissible short term temperature is +170 °C. However iglidur[®] M250 plain bearings may only be exposed to this temperature without any additional load. The long term permissible application temperature is +80 °C. This is also the point of the wear limit, i. e. the temperature over which the wear increases exponentially.

► Application Temperatures, [page 46](#)

iglidur [®] M250	Application temperature
Minimum	-40 °C
Max. long term	+80 °C
Max. short term	+170 °C
Add. securing is required from	+60 °C

Table 03: Temperature limits

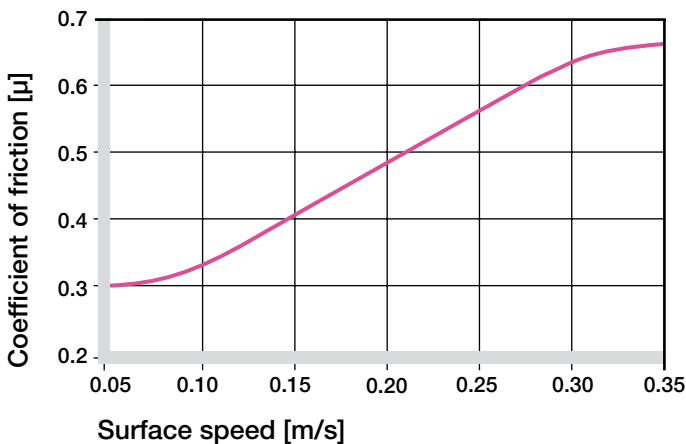
Friction and Wear

The coefficient of friction μ of a plain bearing among other things is influenced by the surface speed and the load. If the load stays constant, then the coefficient of friction increases with increasing speed (see Graph 04).

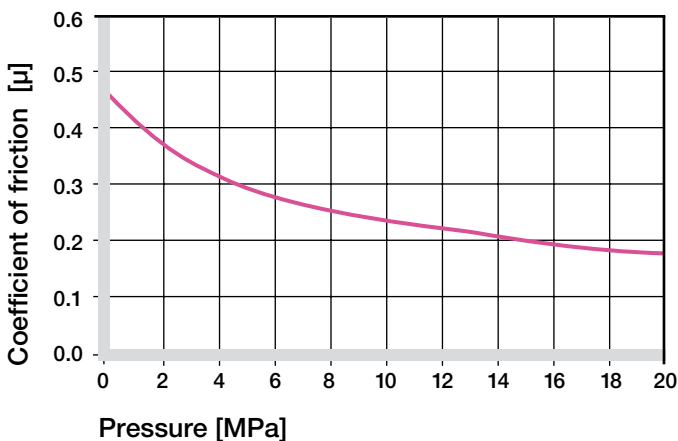
On the other hand, an increase in load at constant speed can result in a reduction in the coefficient of friction (see Graph 05).

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75$ MPa



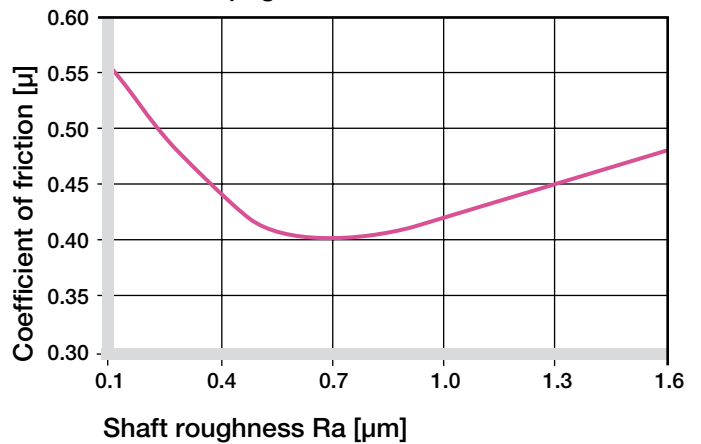
Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01$ m/s

Shaft Materials

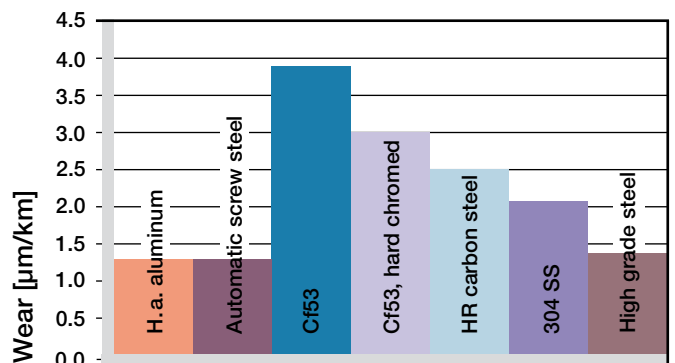
Friction and wear are also greatly dependent on the surface of the shaft. If you observe the coefficient of friction, then the ideal shaft surface finish for iglidur® M250 bearings is $R_a = 0.6$ μm (Graph 06).

Graphs 07 to 09 show results of testing different shaft materials with plain bearings made of iglidur® M250. Up to loads of 2 MPa the shaft material plays a relatively small role for rotational movements. Graph 07 best illustrates which shaft materials are best suited for smaller loads. If the load increases, the wear of a bearing clearly increases. Therefore, a suitable shaft material must be considered for higher loads. These are hardened shafts, such as cold-rolled steel or hard chromed shafts. Graph 09 makes it clear that iglidur® M250 is considerably better for rotational than for oscillating operation. However, it must be mentioned that in oscillating movements, often the vibrations acting on the bearing are especially high. Here, iglidur® M250 can utilise its special dampening properties. In our test, these vibrations are excluded so that the comparison between rotation and oscillating operation is captured first.

► Shaft Materials, **page 51**

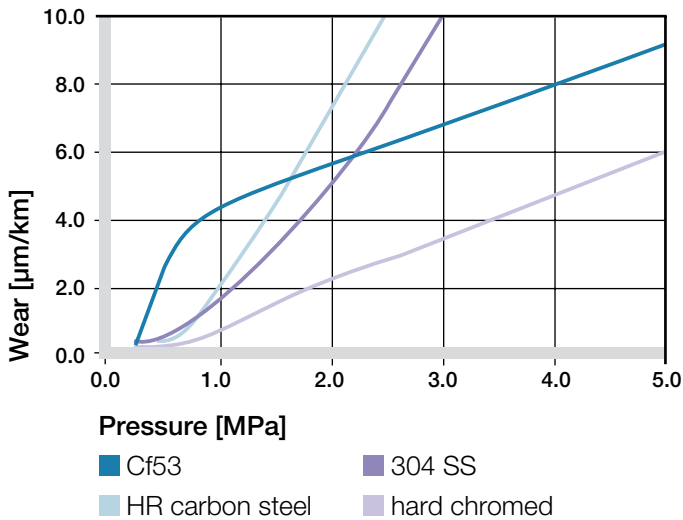


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

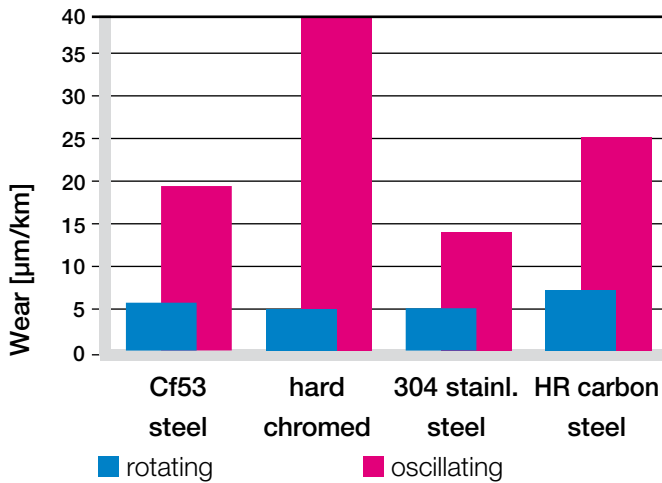


Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75$ MPa, $v = 0.5$ m/s

iglidur® M250 | Technical Data



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur® M250	Dry	Greases	Oil	Water
C.o.f. μ	0.18–0.40	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ($R_a = 1 \mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® M250 plain bearings have a good resistance to chemicals. They are resistant to most lubricants. iglidur® M250 are not affected by most weak organic and inorganic acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	0

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® M250 can be used conditionally under radioactive radiation. They are resistant to radiation up to a radiation intensity of $1 \cdot 10^4$ Gy.

UV Resistance

iglidur® M250 plain bearings are permanently resistant to UV radiation.

Vacuum

In a vacuum environment, the iglidur® M250 plain bearing releases moisture as vapour. The relatively high moisture absorption of the bearing allows only limited use in the vacuum.

Electrical Properties

iglidur® M250 plain bearings are electrically insulating.

Volume resistance	$> 10^{13} \Omega\text{cm}$
Surface resistance	$> 10^{11} \Omega$

Moisture Absorption

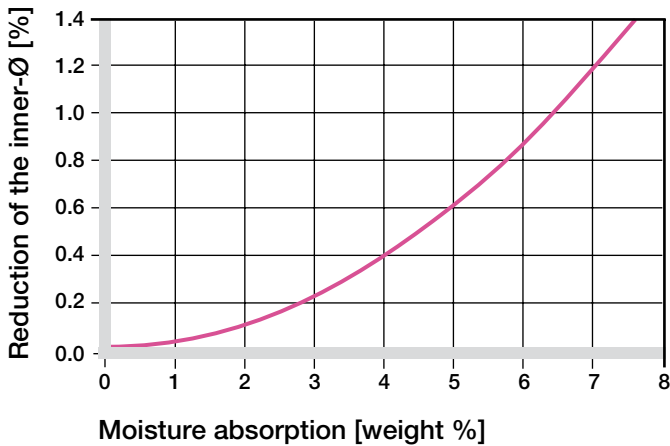
The moisture absorption of iglidur® M250 plain bearings is approximately 1.4 % in standard atmosphere. The saturation limit in water is 7.5 %. This must be taken into account along with other application conditions.

Maximum moisture absorption

At +23 °C/50 % r.h. 1.4 % weight

Max. moisture absorption 7.6 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

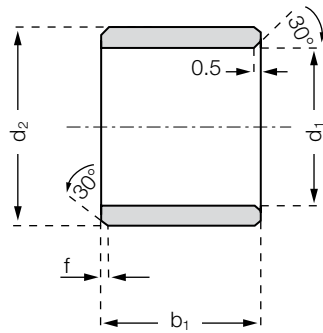
iglidur® M250 plain bearings require a relatively large amount of clearance for optimal operation. This ensures that the bearing remains reliable during temperature change and water absorption. This clearance, which would not be acceptable for a metallic plain bearing, allows the iglidur® M250 to exhibit its best qualities, such as wear resistance and maintenance free operation. The disadvantages of the clearance are minimised by the vibration dampening properties. The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing methods, [page 55](#)

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® M250 D11 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.020 +0.080	0 +0.010
> 3 to 6	0-0.030	+0.030 +0.105	0 +0.012
> 6 to 10	0-0.036	+0.040 +0.130	0 +0.015
> 10 to 18	0-0.043	+0.050 +0.160	0 +0.018
> 18 to 30	0-0.052	+0.065 +0.195	0 +0.021
> 30 to 50	0-0.062	+0.080 +0.240	0 +0.025
> 50 to 80	0-0.074	+0.100 +0.290	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

MSM-0103-02



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® M250

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
MSM-0103-02	1.0	+0.020 +0.080	3.0	2.0
MSM-0104-02	1.5	+0.020 +0.080	4.0	2.0
MSM-0205-01	2.0	+0.020 +0.080	5.0	1.0
MSM-0205-02	2.0	+0.020 +0.080	5.0	2.0
MSM-0205-03	2.0	+0.020 +0.080	5.0	3.0
MSM-0206-03	2.5	+0.020 +0.080	6.0	3.0
MSM-0305-03	3.0	+0.020 +0.080	5.0	3.0
MSM-0305-04	3.0	+0.020 +0.080	5.0	4.0
MSM-0306-03	3.0	+0.020 +0.080	6.0	3.0
MSM-0306-04	3.0	+0.020 +0.080	6.0	4.0
MSM-0407-03	4.0	+0.030 +0.105	7.0	3.0
MSM-0407-04	4.0	+0.030 +0.105	7.0	4.0
MSM-0407-06	4.0	+0.030 +0.105	7.0	6.0
MSM-0408-04	4.0	+0.030 +0.105	8.0	4.0
MSM-0408-06	4.0	+0.030 +0.105	8.0	6.0
MSM-0508-04	5.0	+0.030 +0.105	8.0	4.0
MSM-0508-05	5.0	+0.030 +0.105	8.0	5.0
MSM-0508-08	5.0	+0.030 +0.105	8.0	8.0
MSM-0509-05	5.0	+0.030 +0.105	9.0	5.0
MSM-0509-08	5.0	+0.030 +0.105	9.0	8.0
MSM-0608-10	6.0	+0.030 +0.105	8.0	10.0
MSM-0609-06	6.0	+0.030 +0.105	9.0	6.0
MSM-0610-02	6.0	+0.030 +0.105	10.0	2.5
MSM-0610-04	6.0	+0.030 +0.105	10.0	4.0
MSM-0610-06	6.0	+0.030 +0.105	10.0	6.0

Part number	d1	d1-Tolerance*	d2	b1 h13
MSM-0610-08	6.0	+0.030 +0.105	10.0	8.0
MSM-0610-10	6.0	+0.030 +0.105	10.0	10.0
MSM-0611-04	6.0	+0.030 +0.105	11.0	4.0
MSM-0612-06	6.0	+0.030 +0.105	12.0	6.0
MSM-0612-10	6.0	+0.030 +0.105	12.0	10.0
MSM-0710-05	7.0	+0.040 +0.130	10.0	5.0
MSM-0710-08	7.0	+0.040 +0.130	10.0	8.0
MSM-0710-10	7.0	+0.040 +0.130	10.0	10.0
MSM-0711-16	7.0	+0.040 +0.130	11.0	16.0
MSM-0810-06	8.0	+0.040 +0.130	10.0	6.0
MSM-0810-08	8.0	+0.040 +0.130	10.0	8.0
MSM-0810-10	8.0	+0.040 +0.130	10.0	10.0
MSM-0811-06	8.0	+0.040 +0.130	11.0	6.0
MSM-0811-08	8.0	+0.040 +0.130	11.0	8.0
MSM-0811-12	8.0	+0.040 +0.130	11.0	12.0
MSM-0812-04	8.0	+0.040 +0.130	12.0	4.0
MSM-0812-06	8.0	+0.040 +0.130	12.0	6.0
MSM-0812-08	8.0	+0.040 +0.130	12.0	8.0
MSM-0812-10	8.0	+0.040 +0.130	12.0	10.0
MSM-0812-12	8.0	+0.040 +0.130	12.0	12.0
MSM-0814-06	8.0	+0.040 +0.130	14.0	6.0
MSM-0814-10	8.0	+0.040 +0.130	14.0	10.0
MSM-0912-14	9.0	+0.040 +0.130	12.0	14.0
MSM-1014-06	10.0	+0.040 +0.130	14.0	6.0
MSM-1014-08	10.0	+0.040 +0.130	14.0	8.0

* after pressfit. Testing methods ► page 55



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order part number
example MSM-0103-02



Sleeve bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
MSM-1014-10	10.0	+0.040 +0.130	14.0	10.0
MSM-1014-16	10.0	+0.040 +0.130	14.0	16.0
MSM-1016-06	10.0	+0.040 +0.130	16.0	6.0
MSM-1016-08	10.0	+0.040 +0.130	16.0	8.0
MSM-1016-10	10.0	+0.040 +0.130	16.0	10.0
MSM-1016-16	10.0	+0.040 +0.130	16.0	16.0
MSM-1016-50	10.0	+0.040 +0.130	16.0	50.0
MSM-1214-15	12.0	+0.050 +0.160	14.0	15.0
MSM-1214-20	12.0	+0.050 +0.160	14.0	20.0
MSM-1216-15	12.0	+0.050 +0.160	16.0	15.0
MSM-1216-20	12.0	+0.050 +0.160	16.0	20.0
MSM-1218-08	12.0	+0.050 +0.160	18.0	8.0
MSM-1218-10	12.0	+0.050 +0.160	18.0	10.0
MSM-1218-15	12.0	+0.050 +0.160	18.0	15.0
MSM-1218-20	12.0	+0.050 +0.160	18.0	20.0
MSM-1416-085	14.0	+0.050 +0.160	16.0	8.5
MSM-1416-10	14.0	+0.050 +0.160	16.0	10.0
MSM-1416-15	14.0	+0.050 +0.160	16.0	15.0
MSM-1416-20	14.0	+0.050 +0.160	16.0	20.0
MSM-1416-29	14.0	+0.050 +0.160	16.0	29.0
MSM-1418-20	14.0	+0.050 +0.160	18.0	20.0
MSM-1420-10	14.0	+0.050 +0.160	20.0	10.0
MSM-1420-15	14.0	+0.050 +0.160	20.0	15.0
MSM-1420-20	14.0	+0.050 +0.160	20.0	20.0
MSM-1517-10	15.0	+0.050 +0.160	17.0	10.0
MSM-1517-15	15.0	+0.050 +0.160	17.0	15.0
MSM-1521-10	15.0	+0.050 +0.160	21.0	10.0
MSM-1521-15	15.0	+0.050 +0.160	21.0	15.0
MSM-1521-20	15.0	+0.050 +0.160	21.0	20.0
MSM-1521-23	15.0	+0.050 +0.160	21.0	23.0
MSM-1618-12	16.0	+0.050 +0.160	18.0	12.0
MSM-1618-20	16.0	+0.050 +0.160	18.0	20.0
MSM-1620-20	16.0	+0.050 +0.160	20.0	20.0
MSM-1620-25	16.0	+0.050 +0.160	20.0	25.0
MSM-1620-30	16.0	+0.050 +0.160	20.0	30.0
MSM-1622-12	16.0	+0.050 +0.160	22.0	12.0
MSM-1622-15	16.0	+0.050 +0.160	22.0	15.0
MSM-1622-16	16.0	+0.050 +0.160	22.0	16.0
MSM-1622-20	16.0	+0.050 +0.160	22.0	20.0
MSM-1622-25	16.0	+0.050 +0.160	22.0	25.0
MSM-1824-12	18.0	+0.050 +0.160	24.0	12.0
MSM-1824-20	18.0	+0.050 +0.160	24.0	20.0

Part number	d1	d1-Tolerance*	d2	b1 h13
MSM-1824-30	18.0	+0.050 +0.160	24.0	30.0
MSM-2023-15	20.0	+0.065 +0.195	23.0	15.0
MSM-2023-20	20.0	+0.065 +0.195	23.0	20.0
MSM-2025-14	20.0	+0.065 +0.195	25.0	14.0
MSM-2025-20	20.0	+0.065 +0.195	25.0	20.0
MSM-2025-30	20.0	+0.065 +0.195	25.0	30.0
MSM-2026-12	20.0	+0.065 +0.195	26.0	12.0
MSM-2026-15	20.0	+0.065 +0.195	26.0	15.0
MSM-2026-20	20.0	+0.065 +0.195	26.0	20.0
MSM-2026-30	20.0	+0.065 +0.195	26.0	30.0
MSM-2226-15	22.0	+0.065 +0.195	26.0	15.0
MSM-2228-10	22.0	+0.065 +0.195	28.0	10.0
MSM-2228-15	22.0	+0.065 +0.195	28.0	15.0
MSM-2228-20	22.0	+0.065 +0.195	28.0	20.0
MSM-2228-30	22.0	+0.065 +0.195	28.0	30.0
MSM-2430-15	24.0	+0.065 +0.195	30.0	15.0
MSM-2430-20	24.0	+0.065 +0.195	30.0	20.0
MSM-2430-30	24.0	+0.065 +0.195	30.0	30.0
MSM-2528-12	25.0	+0.065 +0.195	28.0	12.0
MSM-2528-20	25.0	+0.065 +0.195	28.0	20.0
MSM-2530-20	25.0	+0.065 +0.195	30.0	20.0
MSM-2530-30	25.0	+0.065 +0.195	30.0	30.0
MSM-2530-40	25.0	+0.065 +0.195	30.0	40.0
MSM-2532-12	25.0	+0.065 +0.195	32.0	12.0
MSM-2532-20	25.0	+0.065 +0.195	32.0	20.0
MSM-2532-30	25.0	+0.065 +0.195	32.0	30.0
MSM-2532-35	25.0	+0.065 +0.195	32.0	35.0
MSM-2532-40	25.0	+0.065 +0.195	32.0	40.0
MSM-2630-20	26.0	+0.065 +0.195	30.0	20.0
MSM-2632-30	26.0	+0.065 +0.195	32.0	30.0
MSM-2734-20	27.0	+0.065 +0.195	34.0	20.0
MSM-2734-30	27.0	+0.065 +0.195	34.0	30.0
MSM-2734-40	27.0	+0.065 +0.195	34.0	40.0
MSM-2833-20	28.0	+0.065 +0.195	33.0	20.0
MSM-2836-20	28.0	+0.065 +0.195	36.0	20.0
MSM-2836-30	28.0	+0.065 +0.195	36.0	30.0
MSM-2836-40	28.0	+0.065 +0.195	36.0	40.0
MSM-3035-20	30.0	+0.065 +0.195	35.0	20.0
MSM-3035-40	30.0	+0.065 +0.195	35.0	40.0
MSM-3038-20	30.0	+0.065 +0.195	38.0	20.0
MSM-3038-30	30.0	+0.065 +0.195	38.0	30.0
MSM-3038-40	30.0	+0.065 +0.195	38.0	40.0

* after pressfit. Testing methods ► page 55



Sleeve bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
MSM-3040-40	30.0	+0.065 +0.195	40.0	40.0
MSM-3240-20	32.0	+0.080 +0.240	40.0	20.0
MSM-3240-30	32.0	+0.080 +0.240	40.0	30.0
MSM-3240-40	32.0	+0.080 +0.240	40.0	40.0

Part number	d1	d1-Tolerance*	d2	b1 h13
MSM-3542-50	35.0	+0.080 +0.240	42.0	50.0
MSM-4046-20	40.0	+0.080 +0.240	46.0	20.0
MSM-7580-60	75.0	+0.100 +0.290	80.0	60.0

* after pressfit. Testing methods ► page 55



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time from stock

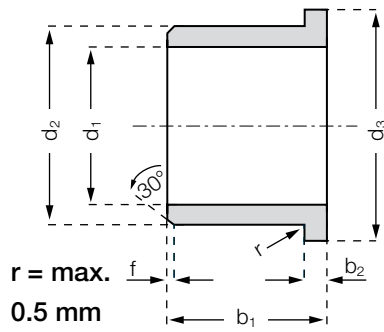


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order part number
example MSM-3040-40

Flange bearing



Order key

MFM-0103-02



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form S)
Material iglidur® M250

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
MFM-0103-02	1.0	+0.020 +0.080	3.0	5.0	2.0	1.0
MFM-0104-02	1.5	+0.020 +0.080	4.0	6.0	2.0	1.0
MFM-0205-03	2.0	+0.020 +0.080	5.0	8.0	3.0	1.5
MFM-0206-03	2.5	+0.020 +0.080	6.0	9.0	3.0	1.5
MFM-0306-04	3.0	+0.020 +0.080	6.0	9.0	4.0	1.5
MFM-0408-04	4.0	+0.030 +0.105	8.0	12.0	4.0	2.0
MFM-0408-06	4.0	+0.030 +0.105	8.0	12.0	6.0	2.0
MFM-0408-08	4.0	+0.030 +0.105	8.0	12.0	8.0	2.0
MFM-0509-05	5.0	+0.030 +0.105	9.0	13.0	5.0	2.0
MFM-0509-06	5.0	+0.030 +0.105	9.0	13.0	6.0	2.0
MFM-0509-08	5.0	+0.030 +0.105	9.0	13.0	8.0	2.0
MFM-0610-04	6.0	+0.030 +0.105	10.0	14.0	4.0	2.0
MFM-0610-06	6.0	+0.030 +0.105	10.0	14.0	6.0	2.0
MFM-0610-10	6.0	+0.030 +0.105	10.0	14.0	10.0	2.0
MFM-0612-06	6.0	+0.030 +0.105	12.0	14.0	6.0	3.0
MFM-0612-10	6.0	+0.030 +0.105	12.0	14.0	10.0	3.0
MFM-0711-08	7.0	+0.040 +0.130	11.0	15.0	8.0	2.0
MFM-0811-05	8.0	+0.040 +0.130	11.0	13.0	5.0	2.0
MFM-0811-08	8.0	+0.040 +0.130	11.0	13.0	8.0	2.0
MFM-0812-06	8.0	+0.040 +0.130	12.0	16.0	6.0	2.0
MFM-0812-08	8.0	+0.040 +0.130	12.0	16.0	8.0	2.0
MFM-0812-12	8.0	+0.040 +0.130	12.0	16.0	12.0	2.0
MFM-0814-06	8.0	+0.040 +0.130	14.0	18.0	6.0	3.0
MFM-0814-10	8.0	+0.040 +0.130	14.0	18.0	10.0	3.0
MFM-081416-06	8.0	+0.040 +0.130	14.0	16.0	6.0	3.0

* after pressfit. Testing methods ► page 55



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order part number
example MFM-0103-02



Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
MFM-081416-10	8.0	+0.040 +0.130	14.0	16.0	10.0	3.0
MFM-0914-06	9.0	+0.040 +0.130	14.0	19.0	6.0	2.0
MFM-0914-10	9.0	+0.040 +0.130	14.0	19.0	10.0	2.0
MFM-0914-14	9.0	+0.040 +0.130	14.0	19.0	14.0	2.0
MFM-1014-10	10.0	+0.040 +0.130	14.0	19.0	10.0	2.0
MFM-1014-14	10.0	+0.040 +0.130	14.0	17.5	14.0	1.0
MFM-1014-19	10.0	+0.040 +0.130	14.0	17.5	19.0	1.0
MFM-1014-24	10.0	+0.040 +0.130	14.0	17.5	24.0	1.0
MFM-1014-34	10.0	+0.040 +0.130	14.0	17.5	34.0	1.0
MFM-101420-12	10.0	+0.040 +0.130	14.0	20.0	12.0	2.0
MFM-1016-08	10.0	+0.040 +0.130	16.0	22.0	8.0	3.0
MFM-1016-10	10.0	+0.040 +0.130	16.0	22.0	10.0	3.0
MFM-1016-16	10.0	+0.040 +0.130	16.0	22.0	16.0	3.0
MFM-101620-06	10.0	+0.040 +0.130	16.0	20.0	6.0	3.0
MFM-101620-10	10.0	+0.040 +0.130	16.0	20.0	10.0	3.0
MFM-1216-10	12.0	+0.050 +0.160	16.0	22.0	10.0	2.0
MFM-1216-20	12.0	+0.050 +0.160	16.0	22.0	20.0	2.0
MFM-1218-08	12.0	+0.050 +0.160	18.0	24.0	8.0	3.0
MFM-1218-10	12.0	+0.050 +0.160	18.0	22.0	10.0	3.0
MFM-1218-12	12.0	+0.050 +0.160	18.0	24.0	12.0	3.0
MFM-1218-15	12.0	+0.050 +0.160	18.0	22.0	15.0	3.0
MFM-1218-20	12.0	+0.050 +0.160	18.0	22.0	20.0	3.0
MFM-1420-07	14.0	+0.050 +0.160	20.0	25.0	7.0	3.0
MFM-1420-10	14.0	+0.050 +0.160	20.0	25.0	10.0	3.0
MFM-1420-15	14.0	+0.050 +0.160	20.0	25.0	15.0	3.0
MFM-1420-20	14.0	+0.050 +0.160	20.0	25.0	20.0	3.0
MFM-1521-10	15.0	+0.050 +0.160	21.0	27.0	10.0	3.0
MFM-1521-15	15.0	+0.050 +0.160	21.0	27.0	15.0	3.0
MFM-1521-20	15.0	+0.050 +0.160	21.0	27.0	20.0	3.0
MFM-1521-25	15.0	+0.050 +0.160	21.0	27.0	25.0	3.0
MFM-1618-12	16.0	+0.050 +0.160	18.0	24.0	12.0	1.0
MFM-1622-12	16.0	+0.050 +0.160	22.0	28.0	12.0	3.0
MFM-1622-15	16.0	+0.050 +0.160	22.0	28.0	15.0	3.0
MFM-1622-20	16.0	+0.050 +0.160	22.0	28.0	20.0	3.0
MFM-1622-25	16.0	+0.050 +0.160	22.0	28.0	25.0	3.0
MFM-1824-08	18.0	+0.050 +0.160	24.0	30.0	8.0	3.0
MFM-1824-12	18.0	+0.050 +0.160	24.0	30.0	12.0	3.0
MFM-1824-18	18.0	+0.050 +0.160	24.0	30.0	18.0	3.0
MFM-1824-20	18.0	+0.050 +0.160	24.0	30.0	20.0	3.0
MFM-1824-30	18.0	+0.050 +0.160	24.0	30.0	30.0	3.0
MFM-182426-078	18.0	+0.050 +0.160	24.0	26.0	7.8	3.0
MFM-192427-12	19.0	+0.065 +0.195	24.0	27.0	12.0	2.0

* after pressfit. Testing methods ► page 55



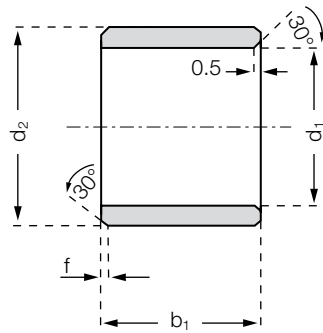
Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
MFM-2026-15	20.0	+0.065 +0.195	26.0	32.0	15.0	3.0
MFM-2026-20	20.0	+0.065 +0.195	26.0	32.0	20.0	3.0
MFM-202628-12	20.0	+0.065 +0.195	26.0	28.0	12.0	3.0
MFM-2026-30	20.0	+0.065 +0.195	26.0	32.0	30.0	3.0
MFM-2228-15	22.0	+0.065 +0.195	28.0	34.0	15.0	3.0
MFM-2228-20	22.0	+0.065 +0.195	28.0	34.0	20.0	3.0
MFM-2228-30	22.0	+0.065 +0.195	28.0	34.0	30.0	3.0
MFM-2430-15	24.0	+0.065 +0.195	30.0	36.0	15.0	3.0
MFM-2430-20	24.0	+0.065 +0.195	30.0	36.0	20.0	3.0
MFM-2430-30	24.0	+0.065 +0.195	30.0	36.0	30.0	3.0
MFM-2532-12	25.0	+0.065 +0.195	32.0	38.0	12.0	4.0
MFM-2532-15	25.0	+0.065 +0.195	32.0	38.0	15.0	4.0
MFM-2532-20	25.0	+0.065 +0.195	32.0	38.0	20.0	4.0
MFM-2532-30	25.0	+0.065 +0.195	32.0	38.0	30.0	4.0
MFM-2532-40	25.0	+0.065 +0.195	32.0	38.0	40.0	4.0
MFM-2734-20	27.0	+0.065 +0.195	34.0	40.0	20.0	4.0
MFM-2734-30	27.0	+0.065 +0.195	34.0	40.0	30.0	4.0
MFM-2734-40	27.0	+0.065 +0.195	34.0	40.0	40.0	4.0
MFM-2836-20	28.0	+0.065 +0.195	36.0	42.0	20.0	4.0
MFM-2836-30	28.0	+0.065 +0.195	36.0	42.0	30.0	4.0
MFM-2836-40	28.0	+0.065 +0.195	36.0	42.0	40.0	4.0
MFM-3035-20	30.0	+0.065 +0.195	35.0	44.0	20.0	4.0
MFM-3038-20	30.0	+0.065 +0.195	38.0	44.0	20.0	4.0
MFM-3038-30	30.0	+0.065 +0.195	38.0	44.0	30.0	4.0
MFM-3038-40	30.0	+0.065 +0.195	38.0	44.0	40.0	4.0
MFM-3240-20	32.0	+0.080 +0.240	40.0	46.0	20.0	4.0
MFM-3240-30	32.0	+0.080 +0.240	40.0	46.0	30.0	4.0
MFM-3240-40	32.0	+0.080 +0.240	40.0	46.0	40.0	4.0

* after pressfit. Testing methods ► page 55

Sleeve bearing



Order key

MSI-0203-02



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form S)
- Material iglidur® M250

Chamfer in relation to the d1

d1 [Inch]:	Ø 0,040–0,236	Ø 0,236–0,472	Ø 0,472–1,18	Ø > 1,18
f [Inch]:	0,012	0,019	0,031	0,047

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
MSI-0203-02	1/8	3/16	1/8	.1280	.1262	.1990	.1985	.1250	.1241
MSI-0203-04	1/8	3/16	1/4	.1280	.1262	.1990	.1985	.1250	.1241
MSI-0204-02	1/8	1/4	1/8	.1280	.1262	.2515	.2510	.1250	.1241
MSI-0204-03	1/8	1/4	3/16	.1280	.1262	.2515	.2510	.1250	.1241
MSI-0204-04	1/8	1/4	1/4	.1280	.1262	.2515	.2510	.1250	.1241
MSI-0204-06	1/8	1/4	3/8	.1280	.1262	.2515	.2510	.1250	.1241
MSI-0304-04	3/16	1/4	1/4	.1905	.1887	.2515	.2510	.1875	.1866
MSI-0304-06	3/16	1/4	3/8	.1905	.1887	.2515	.2510	.1875	.1866
MSI-0304-08	3/16	1/4	1/2	.1905	.1887	.2515	.2510	.1875	.1866
MSI-0305-02	3/16	5/16	1/8	.1905	.1887	.3140	.3135	.1875	.1866
MSI-0305-03	3/16	5/16	3/16	.1905	.1887	.3140	.3135	.1875	.1866
MSI-0305-04	3/16	5/16	1/4	.1905	.1887	.3140	.3135	.1875	.1866
MSI-0305-05	3/16	5/16	5/16	.1905	.1887	.3140	.3135	.1875	.1866
MSI-0305-06	3/16	5/16	3/8	.1905	.1887	.3140	.3135	.1875	.1866
MSI-0305-08	3/16	5/16	1/2	.1905	.1887	.3140	.3135	.1875	.1866
MSI-0405-03	1/4	5/16	3/16	.2539	.2516	.3140	.3135	.2500	.2491
MSI-0405-06	1/4	5/16	3/8	.2539	.2516	.3140	.3135	.2500	.2491
MSI-0405-08	1/4	5/16	1/2	.2539	.2516	.3140	.3135	.2500	.2491
MSI-0406-02	1/4	3/8	1/8	.2539	.2516	.3765	.3760	.2500	.2491
MSI-0406-03	1/4	3/8	3/16	.2539	.2516	.3765	.3760	.2500	.2491
MSI-0406-04	1/4	3/8	1/4	.2539	.2516	.3765	.3760	.2500	.2491
MSI-0406-05	1/4	3/8	5/16	.2539	.2516	.3765	.3760	.2500	.2491
MSI-0406-06	1/4	3/8	3/8	.2539	.2516	.3765	.3760	.2500	.2491
MSI-0406-08	1/4	3/8	1/2	.2539	.2516	.3765	.3760	.2500	.2491
MSI-0406-10	1/4	3/8	5/8	.2539	.2516	.3765	.3760	.2500	.2491

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/m250



order part number
example MSI-0203-02



Sleeve bearing

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
MSI-0406-12	1/4	3/8	3/4	.2539	.2516	.3765	.3760	.2500	.2491
MSI-0506-04	5/16	3/8	1/4	.3164	.3141	.3765	.3760	.3125	.3116
MSI-0506-06	5/16	3/8	3/8	.3164	.3141	.3765	.3760	.3125	.3116
MSI-0506-08	5/16	3/8	1/2	.3164	.3141	.3765	.3760	.3125	.3116
MSI-0507-03	5/16	7/16	3/16	.3164	.3141	.4390	.4385	.3125	.3116
MSI-0507-04	5/16	7/16	1/4	.3164	.3141	.4390	.4385	.3125	.3116
MSI-0507-05	5/16	7/16	5/16	.3164	.3141	.4390	.4385	.3125	.3116
MSI-0507-06	5/16	7/16	3/8	.3164	.3141	.4390	.4385	.3125	.3116
MSI-0507-08	5/16	7/16	1/2	.3164	.3141	.4390	.4385	.3125	.3116
MSI-0507-10	5/16	7/16	5/8	.3164	.3141	.4390	.4385	.3125	.3116
MSI-0507-12	5/16	7/16	3/4	.3164	.3141	.4390	.4385	.3125	.3116
MSI-0607-04	3/8	7/16	1/4	.3789	.3766	.4390	.4385	.3750	.3741
MSI-0607-06	3/8	7/16	3/8	.3789	.3766	.4390	.4385	.3750	.3741
MSI-0607-08	3/8	7/16	1/2	.3789	.3766	.4390	.4385	.3750	.3741
MSI-0608-04	3/8	1/2	1/4	.3789	.3766	.5015	.5010	.3750	.3741
MSI-0608-05	3/8	1/2	5/16	.3789	.3766	.5015	.5010	.3750	.3741
MSI-0608-06	3/8	1/2	3/8	.3789	.3766	.5015	.5010	.3750	.3741
MSI-0608-08	3/8	1/2	1/2	.3789	.3766	.5015	.5010	.3750	.3741
MSI-0608-10	3/8	1/2	5/8	.3789	.3766	.5015	.5010	.3750	.3741
MSI-0608-12	3/8	1/2	3/4	.3789	.3766	.5015	.5010	.3750	.3741
MSI-0608-16	3/8	1/2	1	.3789	.3766	.5015	.5010	.3750	.3741
MSI-0709-06	7/16	9/16	3/8	.4422	.4395	.5941	.5934	.4375	.4365
MSI-0709-08	7/16	9/16	1/2	.4422	.4395	.5941	.5934	.4375	.4365
MSI-0810-04	1/2	5/8	1/4	.5047	.5020	.6260	.6250	.5000	.4990
MSI-0810-05	1/2	5/8	5/16	.5047	.5020	.6260	.6250	.5000	.4990
MSI-0810-06	1/2	5/8	3/8	.5047	.5020	.6260	.6250	.5000	.4990
MSI-0810-08	1/2	5/8	1/2	.5047	.5020	.6260	.6250	.5000	.4990
MSI-0810-10	1/2	5/8	5/8	.5047	.5020	.6260	.6250	.5000	.4990
MSI-0810-12	1/2	5/8	3/4	.5047	.5020	.6260	.6250	.5000	.4990
MSI-0810-16	1/2	5/8	1	.5047	.5020	.6260	.6250	.5000	.4990
MSI-1012-04	5/8	3/4	1/4	.6297	.6270	.7510	.7500	.6250	.6240
MSI-1012-06	5/8	3/4	3/8	.6297	.6270	.7510	.7500	.6250	.6240
MSI-1012-08	5/8	3/4	1/2	.6297	.6270	.7510	.7500	.6250	.6240
MSI-1012-10	5/8	3/4	5/8	.6297	.6270	.7510	.7500	.6250	.6240
MSI-1012-12	5/8	3/4	3/4	.6297	.6270	.7510	.7500	.6250	.6240
MSI-1012-16	5/8	3/4	1	.6297	.6270	.7510	.7500	.6250	.6240
MSI-1012-26	5/8	3/4	1 5/8	.6297	.6270	.7510	.7500	.6250	.6240
MSI-1013-06	5/8	13/16	3/8	.6297	.6270	.8135	.8125	.6250	.6240
MSI-1013-08	5/8	13/16	1/2	.6297	.6270	.8135	.8125	.6250	.6240
MSI-1013-10	5/8	13/16	5/8	.6297	.6270	.8135	.8125	.6250	.6240
MSI-1013-12	5/8	13/16	3/4	.6297	.6270	.8135	.8125	.6250	.6240
MSI-1013-16	5/8	13/16	1	.6297	.6270	.8135	.8125	.6250	.6240

* after pressfit. Testing methods ► page 55



Sleeve bearing

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
MSI-1113-12	11/16	13/16	3/4	.6921	.6893	.8135	.8125	.6875	.6865
MSI-1113-14	11/16	13/16	7/8	.6921	.6893	.8135	.8125	.6875	.6865
MSI-1113-16	11/16	13/16	1	.6922	.6900	.8135	.8125	.6875	.6865
MSI-1214-06	3/4	7/8	3/8	.7559	.7525	.8760	.8750	.7500	.7490
MSI-1214-12	3/4	7/8	3/4	.7559	.7525	.8760	.8750	.7500	.7490
MSI-1214-16	3/4	7/8	1	.7559	.7525	.8760	.8750	.7500	.7490
MSI-1214-24	3/4	7/8	1 1/2	.7559	.7525	.8760	.8750	.7500	.7490
MSI-1216-06	3/4	1	3/8	.7559	.7525	1.0010	1.0000	.7500	.7490
MSI-1216-08	3/4	1	1/2	.7559	.7525	1.0010	1.0000	.7500	.7490
MSI-1216-10	3/4	1	5/8	.7559	.7525	1.0010	1.0000	.7500	.7490
MSI-1216-12	3/4	1	3/4	.7559	.7525	1.0010	1.0000	.7500	.7490
MSI-1216-16	3/4	1	1	.7559	.7525	1.0010	1.0000	.7500	.7490
MSI-1216-20	3/4	1	1 1/4	.7559	.7525	1.0010	1.0000	.7500	.7490
MSI-1216-24	3/4	1	1 1/2	.7559	.7525	1.0010	1.0000	.7500	.7490
MSI-1316-08	13/16	1	1/2	.8184	.8151	1.0010	1.0000	.8126	.8116
MSI-1416-12	7/8	1	3/4	.8809	.8775	1.0010	1.0000	.8750	.8740
MSI-1416-16	7/8	1	1	.8809	.8775	1.0010	1.0000	.8750	.8740
MSI-1416-24	7/8	1	1 1/2	.8809	.8775	1.0010	1.0000	.8750	.8740
MSI-1418-08	7/8	1 1/8	1/2	.8809	.8775	1.1260	1.1250	.8750	.8740
MSI-1418-12	7/8	1 1/8	3/4	.8809	.8775	1.1260	1.1250	.8750	.8740
MSI-1418-16	7/8	1 1/8	1	.8809	.8775	1.1260	1.1250	.8750	.8740
MSI-1418-24	7/8	1 1/8	1 1/2	.8809	.8775	1.1260	1.1250	.8750	.8740
MSI-1618-12	1	1 1/8	3/4	1.0059	1.0025	1.1260	1.1250	1.0000	.9990
MSI-1618-16	1	1 1/8	1	1.0059	1.0025	1.1260	1.1250	1.0000	.9990
MSI-1618-24	1	1 1/8	1 1/2	1.0059	1.0025	1.1260	1.1250	1.0000	.9990
MSI-1620-08	1	1 1/4	1/2	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
MSI-1620-10	1	1 1/4	5/8	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
MSI-1620-12	1	1 1/4	3/4	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
MSI-1620-16	1	1 1/4	1	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
MSI-1620-24	1	1 1/4	1 1/2	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
MSI-1620-32	1	1 1/4	2	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
MSI-1822-16	1 1/8	1 3/8	1	1.1309	1.1275	1.3760	1.3750	1.1250	1.1240
MSI-1822-24	1 1/8	1 3/8	1 1/2	1.1309	1.1275	1.3760	1.3750	1.1250	1.1240
MSI-2024-12	1 1/4	1 1/2	3/4	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
MSI-2024-16	1 1/4	1 1/2	1	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
MSI-2024-22	1 1/4	1 1/2	1 3/8	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
MSI-2024-24	1 1/4	1 1/2	1 1/2	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
MSI-2024-40	1 1/4	1 1/2	2 1/2	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
MSI-2226-16	1 3/8	1 5/8	1	1.3850	1.3182	1.6255	1.6245	1.3750	1.3740

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/m250



order part number
example MSI-1113-12



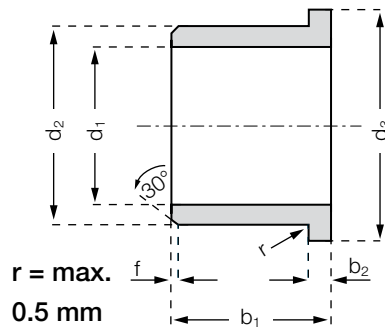
Sleeve bearing

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
MSI-2428-12	1 1/2	1 3/4	3/4	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990
MSI-2428-16	1 1/2	1 3/4	1	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990
MSI-2428-24	1 1/2	1 3/4	1 1/2	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990
MSI-2428-40	1 1/2	1 3/4	2 1/2	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990
MSI-2630-16	1 5/8	1 7/8	1	1.6350	1.6282	1.8755	1.8745	1.6250	1.6240
MSI-2832-08	1 3/4	2	1/2	1.7560	1.7532	2.0005	1.9995	1.7500	1.7490
MSI-2832-12	1 3/4	2	3/4	1.7560	1.7532	2.0005	1.9995	1.7500	1.7490
MSI-2832-16	1 3/4	2	1	1.7560	1.7532	2.0005	1.9995	1.7500	1.7490
MSI-2832-24	1 3/4	2	1 1/2	1.7560	1.7532	2.0005	1.9995	1.7500	1.7490
MSI-2832-40	1 3/4	2	2 1/2	1.7560	1.7532	2.0005	1.9995	1.7500	1.7490
MSI-3236-16	2	2 1/4	1	2.0100	2.0032	2.2505	2.2495	2.0000	1.9990
MSI-3236-24	2	2 1/4	1 1/2	2.0100	2.0032	2.2505	2.2495	2.0000	1.9990
MSI-3236-32	2	2 1/4	2	2.0100	2.0032	2.2505	2.2495	2.0000	1.9990
MSI-3236-40	2	2 1/4	2 1/2	2.0100	2.0032	2.2505	2.2495	2.0000	1.9990
MSI-4852-16	3	3 1/4	1	3.0114	3.0039	3.2505	3.2495	3.0000	2.9990

* after pressfit. Testing methods ► page 55

Flange bearing



Order key

MFI-0203-02



Length b1
Outer diameter d2
Inner diameter d1
Inch
Type (Form F)
Material iglidur® M250

Chamfer in relation to the d1

d1 [Inch]:	Ø 0,040–0,236	Ø 0,236–0,472	Ø 0,472–1,18	Ø > 1,18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
MFI-0203-02	1/8	3/16	1/8	.3125	.032	.1280	.1262	.1885	.1880	.1250	.1241
MFI-0203-04	1/8	3/16	1/4	.3125	.032	.1280	.1262	.1885	.1880	.1250	.1241
MFI-0204-02	1/8	1/4	1/8	.360	.047	.1280	.1262	.2515	.2510	.1250	.1241
MFI-0204-03	1/8	1/4	3/16	.360	.047	.1280	.1262	.2515	.2510	.1250	.1241
MFI-0204-04	1/8	1/4	1/4	.360	.047	.1280	.1262	.2515	.2510	.1250	.1241
MFI-0204-06	1/8	1/4	3/8	.360	.047	.1280	.1262	.2515	.2510	.1250	.1241
MFI-0204-12	1/8	1/4	3/4	.360	.047	.1280	.1262	.2515	.2510	.1250	.1241
MFI-0304-04	3/16	1/4	1/4	.375	.032	.1905	.1887	.2515	.2510	.1875	.1866
MFI-0304-06	3/16	1/4	3/8	.375	.032	.1905	.1887	.2515	.2510	.1875	.1866
MFI-0304-08	3/16	1/4	1/2	.375	.032	.1905	.1887	.2515	.2510	.1875	.1866
MFI-0305-03	3/16	5/16	3/16	.370	.047	.1905	.1887	.3140	.3135	.1875	.1866
MFI-0305-04	3/16	5/16	1/4	.370	.047	.1905	.1887	.3140	.3135	.1875	.1866
MFI-0305-05	3/16	5/16	5/16	.370	.047	.1905	.1887	.3140	.3135	.1875	.1866
MFI-0305-06	3/16	5/16	3/8	.370	.047	.1905	.1887	.3140	.3135	.1875	.1866
MFI-0305-08	3/16	5/16	1/2	.370	.047	.1905	.1887	.3140	.3135	.1875	.1866
MFI-0405-03	1/4	5/16	3/16	.4375	.047	.2539	.2516	.3140	.3135	.2500	.2491
MFI-0405-04	1/4	5/16	1/4	.4375	.032	.2539	.2516	.3140	.3135	.2500	.2491
MFI-0405-06	1/4	5/16	3/8	.4375	.032	.2539	.2516	.3140	.3135	.2500	.2491
MFI-0405-07	1/4	5/16	7/16	.4375	.047	.2539	.2516	.3140	.3135	.2500	.2491
MFI-0405-08	1/4	5/16	1/2	.4375	.032	.2539	.2516	.3140	.3135	.2500	.2491
MFI-0405-12	1/4	5/16	3/4	.4375	.047	.2539	.2516	.3140	.3135	.2500	.2491
MFI-0406-02	1/4	3/8	1/8	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491
MFI-0406-03	1/4	3/8	3/16	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491
MFI-0406-04	1/4	3/8	1/4	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491
MFI-0406-06	1/4	3/8	3/8	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/m250



order part number
example MFI-0203-02



Flange bearing

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
MFI-0406-08	1/4	3/8	1/2	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491
MFI-0406-10	1/4	3/8	5/8	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491
MFI-0406-12	1/4	3/8	3/4	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491
MFI-0506-04	5/16	3/8	1/4	.500	.032	.3164	.3141	.3765	.3760	.3125	.3116
MFI-0506-06	5/16	3/8	3/8	.500	.032	.3164	.3141	.3765	.3760	.3125	.3116
MFI-0506-08	5/16	3/8	1/2	.500	.032	.3164	.3141	.3765	.3760	.3125	.3116
MFI-0506-15	5/16	3/8	15/16	.500	.032	.3164	.3141	.3765	.3760	.3125	.3116
MFI-0507-03	5/16	7/16	3/16	.560	.062	.3164	.3141	.4390	.4385	.3125	.3116
MFI-0507-04	5/16	7/16	1/4	.560	.062	.3164	.3141	.4390	.4385	.3125	.3116
MFI-0507-05	5/16	7/16	5/16	.560	.062	.3164	.3141	.4390	.4385	.3125	.3116
MFI-0507-06	5/16	7/16	3/8	.560	.062	.3164	.3141	.4390	.4385	.3125	.3116
MFI-0507-08	5/16	7/16	1/2	.560	.062	.3164	.3141	.4390	.4385	.3125	.3116
MFI-0507-10	5/16	7/16	5/8	.560	.062	.3164	.3141	.4390	.4385	.3125	.3116
MFI-0507-12	5/16	7/16	3/4	.560	.062	.3164	.3141	.4390	.4385	.3125	.3116
MFI-0607-04	3/8	7/16	1/4	.5625	.032	.3789	.3766	.4390	.4385	.3750	.3741
MFI-0607-06	3/8	7/16	3/8	.5625	.032	.3789	.3766	.4390	.4385	.3750	.3741
MFI-0607-08	3/8	7/16	1/2	.5625	.032	.3789	.3766	.4390	.4385	.3750	.3741
MFI-0608-02	3/8	1/2	1/8	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
MFI-0608-03	3/8	1/2	3/16	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
MFI-0608-04	3/8	1/2	1/4	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
MFI-0608-05	3/8	1/2	5/16	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
MFI-0608-06	3/8	1/2	3/8	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
MFI-0608-08	3/8	1/2	1/2	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
MFI-0608-10	3/8	1/2	5/8	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
MFI-0608-12	3/8	1/2	3/4	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
MFI-0608-16	3/8	1/2	1	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
MFI-0709-06	7/16	9/16	3/8	.687	.062	.4422	.4395	.5941	.5934	.4375	.4365
MFI-0709-08	7/16	9/16	1/2	.687	.062	.4422	.4395	.5941	.5934	.4375	.4365
MFI-0810-02	1/2	5/8	1/8	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990
MFI-0810-04	1/2	5/8	1/4	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990
MFI-0810-05	1/2	5/8	5/16	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990
MFI-0810-06	1/2	5/8	3/8	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990
MFI-0810-08	1/2	5/8	1/2	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990
MFI-0810-10	1/2	5/8	5/8	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990
MFI-0810-12	1/2	5/8	3/4	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990
MFI-0810-16	1/2	5/8	1	.875	.062	.5047	.5020	.6260	.6250	.5000	.4990
MFI-1012-06	5/8	3/4	3/8	1.000	.062	.6297	.6270	.7510	.7500	.6250	.6240
MFI-1012-08	5/8	3/4	1/2	1.000	.062	.6297	.6270	.7510	.7500	.6250	.6240
MFI-1012-10	5/8	3/4	5/8	1.000	.062	.6297	.6270	.7510	.7500	.6250	.6240
MFI-1012-12	5/8	3/4	3/4	1.000	.062	.6297	.6270	.7510	.7500	.6250	.6240
MFI-1012-16	5/8	3/4	1	1.000	.062	.6297	.6270	.7510	.7500	.6250	.6240
MFI-1012-24	5/8	3/4	1 1/2	1.000	.062	.6297	.6270	.7510	.7500	.6250	.6240

* after pressfit. Testing methods ► page 55



Flange bearing

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
MFI-1013-08	5/8	13/16	1/2	1.063	.062	.6297	.6270	.8135	.8125	.6250	.6240
MFI-1013-10	5/8	13/16	5/8	1.063	.062	.6297	.6270	.8135	.8125	.6250	.6240
MFI-1013-12	5/8	13/16	3/4	1.063	.062	.6297	.6270	.8135	.8125	.6250	.6240
MFI-1013-16	5/8	13/16	1	1.063	.062	.6297	.6270	.8135	.8125	.6250	.6240
MFI-1214-06	3/4	7/8	3/8	1.125	.062	.7559	.7525	.8760	.8750	.6250	.6240
MFI-1214-08	3/4	7/8	1/2	1.125	.062	.7559	.7525	.8760	.8750	.6250	.6240
MFI-1214-12	3/4	7/8	3/4	1.125	.062	.7559	.7525	.8760	.8750	.7500	.7490
MFI-1214-16	3/4	7/8	1	1.125	.062	.7559	.7525	.8760	.8750	.7500	.7490
MFI-1214-24	3/4	7/8	1 1/2	1.125	.062	.7559	.7525	.8760	.8750	.7500	.7490
MFI-1216-08	3/4	1	1/2	1.250	.156	.7559	.7525	1.0010	1.0000	.7500	.7490
MFI-1216-10	3/4	1	5/8	1.250	.156	.7559	.7525	1.0010	1.0000	.7500	.7490
MFI-1216-12	3/4	1	3/4	1.250	.156	.7559	.7525	1.0010	1.0000	.7500	.7490
MFI-1216-16	3/4	1	1	1.250	.156	.7559	.7525	1.0010	1.0000	.7500	.7490
MFI-1216-24	3/4	1	1 1/2	1.250	.156	.7559	.7525	1.0010	1.0000	.7500	.7490
MFI-1416-12	7/8	1	3/4	1.250	.062	.8809	.8775	1.0010	1.0000	.8750	.8740
MFI-1416-16	7/8	1	1	1.250	.062	.8809	.8775	1.0010	1.0000	.8750	.8740
MFI-1416-24	7/8	1	1 1/2	1.250	.062	.8809	.8775	1.0010	1.0000	.8750	.8740
MFI-1418-08	7/8	1 1/8	1/2	1.375	.156	.8809	.8775	1.1260	1.1250	.8750	.8740
MFI-1418-12	7/8	1 1/8	3/4	1.375	.156	.8809	.8775	1.1260	1.1250	.8750	.8740
MFI-1418-16	7/8	1 1/8	1	1.375	.156	.8809	.8775	1.1260	1.1250	.8750	.8740
MFI-1418-24	7/8	1 1/8	1 1/2	1.375	.156	.8809	.8775	1.1260	1.1250	.8750	.8740
MFI-1618-03	1	1 1/8	3/16	1.375	.062	1.0059	1.0025	1.1260	1.1250	1.0000	.9990
MFI-1618-12	1	1 1/8	3/4	1.375	.062	1.0059	1.0025	1.1260	1.1250	1.0000	.9990
MFI-1618-16	1	1 1/8	1	1.375	.062	1.0059	1.0025	1.1260	1.1250	1.0000	.9990
MFI-1618-24	1	1 1/8	1 1/2	1.375	.062	1.0059	1.0025	1.1260	1.1250	1.0000	.9990
MFI-1620-08	1	1 1/4	1/2	1.500	.188	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
MFI-1620-10	1	1 1/4	5/8	1.500	.188	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
MFI-1620-12	1	1 1/4	3/4	1.500	.188	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
MFI-1620-16	1	1 1/4	1	1.500	.188	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
MFI-1620-24	1	1 1/4	1 1/2	1.500	.188	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
MFI-2024-07	1 1/4	1 1/2	7/16	1.750	.200	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
MFI-2024-12	1 1/4	1 1/2	3/4	1.750	.200	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
MFI-2024-16	1 1/4	1 1/2	1	1.750	.200	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
MFI-2024-24	1 1/4	1 1/2	1 1/2	1.750	.200	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
MFI-2226-12	1 3/8	1 5/8	3/4	1.875	.125	1.3850	1.3182	1.6255	1.6245	1.3750	1.3740
MFI-2226-16	1 3/8	1 5/8	1	1.875	.125	1.3850	1.3182	1.6255	1.6245	1.3750	1.3740
MFI-2428-12	1 1/2	1 3/4	3/4	2.000	.125	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990
MFI-2428-16	1 1/2	1 3/4	1	2.000	.125	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990
MFI-2428-24	1 1/2	1 3/4	1 1/2	2.000	.125	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/m250



order part number
example MFI-1013-08



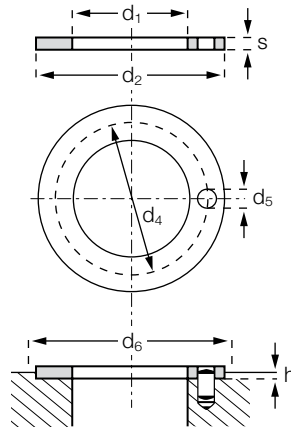
Flange bearing

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
MFI-2630-16	1 5/8	1 7/8	1	2.125	.125	1.6350	1.6282	1.8755	1.8745	1.6250	1.6240
MFI-2832-12	1 3/4	2	3/4	2.250	.125	1.7560	1.7532	2.0005	1.9995	1.7500	1.7490
MFI-2832-16	1 3/4	2	1	2.250	.125	1.7560	1.7532	2.0005	1.9995	1.7500	1.7490
MFI-2832-24	1 3/4	2	1 1/2	2.250	.125	1.7560	1.7532	2.0005	1.9995	1.7500	1.7490
MFI-3236-16	2	2 1/4	1	2.500	.125	2.0100	2.0032	2.2550	2.2540	2.0000	1.9990
MFI-3236-24	2	2 1/4	1 1/2	2.500	.125	2.0100	2.0032	2.2550	2.2540	2.0000	1.9990
MFI-3236-32	2	2 1/4	2	2.500	.125	2.0100	2.0032	2.2550	2.2540	2.0000	1.9990

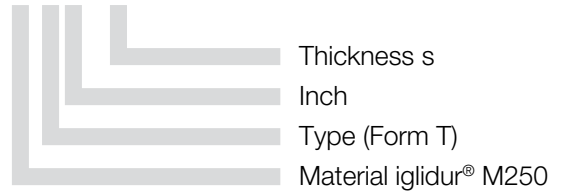
* after pressfit. Testing methods ► page 55

Thrust washer



Order key

MTI-04



Dimensions according to ISO 3547-1 and special dimensions

Dimensions [Inch]

Part number	d1 (nominal)	d1*		d2		s
		max.	min.	max.	min.	
MTI-04	1/4	.2609	.2550	.6200	.6094	.0900
MTI-05	5/16	.3271	.3189	.6874	.6767	.0900
MTI-06	3/8	.3850	.3780	.7409	.7394	.0900
MTI-08	1/2	.5101	.5030	.8200	.8070	.0900
MTI-10	5/8	.6371	.6300	1.0000	.9870	.0940
MTI-12	3/4	.7675	.7600	1.0630	1.0500	.0940
MTI-16	1	1.0200	1.0100	1.5000	1.4843	.1250
MTI-20	1 1/4	1.2998	1.2900	2.1400	2.1220	.0980
MTI-24	1 1/2	1.6000	1.5500	2.6000	2.5500	.1250

* after pressfit. Testing methods ► page 55



delivery available
time from stock

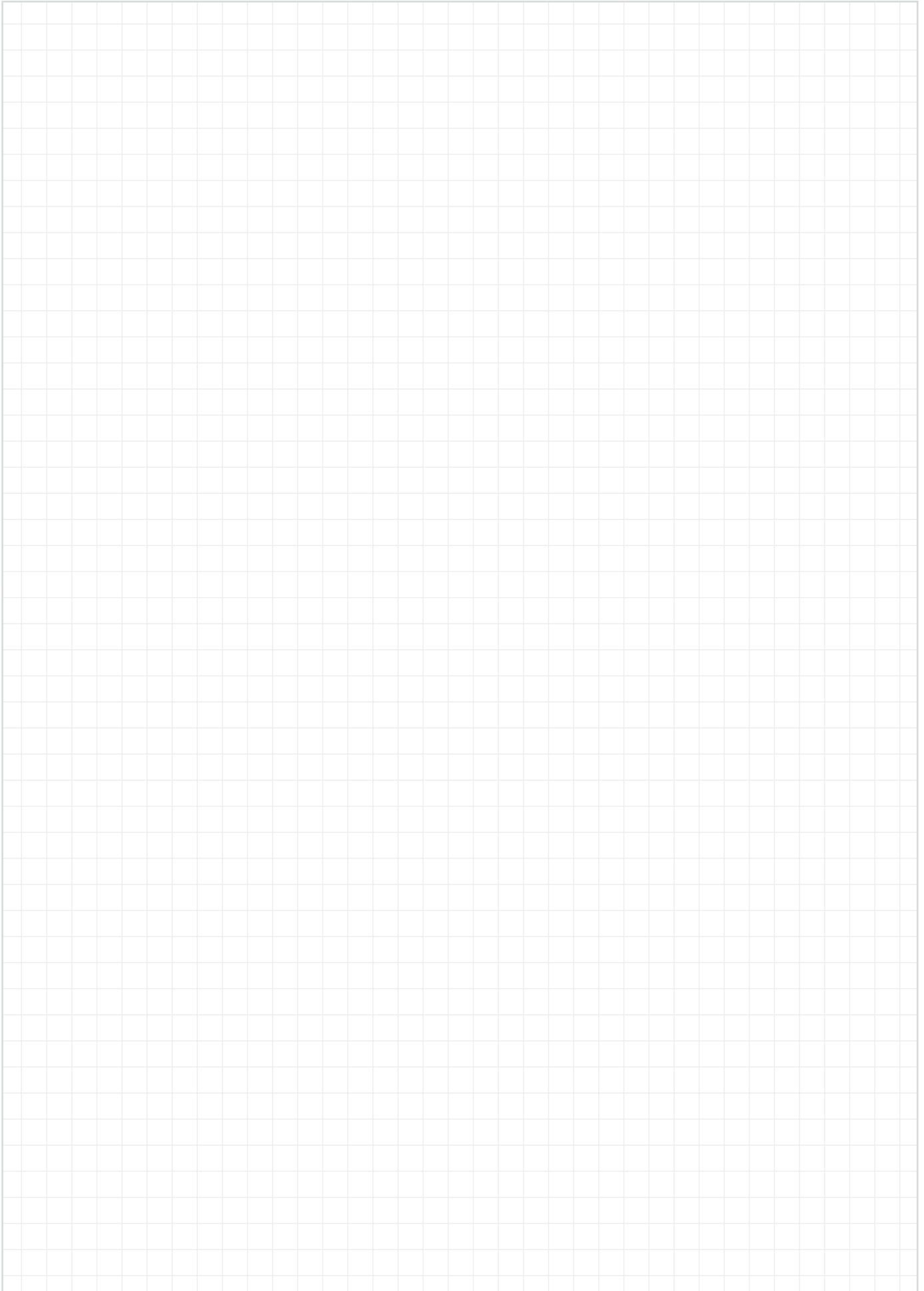


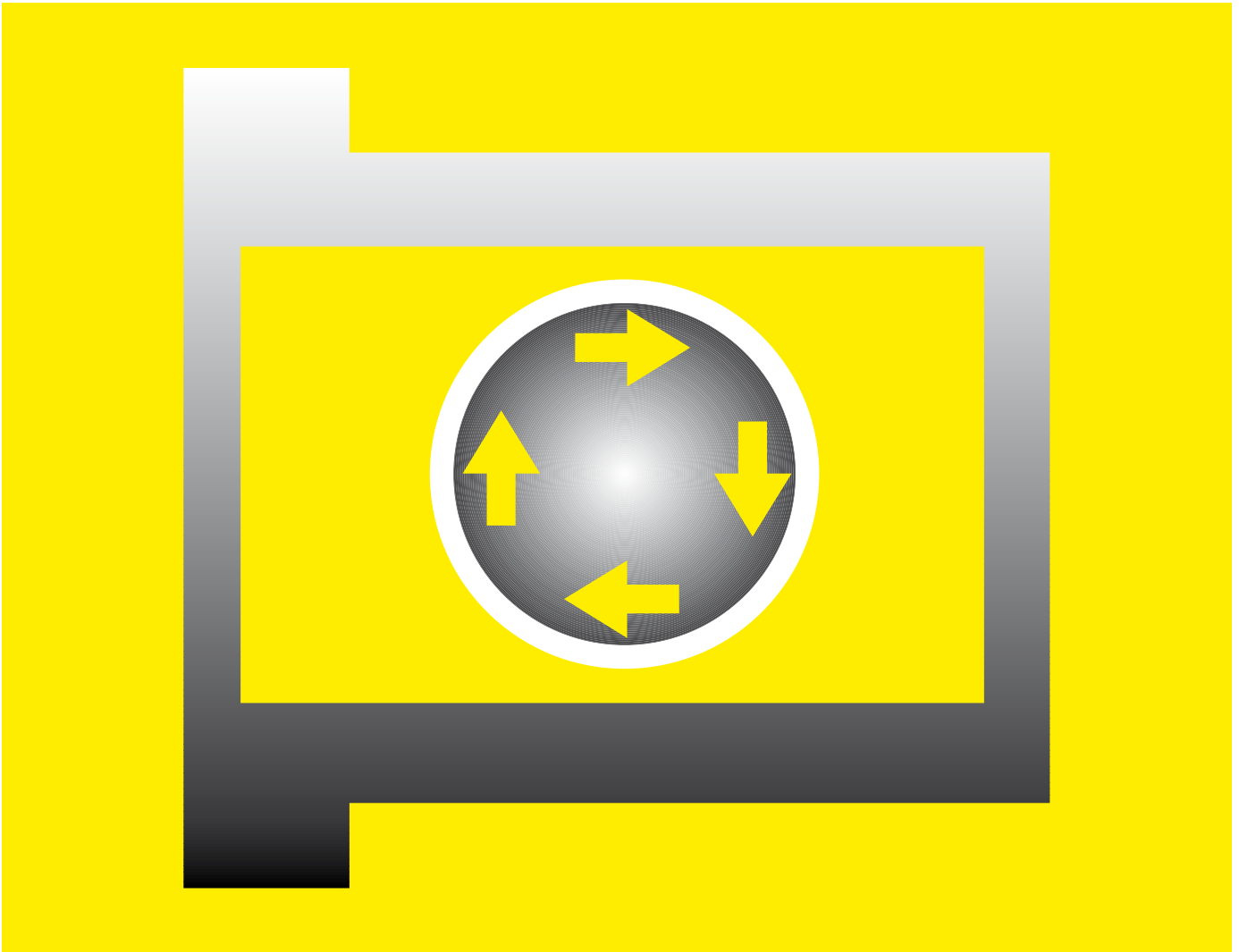
prices price list online
www.igus.co.uk/en/m250



order part number
example MTI-04

My Sketches





iglidur® W300 – The Marathon Runner: long service life, also for soft shafts



Over 400 sizes available from stock

For especially long service life

Low coefficient of friction

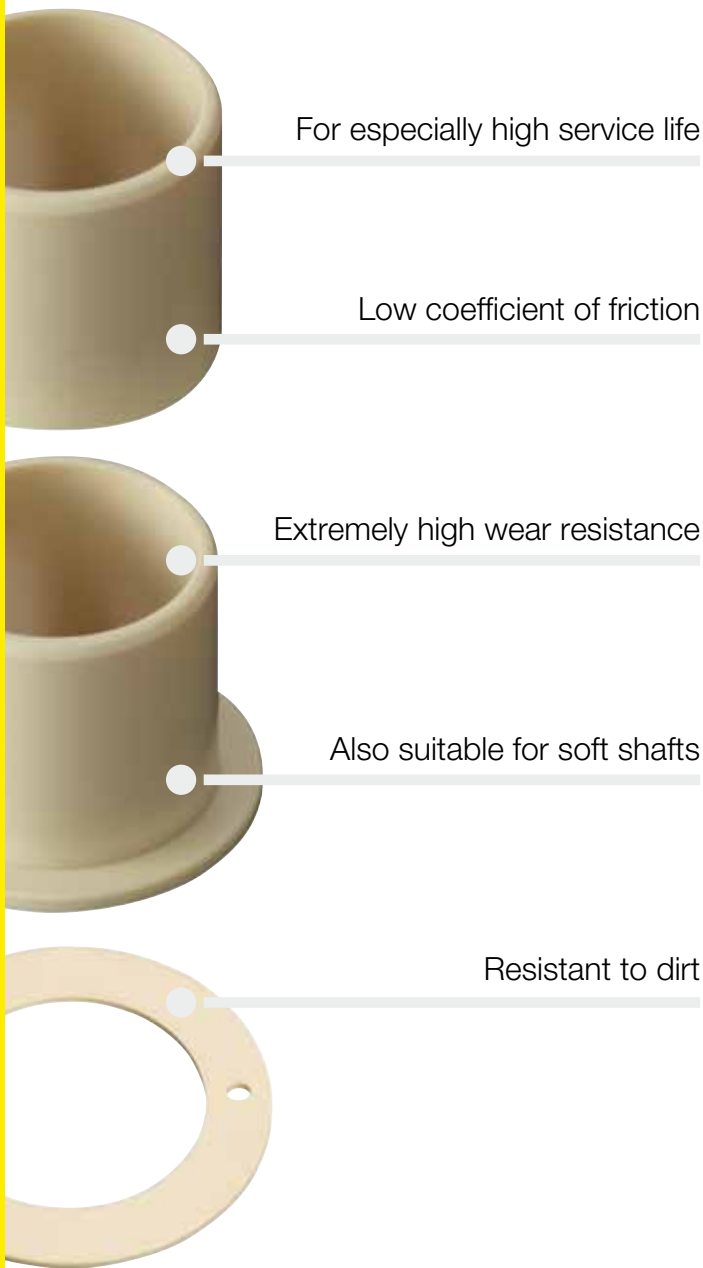
Extremely high wear resistance

Also suitable for soft shafts

Resistant to dirt

iglidur® W300 | The Marathon Runner

Long service life, also for soft shafts. The iglidur® W300 material gives excellent wear resistance, even in harsh environments or when used with rough shafts. Of all iglidur® materials, iglidur® W300 is the most resistant to these conditions.



When to use it?

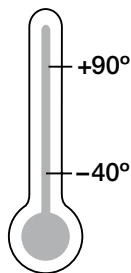
- When especially high service life is necessary
- When low coefficients of dynamic friction and high wear resistance are needed
- For use on 303 stainless steel shafts
- For harsh environments and very rough shafts
- Dirt resistant



When not to use it?

- For high loads starting at 50 MPa
▶ **iglidur® Q, page 461**
- When temperatures are constantly above +90 °C
▶ **iglidur® H, page 325**
▶ **iglidur® X, page 153**
- For very wet environments
▶ **iglidur® P, page 185**
- When an economical bearing is required
▶ **iglidur® G, page 61**

Temperature



Product range

3 types
> 400 dimensions
Ø 2–120 mm



iglidur® W300 | Application Examples



Typical sectors of industry and application areas

- Automation ● Printing industry
- Woodworking ● Mechatronics
- Test engineering and quality assurance etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/hydrogen-car



► www.igus.co.uk/concrete-machines



► www.igus.co.uk/rickshaw

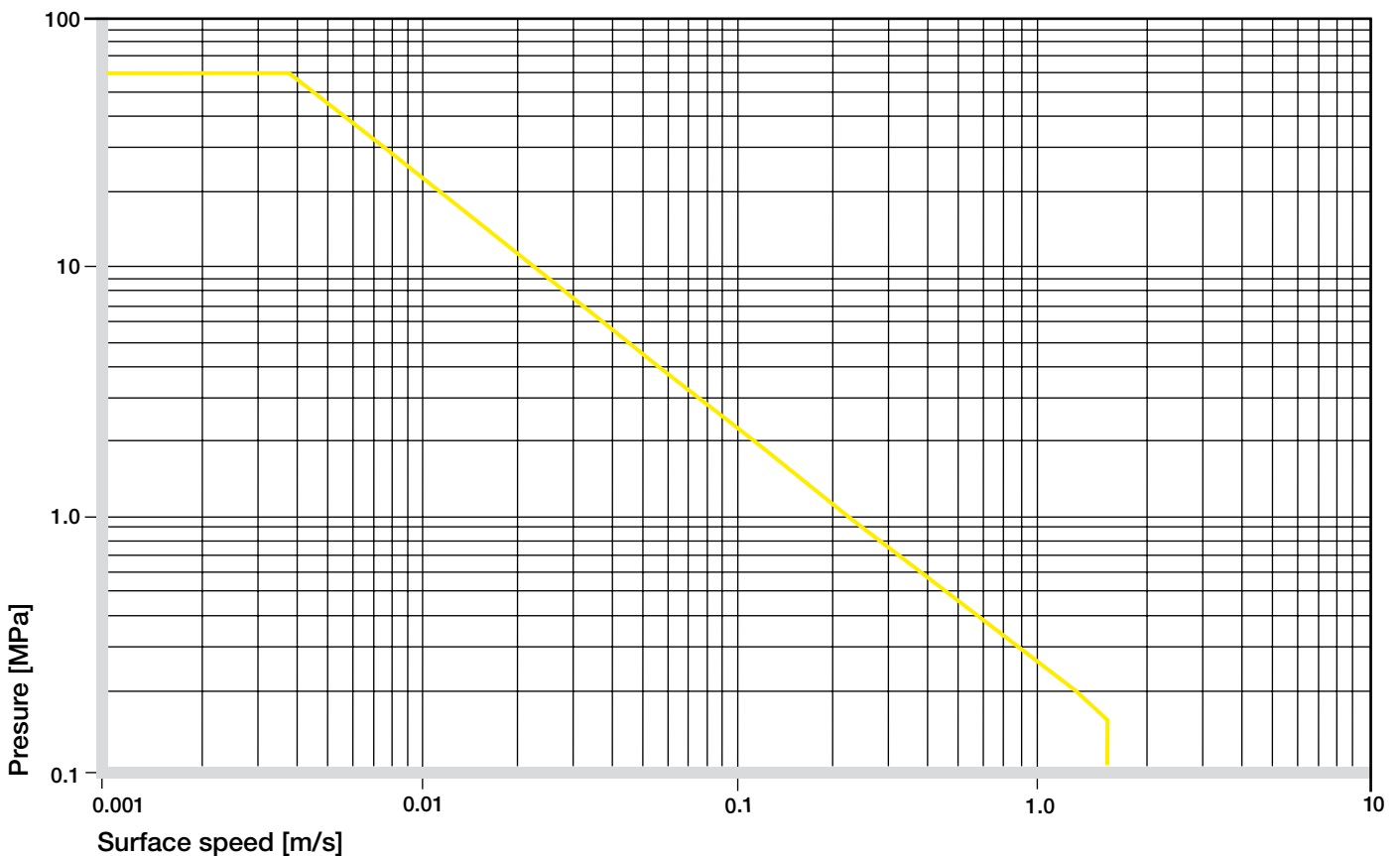


► www.igus.co.uk/teabag-packaging

Material data

General properties	Unit	iglidur® W300	Testing method
Density	g/cm ³	1.24	
Colour		yellow	
Max. moisture absorption at +23°C/50% r.h.	% weight	1.3	DIN 53495
Max. moisture absorption	% weight	6.5	
Coefficient of sliding friction, dynamic against steel	μ	0.08–0.23	
pv value, max. (dry)	MPa · m/s	0.23	
Mechanical properties			
Modulus of elasticity	MPa	3,500	DIN 53457
Tensile strength at +20°C	MPa	125	DIN 53452
Compressive strength	MPa	61	
Max. recommended surface pressure (+20°C)	MPa	60	
Shore D hardness		77	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+90	
Max. short term application temperature	°C	+180	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	9	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹³	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

Table 01: Material data

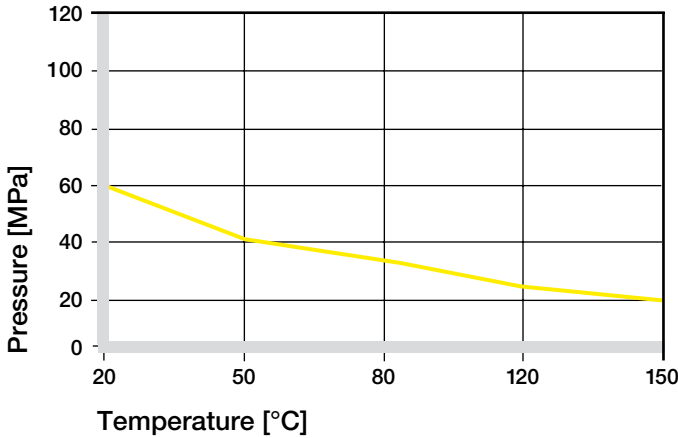


Graph 01: Permissible pv values for iglidur® W300 with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

iglidur® W300 | Technical Data

Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® W300 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 30 MPa.



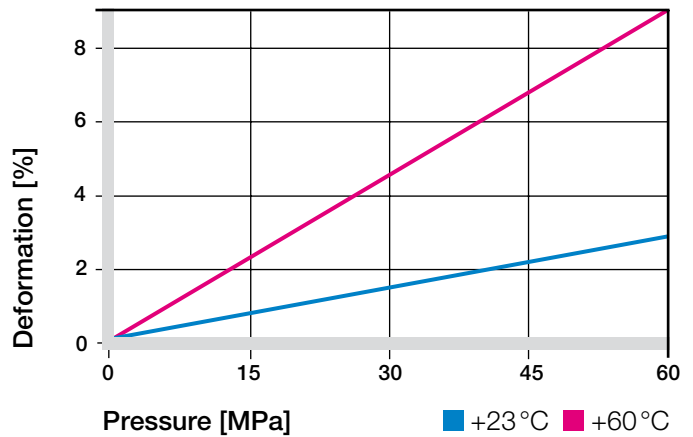
Graph 02: Recommended maximum surface pressure as a function of temperature (35 MPa at +20 °C)

iglidur® W300 gives excellent wear resistance, even in harsh environments or when used with rough shafts. This material is the most tolerant of these external effects out of all the iglidur® range.

iglidur® W300 exhibits a very high compression resistance in spite of its high elasticity. Graph 03 shows the elastic deformation of iglidur® W300 under radial loading. At the recommended maximum surface pressure of 60 MPa, the deformation at room temperature is less than 3 %.

Below the recommended maximum surface pressure of 60 MPa the deformation at room temperature is virtually zero.

► Surface Speed, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

Even at higher surface speeds, the coefficients of friction for iglidur® W300 do not increase. Therefore, compared to other materials, higher surface speeds can be obtained, for example, up to 1.5 m/s rotating and up to 5 m/s linear. The bearing wear remains low when used for long periods at high speeds, due to exceptional wear resistance. Relatively high speeds can be obtained with iglidur® W300 bearings on hardened shafts with the recommended surface finish.

► Surface Speed, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	4
Short term	2.5	1.8	6

Table 02: Maximum surface speeds

Temperatures

iglidur® W300 plain bearings show minimal reaction to environmental effects. This also applies to temperatures. iglidur® W300 bearings maintain their exceptional wear resistance even up to the highest permissible application temperatures and at the same time resist becoming brittle at low temperatures.

► Application Temperatures, [page 46](#)

iglidur® W300	Application temperature
Minimum	-40 °C
Max. long term	+90 °C
Max. short term	+180 °C
Add. securing is required from	+60 °C

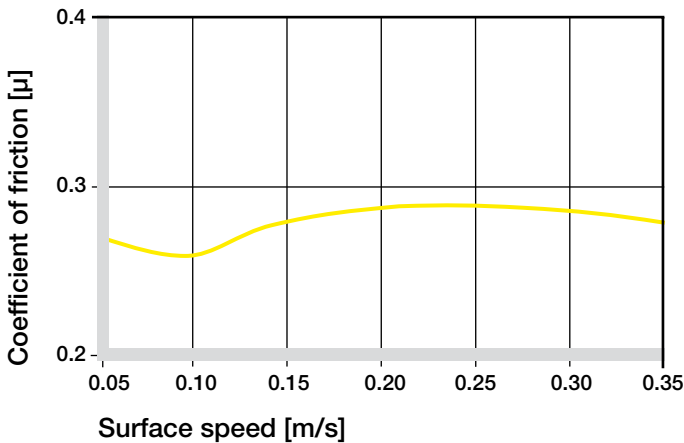
Table 03: Temperature limits

Friction and Wear

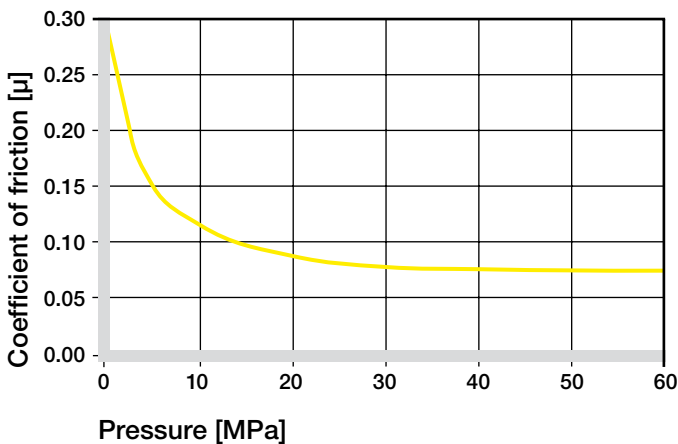
Similar to wear resistance, the coefficient of friction μ also changes with the load. In contrast to other iglidur® materials, the coefficient of friction of iglidur® W300 remains consistently low at higher rotational speeds.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

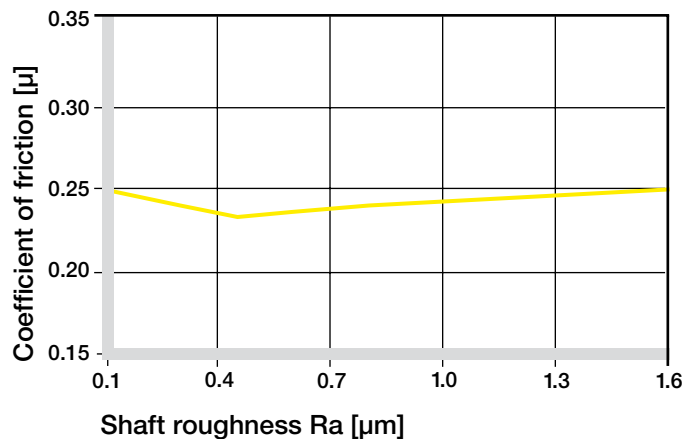
Friction and wear are to a large extent also highly dependant on the shaft materials. Shafts that are too smooth increase both the coefficient of friction and the wear of the bearing. Smooth shafts have the danger of stick slip. Squeaking as an effect of stick slip is usually the result of shafts that are too smooth.

For the lowest coefficients of friction when using iglidur® W300 plain bearings, the surfaces should not be too smooth. Shaft roughnesses of 0.4 to $0.5 \mu\text{m}$ have proven to be the best (see Graph 06). Tests with iglidur® W300 have shown the wear resistance at this roughness is very high, while the friction reduces to the lowest value.

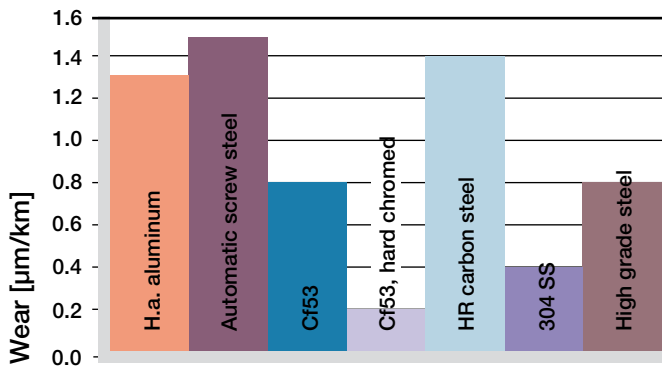
Graphs 07 to 09 show results of testing different shaft materials with iglidur® W300 plain bearings. For rotational applications with low loads, the wear varies according to the shaft material. iglidur® W300 provides very good to acceptable coefficients of friction for all shafts that were tested. iglidur® W300 gives best results when running on hard shafts. For small radial loads with hard chromed shafts and/or shafts made of stainless steel, iglidur® W300 is the most suitable iglidur® material. The soft shaft materials HR carbon steel and free-machining steel are not as well suited to iglidur® W300 plain bearings. Hardened shafts are preferred for applications for higher loads. Graph 08 clearly shows the difference in materials for increasing loads. A similar picture emerges for oscillating applications. First, for low loads, the wear for the oscillating movement lies below that of a rotation at the same load.

For higher loads, the situation changes. If the shaft material you plan to use is not contained in this list, please contact us.

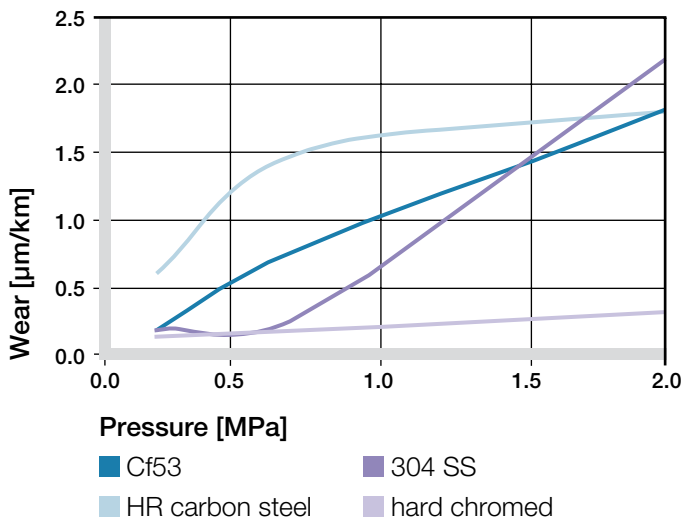
► Shaft Materials, **page 51**



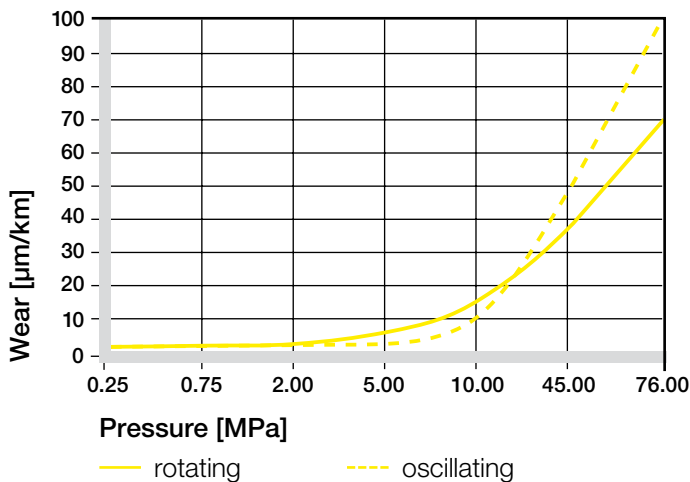
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating application with different shaft materials, $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with Cf53 hardened and ground steel shafts, as a function of the pressure

iglidur® W300	Dry	Greases	Oil	Water
C.o.f. μ	0,08–0,23	0,09	0,04	0,04

Table 04: Coefficient of friction against steel ($R_a = 1 \text{ }\mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® W300 plain bearings have a good resistance to chemicals. They are resistant to most lubricants. iglidur® W300 is not attacked by most weak organic or inorganic acids.

► Chemical Table, page 974

Medium	Resistance
Alkohole	+ to 0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	0

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® W300 are resistant to radiation up to an intensity of $3 \cdot 10^2 \text{ Gy}$.

UV Resistance

iglidur® W300 plain bearings are permanently resistant to UV radiation. A slight change in colour (dark coloration) due to UV radiation and other weathering effects will not significantly influence the mechanical, electrical or thermal properties.

Vacuum

In a vacuum, iglidur® W300 plain bearings will outgas any moisture that may have been absorbed. The use of iglidur® W300 in a vacuum environment is only possible to a limited extent.

Electrical Properties

iglidur® W300 plain bearings are electrically insulating.

Specific volume resistance > 10¹³ Ωcm

Surface resistance > 10¹² Ω

Moisture Absorption

The moisture absorption of iglidur® W300 plain bearings is approximately 1.3% weight in the standard atmosphere.

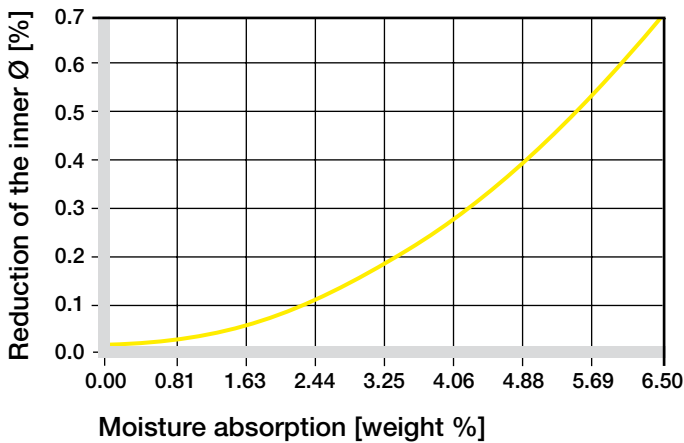
The maximum water absorption is 6.5%. This must be taken into account along with other environmental influences.

Maximum moisture absorption

At +23°C/50% r.h. 1.3% weight

Max. moisture absorption 6.5% weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® W300 plain bearings are meant to be oversized before pressfit. The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

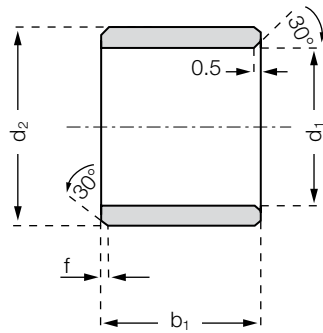
► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® W300 E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

Table 07: Essential tolerances for plain bearings according to ISO 3547-1 after pressfit

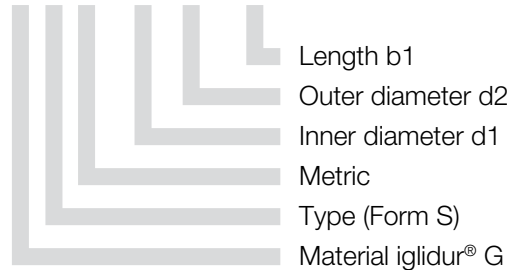
iglidur® W300 | Product Range

Sleeve bearing



Order key

WSM-0203-03



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
WSM-0203-03	2.0	+0.014 +0.054	3.5	3.0
WSM-0204-03	2.5	+0.014 +0.054	4.0	3.0
WSM-0304-03	3.0	+0.014 +0.054	4.5	3.0
WSM-0304-05	3.0	+0.014 +0.054	4.5	5.0
WSM-0304-06	3.0	+0.014 +0.054	4.5	6.0
WSM-0405-04	4.0	+0.020 +0.068	5.5	4.0
WSM-0405-06	4.0	+0.020 +0.068	5.5	6.0
WSM-0405-08	4.0	+0.020 +0.068	5.5	8.0
WSM-0405-10	4.0	+0.020 +0.068	5.5	10.0
WSM-0507-05	5.0	+0.020 +0.068	7.0	5.0
WSM-0507-08	5.0	+0.020 +0.068	7.0	8.0
WSM-0507-10	5.0	+0.020 +0.068	7.0	10.0
WSM-0608-06	6.0	+0.020 +0.068	8.0	6.0
WSM-0608-08	6.0	+0.020 +0.068	8.0	8.0
WSM-0608-09	6.0	+0.020 +0.068	8.0	9.5
WSM-0608-10	6.0	+0.020 +0.068	8.0	10.0
WSM-0608-11	6.0	+0.020 +0.068	8.0	11.8
WSM-0608-13	6.0	+0.020 +0.068	8.0	13.8
WSM-0709-09	7.0	+0.025 +0.083	9.0	9.0
WSM-0709-12	7.0	+0.025 +0.083	9.0	12.0
WSM-0709-125	7.0	+0.025 +0.083	9.0	12.5
WSM-0810-06	8.0	+0.025 +0.083	10.0	6.0
WSM-0810-08	8.0	+0.025 +0.083	10.0	8.0
WSM-0810-10	8.0	+0.025 +0.083	10.0	10.0
WSM-0810-12	8.0	+0.025 +0.083	10.0	12.0

Part number	d1	d1-Tolerance*	d2	b1 h13
WSM-0810-13	8.0	+0.025 +0.083	10.0	13.8
WSM-0810-15	8.0	+0.025 +0.083	10.0	15.0
WSM-0810-16	8.0	+0.025 +0.083	10.0	16.0
WSM-0810-20	8.0	+0.025 +0.083	10.0	20.0
WSM-0810-21	8.0	+0.025 +0.083	10.0	21.0
WSM-0911-06	9.0	+0.025 +0.083	11.0	6.0
WSM-1012-04	10.0	+0.025 +0.083	12.0	4.0
WSM-1012-06	10.0	+0.025 +0.083	12.0	6.0
WSM-1012-08	10.0	+0.025 +0.083	12.0	8.0
WSM-1012-09	10.0	+0.025 +0.083	12.0	9.0
WSM-1012-10	10.0	+0.025 +0.083	12.0	10.0
WSM-1012-12	10.0	+0.025 +0.083	12.0	12.0
WSM-1012-15	10.0	+0.025 +0.083	12.0	15.0
WSM-1012-17	10.0	+0.025 +0.083	12.0	17.0
WSM-1012-20	10.0	+0.025 +0.083	12.0	20.0
WSM-1012-25.5	10.0	+0.025 +0.083	12.0	25.5
WSM-1113-08	11.0	+0.032 +0.102	13.0	8.0
WSM-1214-04	12.0	+0.032 +0.102	14.0	4.0
WSM-1214-05	12.0	+0.032 +0.102	14.0	5.0
WSM-1214-06	12.0	+0.032 +0.102	14.0	6.0
WSM-1214-08	12.0	+0.032 +0.102	14.0	8.0
WSM-1214-10	12.0	+0.032 +0.102	14.0	10.0
WSM-1214-12	12.0	+0.032 +0.102	14.0	12.0
WSM-1214-15	12.0	+0.032 +0.102	14.0	15.0
WSM-1214-20	12.0	+0.032 +0.102	14.0	20.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/w300



order part number
example WSM-0203-03



Sleeve bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
WSM-1214-25	12.0	+0.032 +0.102	14.0	25.0
WSM-1315-07	13.0	+0.032 +0.102	15.0	7.0
WSM-1315-10	13.0	+0.032 +0.102	15.0	10.0
WSM-1315-15	13.0	+0.032 +0.102	15.0	15.0
WSM-1315-20	13.0	+0.032 +0.102	15.0	20.0
WSM-1416-07	14.0	+0.032 +0.102	16.0	7.25
WSM-1416-10	14.0	+0.032 +0.102	16.0	10.0
WSM-1416-15	14.0	+0.032 +0.102	16.0	15.0
WSM-1416-20	14.0	+0.032 +0.102	16.0	20.0
WSM-1416-25	14.0	+0.032 +0.102	16.0	25.0
WSM-1416-33	14.0	+0.032 +0.102	16.0	33.0
WSM-1517-10	15.0	+0.032 +0.102	17.0	10.0
WSM-1517-15	15.0	+0.032 +0.102	17.0	15.0
WSM-1517-20	15.0	+0.032 +0.102	17.0	20.0
WSM-1517-25	15.0	+0.032 +0.102	17.0	25.0
WSM-1618-07	16.0	+0.032 +0.102	18.0	7.0
WSM-1618-08	16.0	+0.032 +0.102	18.0	8.0
WSM-1618-11	16.0	+0.032 +0.102	18.0	11.5
WSM-1618-12	16.0	+0.032 +0.102	18.0	12.0
WSM-1618-15	16.0	+0.032 +0.102	18.0	15.0
WSM-1618-20	16.0	+0.032 +0.102	18.0	20.0
WSM-1618-25	16.0	+0.032 +0.102	18.0	25.0
WSM-1820-12	18.0	+0.032 +0.102	20.0	12.0
WSM-1820-15	18.0	+0.032 +0.102	20.0	15.0
WSM-1820-20	18.0	+0.032 +0.102	20.0	20.0
WSM-1820-25	18.0	+0.032 +0.102	20.0	25.0
WSM-1820-33	18.0	+0.032 +0.102	20.0	33.0
WSM-1820-35	18.0	+0.032 +0.102	20.0	35.0
WSM-1922-28	19.0	+0.040 +0.124	22.0	28.0
WSM-2022-11	20.0	+0.040 +0.124	22.0	11.5
WSM-2022-12	20.0	+0.040 +0.124	22.0	12.0
WSM-2022-15	20.0	+0.040 +0.124	22.0	15.0
WSM-2022-20	20.0	+0.040 +0.124	22.0	20.0
WSM-2022-30	20.0	+0.040 +0.124	22.0	30.0
WSM-2023-08	20.0	+0.040 +0.124	23.0	8.0
WSM-2023-12	20.0	+0.040 +0.124	23.0	12.0
WSM-2023-15	20.0	+0.040 +0.124	23.0	15.0
WSM-2023-20	20.0	+0.040 +0.124	23.0	20.0
WSM-2023-23	20.0	+0.040 +0.124	23.0	23.0
WSM-2023-25	20.0	+0.040 +0.124	23.0	25.0
WSM-2023-30	20.0	+0.040 +0.124	23.0	30.0
WSM-2224-15	22.0	+0.040 +0.124	24.0	15.0

Part number	d1	d1-Tolerance*	d2	b1 h13
WSM-2224-20	22.0	+0.040 +0.124	24.0	20.0
WSM-2224-30	22.0	+0.040 +0.124	24.0	30.0
WSM-2224-35	22.0	+0.040 +0.124	24.0	35.0
WSM-2225-15	22.0	+0.040 +0.124	25.0	15.0
WSM-2225-20	22.0	+0.040 +0.124	25.0	20.0
WSM-2225-25	22.0	+0.040 +0.124	25.0	25.0
WSM-2225-30	22.0	+0.040 +0.124	25.0	30.0
WSM-2427-15	24.0	+0.040 +0.124	27.0	15.0
WSM-2427-20	24.0	+0.040 +0.124	27.0	20.0
WSM-2427-25	24.0	+0.040 +0.124	27.0	25.0
WSM-2427-30	24.0	+0.040 +0.124	27.0	30.0
WSM-2528-12	25.0	+0.040 +0.124	28.0	12.0
WSM-2528-14	25.0	+0.040 +0.124	28.0	14.0
WSM-2528-15	25.0	+0.040 +0.124	28.0	15.0
WSM-2528-20	25.0	+0.040 +0.124	28.0	20.0
WSM-2528-25	25.0	+0.040 +0.124	28.0	25.0
WSM-2528-30	25.0	+0.040 +0.124	28.0	30.0
WSM-2630-16	26.0	+0.040 +0.124	30.0	16.0
WSM-2630-25	26.0	+0.040 +0.124	30.0	25.0
WSM-2830-10	28.0	+0.040 +0.124	30.0	10.0
WSM-2831-10	28.0	+0.040 +0.124	31.0	10.0
WSM-2832-20	28.0	+0.040 +0.124	32.0	20.0
WSM-2832-25	28.0	+0.040 +0.124	32.0	25.0
WSM-2832-30	28.0	+0.040 +0.124	32.0	30.0
WSM-3034-16	30.0	+0.040 +0.124	34.0	16.0
WSM-3034-20	30.0	+0.040 +0.124	34.0	20.0
WSM-3034-24	30.0	+0.040 +0.124	34.0	24.0
WSM-3034-25	30.0	+0.040 +0.124	34.0	25.0
WSM-3034-30	30.0	+0.040 +0.124	34.0	30.0
WSM-3034-36	30.0	+0.040 +0.124	34.0	36.0
WSM-3034-38	30.0	+0.040 +0.124	34.0	38.0
WSM-3034-40	30.0	+0.040 +0.124	34.0	40.0
WSM-3034-45	30.0	+0.040 +0.124	34.0	45.0
WSM-3236-20	32.0	+0.050 +0.150	36.0	20.0
WSM-3236-25	32.0	+0.050 +0.150	36.0	25.0
WSM-3236-30	32.0	+0.050 +0.150	36.0	30.0
WSM-3236-40	32.0	+0.050 +0.150	36.0	40.0
WSM-3539-20	35.0	+0.050 +0.150	39.0	20.0
WSM-3539-30	35.0	+0.050 +0.150	39.0	30.0
WSM-3539-40	35.0	+0.050 +0.150	39.0	40.0
WSM-3539-50	35.0	+0.050 +0.150	39.0	50.0
WSM-3540-07	35.0	+0.050 +0.150	40.0	7.0

* after pressfit. Testing methods ► page 55



Sleeve bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*		d2	b1 h13
WSM-4044-20	40.0	+0.050	+0.150	44.0	20.0
WSM-4044-30	40.0	+0.050	+0.150	44.0	30.0
WSM-4044-40	40.0	+0.050	+0.150	44.0	40.0
WSM-4044-50	40.0	+0.050	+0.150	44.0	50.0
WSM-4550-30	45.0	+0.050	+0.150	50.0	30.0
WSM-4550-50	45.0	+0.050	+0.150	50.0	50.0
WSM-5055-20	50.0	+0.050	+0.150	55.0	20.0
WSM-5055-30	50.0	+0.050	+0.150	55.0	30.0
WSM-5055-40	50.0	+0.050	+0.150	55.0	40.0
WSM-5055-50	50.0	+0.050	+0.150	55.0	50.0

Part number	d1	d1-Tolerance*		d2	b1 h13
WSM-5560-40	55.0	+0.060	+0.180	60.0	40.0
WSM-5560-60	55.0	+0.060	+0.180	60.0	60.0
WSM-6065-30	60.0	+0.060	+0.180	65.0	30.0
WSM-6065-60	60.0	+0.060	+0.180	65.0	60.0
WSM-6570-60	65.0	+0.060	+0.180	70.0	60.0
WSM-7075-60	70.0	+0.060	+0.180	75.0	60.0
WSM-8085-100	80.0	+0.060	+0.180	85.0	100.0
WSM-9095-100	90.0	+0.072	+0.212	95.0	100.0
WSM-100105-100	100.0	+0.072	+0.212	105.0	100.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock

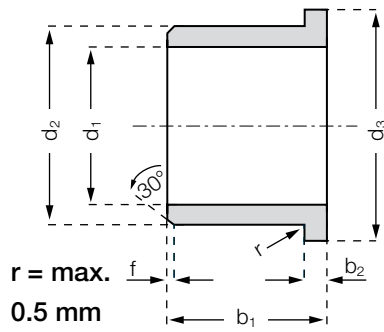


prices price list online
www.igus.co.uk/en/w300



order part number
example WSM-4044-20

Flange bearing



Order key

WFM-0304-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® G

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
WFM-0304-03	3.0	+0.014 +0.054	4.5	7.5	3.0	0.75
WFM-0304-05	3.0	+0.014 +0.054	4.5	7.5	5.0	0.75
WFM-0405-03	4.0	+0.020 +0.068	5.5	9.5	3.0	0.75
WFM-0405-04	4.0	+0.020 +0.068	5.5	9.5	4.0	0.75
WFM-0405-06	4.0	+0.020 +0.068	5.5	9.5	6.0	0.75
WFM-0506-08	5.0	+0.010 +0.040	6.0	10.0	8.0	0.50
WFM-0507-04	5.0	+0.020 +0.068	7.0	11.0	4.0	1.00
WFM-0507-05	5.0	+0.020 +0.068	7.0	11.0	5.0	1.00
WFM-0608-04	6.0	+0.020 +0.068	8.0	12.0	4.0	1.00
WFM-0608-06	6.0	+0.020 +0.068	8.0	12.0	6.0	1.00
WFM-0608-08	6.0	+0.020 +0.068	8.0	12.0	8.0	1.00
WFM-0608-10	6.0	+0.020 +0.068	8.0	12.0	10.0	1.00
WFM-0608-15	6.0	+0.020 +0.068	8.0	12.0	15.0	1.00
WFM-0709-12	7.0	+0.025 +0.083	9.0	15.0	12.0	1.00
WFM-0810-02	8.0	+0.025 +0.083	10.0	15.0	2.7	1.00
WFM-0810-05	8.0	+0.025 +0.083	10.0	15.0	5.5	1.00
WFM-0810-07	8.0	+0.025 +0.083	10.0	15.0	7.5	1.00
WFM-0810-09	8.0	+0.025 +0.083	10.0	15.0	9.5	1.00
WFM-0810-10	8.0	+0.025 +0.083	10.0	15.0	10.0	1.00
WFM-0810-23	8.0	+0.025 +0.083	10.0	15.0	23.0	1.00
WFM-0810-30	8.0	+0.025 +0.083	10.0	15.0	30.0	1.00
WFM-081015-05	8.0	+0.025 +0.083	10.0	15.0	5.0	1.00
WFM-1012-04	10.0	+0.025 +0.083	12.0	18.0	4.0	1.00
WFM-1012-05	10.0	+0.025 +0.083	12.0	18.0	5.0	1.00
WFM-1012-06	10.0	+0.025 +0.083	12.0	18.0	6.0	1.00

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/w300



order part number
example WFM-0304-03



Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
WFM-1012-07	10.0	+0.025 +0.083	12.0	18.0	7.0	1.00
WFM-1012-09	10.0	+0.025 +0.083	12.0	18.0	9.0	1.00
WFM-1012-10	10.0	+0.025 +0.083	12.0	18.0	10.0	1.00
WFM-1012-12	10.0	+0.025 +0.083	12.0	18.0	12.0	1.00
WFM-1012-15	10.0	+0.025 +0.083	12.0	18.0	15.0	1.00
WFM-1012-17	10.0	+0.025 +0.083	12.0	18.0	17.0	1.00
WFM-1214-04	12.0	+0.032 +0.102	14.0	20.0	4.0	1.00
WFM-1214-044	12.0	+0.032 +0.102	14.0	20.0	4.4	1.00
WFM-1214-06	12.0	+0.032 +0.102	14.0	20.0	6.0	1.00
WFM-1214-07	12.0	+0.032 +0.102	14.0	20.0	7.0	1.00
WFM-1214-09	12.0	+0.032 +0.102	14.0	20.0	9.0	1.00
WFM-1214-10	12.0	+0.032 +0.102	14.0	20.0	10.0	1.00
WFM-1214-11	12.0	+0.032 +0.102	14.0	20.0	11.0	1.00
WFM-1214-12	12.0	+0.032 +0.102	14.0	20.0	12.0	1.00
WFM-1214-15	12.0	+0.032 +0.102	14.0	20.0	15.0	1.00
WFM-1214-17	12.0	+0.032 +0.102	14.0	20.0	17.0	1.00
WFM-1214-20	12.0	+0.032 +0.102	14.0	20.0	20.0	1.00
WFM-1315-06	13.0	+0.032 +0.102	15.0	22.0	6.0	1.00
WFM-1416-04	14.0	+0.032 +0.102	16.0	22.0	4.0	1.00
WFM-1416-05	14.0	+0.032 +0.102	16.0	22.0	5.0	1.00
WFM-1416-08	14.0	+0.032 +0.102	16.0	22.0	8.0	1.00
WFM-1416-12	14.0	+0.032 +0.102	16.0	22.0	12.0	1.00
WFM-1416-17	14.0	+0.032 +0.102	16.0	22.0	17.0	1.00
WFM-1416-29	14.0	+0.032 +0.102	16.0	22.0	29.0	1.00
WFM-1517-09	15.0	+0.032 +0.102	17.0	23.0	9.0	1.00
WFM-1517-12	15.0	+0.032 +0.102	17.0	23.0	12.0	1.00
WFM-1517-17	15.0	+0.032 +0.102	17.0	23.0	17.0	1.00
WFM-1517-20	15.0	+0.032 +0.102	17.0	23.0	20.0	1.00
WFM-1618-09	16.0	+0.032 +0.102	18.0	24.0	9.0	1.00
WFM-1618-12	16.0	+0.032 +0.102	18.0	24.0	12.0	1.00
WFM-1618-17	16.0	+0.032 +0.102	18.0	24.0	17.0	1.00
WFM-1719-12	17.0	+0.032 +0.102	19.0	25.0	12.0	1.00
WFM-1719-18	17.0	+0.032 +0.102	19.0	25.0	18.0	1.00
WFM-1719-25	17.0	+0.032 +0.102	19.0	25.0	25.0	1.00
WFM-1820-12	18.0	+0.032 +0.102	20.0	26.0	12.0	1.00
WFM-1820-17	18.0	+0.032 +0.102	20.0	26.0	17.0	1.00
WFM-1820-22	18.0	+0.032 +0.102	20.0	26.0	22.0	1.00
WFM-2023-11	20.0	+0.040 +0.124	23.0	30.0	11.5	1.50
WFM-2023-14	20.0	+0.040 +0.124	23.0	30.0	14.0	1.50
WFM-2023-16	20.0	+0.040 +0.124	23.0	30.0	16.5	1.50
WFM-2023-21	20.0	+0.040 +0.124	23.0	30.0	21.5	1.50
WFM-2427-10	24.0	+0.040 +0.124	27.0	32.0	10.0	1.50

* after pressfit. Testing methods ► page 55



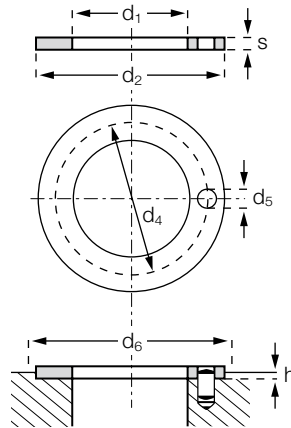
Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
WFM-2528-11	25.0	+0.040 +0.124	28.0	35.0	11.0	1.50
WFM-2528-16	25.0	+0.040 +0.124	28.0	35.0	16.0	1.50
WFM-2528-21	25.0	+0.040 +0.124	28.0	35.0	21.0	1.50
WFM-2528-30	25.0	+0.040 +0.124	28.0	32.0	30.0	1.50
WFM-252831-13	25.0	+0.040 +0.124	28.0	31.0	13.0	1.50
WFM-2830-36	28.0	+0.040 +0.124	30.0	35.0	36.0	1.00
WFM-3034-10	30.0	+0.040 +0.124	34.0	42.0	10.0	2.00
WFM-3034-16	30.0	+0.040 +0.124	34.0	42.0	16.0	2.00
WFM-3034-26	30.0	+0.040 +0.124	34.0	42.0	26.0	2.00
WFM-3034-37	30.0	+0.040 +0.124	34.0	42.0	37.0	2.00
WFM-3236-16	32.0	+0.050 +0.150	36.0	40.0	16.0	2.00
WFM-3236-26	32.0	+0.050 +0.150	36.0	40.0	26.0	2.00
WFM-3539-16	35.0	+0.050 +0.150	39.0	47.0	16.0	2.00
WFM-3539-26	35.0	+0.050 +0.150	39.0	47.0	26.0	2.00
WFM-353950-35	35.0	+0.050 +0.150	39.0	50.0	35.0	2.00
WFM-3842-22	38.0	+0.050 +0.150	42.0	50.0	22.0	2.00
WFM-4044-30	40.0	+0.050 +0.150	44.0	52.0	30.0	2.00
WFM-4044-40	40.0	+0.050 +0.150	44.0	52.0	40.0	2.00
WFM-4550-50	45.0	+0.050 +0.150	50.0	58.0	50.0	2.00
WFM-5055-40	50.0	+0.050 +0.150	55.0	63.0	40.0	2.00
WFM-5055-50	50.0	+0.050 +0.150	55.0	63.0	50.0	2.00
WFM-5560-60	55.0	+0.060 +0.180	60.0	68.0	60.0	2.00
WFM-5762-40	57.0	+0.060 +0.180	62.0	67.0	40.0	2.00
WFM-6065-60	60.0	+0.060 +0.180	65.0	73.0	60.0	2.00
WFM-6570-60	65.0	+0.060 +0.180	70.0	78.0	60.0	2.00
WFM-7075-100	70.0	+0.060 +0.180	75.0	83.0	100.0	2.50
WFM-7580-100	75.0	+0.060 +0.180	80.0	88.0	100.0	2.50
WFM-8085-100	80.0	+0.060 +0.180	85.0	93.0	100.0	2.50
WFM-9095-100	90.0	+0.072 +0.212	95.0	103.0	100.0	2.50
WFM-100105-100	100.0	+0.072 +0.212	105.0	113.0	100.0	2.50
WFM-120125-100	120.0	+0.072 +0.212	125.0	133.0	100.0	2.50

* after pressfit. Testing methods ► page 55

Thrust washer



Order key

WTM-0509-006



Thickness s
Outer diameter d2
Inner diameter d1
Metric
Type (Form T)
Material iglidur® G

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

Part number	d1 +0.25	d2 -0.25	s -0.05	d4 -0.12 +0.12	d5 +0.375 +0.125	h +0.2 -0.2	d6 +0.12
WTM-0509-006	5.0	9.5	0.6	**	**	0.3	9.5
WTM-0620-015	6.0	20.0	1.5	13.0	1.5	1.0	20.0
WTM-0818-015	8.0	18.0	1.5	13.0	1.5	1.0	18.0
WTM-1018-010	10.0	18.0	1.0	**	**	0.7	18.0
WTM-1018-015	10.0	18.0	1.5	**	**	1.0	18.0
WTM-1224-015	12.0	24.0	1.5	18.0	1.5	1.0	24.0
WTM-1426-015	14.0	26.0	1.5	20.0	2.0	1.0	26.0
WTM-1524-015	15.0	24.0	1.5	19.5	1.5	1.0	24.0
WTM-1630-015	16.0	30.0	1.5	23.0	2.0	1.0	30.0
WTM-1832-015	18.0	32.0	1.5	25.0	2.0	1.0	32.0
WTM-2036-015	20.0	36.0	1.5	28.0	3.0	1.0	36.0
WTM-2238-015	22.0	38.0	1.5	30.0	3.0	1.0	38.0
WTM-2442-015	24.0	42.0	1.5	33.0	3.0	1.0	42.0
WTM-2644-015	26.0	44.0	1.5	35.0	3.0	1.0	44.0
WTM-2848-015	28.0	48.0	1.5	38.0	4.0	1.0	48.0
WTM-3254-015	32.0	54.0	1.5	43.0	4.0	1.0	54.0
WTM-3862-015	38.0	62.0	1.5	50.0	4.0	1.0	62.0
WTM-4266-015	42.0	66.0	1.5	54.0	4.0	1.0	66.0
WTM-4874-020	48.0	74.0	2.0	61.0	4.0	1.5	74.0
WTM-5278-020	52.0	78.0	2.0	65.0	4.0	1.5	78.0
WTM-6290-020	62.0	90.0	2.0	76.0	4.0	1.5	90.0
WTM-82110-020	82.0	110.0	2.0	**	**	1.5	110.0
WTM-102130-020	102.0	130.0	2.0	**	**	1.5	130.0
WTM-120150-020	120.0	150.0	2.0	**	**	1.5	150.0

** Design without fixing bore



delivery available
time from stock

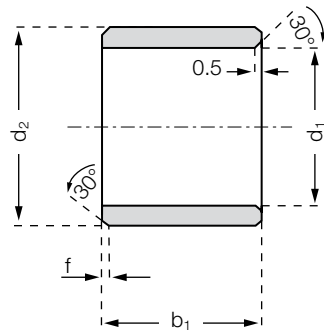


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order part number
example WTM-0509-006

Sleeve bearing



Order key

WSI-0203-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form S)
- Material iglidur® W300

Chamfer in relation to the d1

d1 [Inch]:	Ø 0,040–0,236	Ø 0,236–0,472	Ø 0,472–1,18	Ø > 1,18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
WSI-0203-03	1/8	3/16	3/16	.1269	.1251	.1878	.1873	.1243	.1236
WSI-0203-04	1/8	3/16	1/4	.1269	.1251	.1878	.1873	.1243	.1236
WSI-0203-06	1/8	3/16	3/8	.1269	.1251	.1878	.1873	.1243	.1236
WSI-0304-04	3/16	1/4	1/4	.1892	.1873	.2503	.2497	.1865	.1858
WSI-0304-06	3/16	1/4	3/8	.1892	.1873	.2503	.2497	.1865	.1858
WSI-0304-08	3/16	1/4	1/2	.1892	.1873	.2503	.2497	.1865	.1858
WSI-0405-03	1/4	5/16	3/16	.2521	.2498	.3128	.3122	.2490	.2481
WSI-0405-04	1/4	5/16	1/4	.2521	.2498	.3128	.3122	.2490	.2481
WSI-0405-05	1/4	5/16	5/16	.2521	.2498	.3128	.3122	.2490	.2481
WSI-0405-06	1/4	5/16	3/8	.2521	.2498	.3128	.3122	.2490	.2481
WSI-0405-08	1/4	5/16	1/2	.2521	.2498	.3128	.3122	.2490	.2481
WSI-0506-04	5/16	3/8	1/4	.3148	.3125	.3753	.3747	.3115	.3106
WSI-0506-06	5/16	3/8	3/8	.3148	.3125	.3753	.3747	.3115	.3106
WSI-0506-08	5/16	3/8	1/2	.3148	.3125	.3753	.3747	.3115	.3106
WSI-0506-12	5/16	3/8	3/4	.3148	.3125	.3753	.3747	.3115	.3106
WSI-0607-04	3/8	15/32	1/4	.3773	.3750	.4691	.4684	.3740	.3731
WSI-0607-06	3/8	15/32	3/8	.3773	.3750	.4691	.4684	.3740	.3731
WSI-0607-07	3/8	15/32	7/16	.3773	.3750	.4691	.4684	.3740	.3731
WSI-0607-08	3/8	15/32	1/2	.3773	.3750	.4691	.4684	.3740	.3731
WSI-0607-12	3/8	15/32	3/4	.3773	.3750	.4691	.4684	.3740	.3731
WSI-0608-12	3/8	17/32	3/4	.3773	.3750	.5316	.5309	.3740	.3731
WSI-0708-04	7/16	17/32	1/4	.4406	.4379	.5316	.5309	.4365	.4355
WSI-0708-08	7/16	17/32	1/2	.4406	.4379	.5316	.5309	.4365	.4355
WSI-0809-03	1/2	19/32	3/16	.5030	.5003	.5941	.5934	.4990	.4980
WSI-0809-04	1/2	19/32	1/4	.5030	.5003	.5941	.5934	.4990	.4980

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/w300



order part number
example WSI-0203-03



Sleeve bearing

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
WSI-0809-06	1/2	19/32	3/8	.5030	.5003	.5941	.5934	.4990	.4980
WSI-0809-08	1/2	19/32	1/2	.5030	.5003	.5941	.5934	.4990	.4980
WSI-0809-10	1/2	19/32	5/8	.5030	.5003	.5941	.5934	.4990	.4980
WSI-0809-12	1/2	19/32	3/4	.5030	.5003	.5941	.5934	.4990	.4980
WSI-0809-16	1/2	19/32	1	.5030	.5003	.5941	.5934	.4990	.4980
WSI-0810-08	1/2	5/8	1/2	.5040	.5013	.6260	.6250	.5000	.4990
WSI-0810-10	1/2	5/8	5/8	.5040	.5013	.6260	.6250	.5000	.4990
WSI-0810-12	1/2	5/8	3/4	.5040	.5013	.6260	.6250	.5000	.4990
WSI-0810-16	1/2	5/8	1	.5040	.5013	.6260	.6250	.5000	.4990
WSI-0910-08	9/16	5/8	1/2	.5655	.5627	.6566	.6559	.5615	.5605
WSI-0910-12	9/16	5/8	3/4	.5655	.5627	.6566	.6559	.5615	.5605
WSI-1011-04	5/8	23/32	1/4	.6280	.6253	.7192	.7184	.6240	.6230
WSI-1011-06	5/8	23/32	3/8	.6280	.6253	.7192	.7184	.6240	.6230
WSI-1011-08	5/8	23/32	1/2	.6280	.6253	.7192	.7184	.6240	.6230
WSI-1011-10	5/8	23/32	5/8	.6280	.6253	.7192	.7184	.6240	.6230
WSI-1011-12	5/8	23/32	3/4	.6280	.6253	.7192	.7184	.6240	.6230
WSI-1011-16	5/8	23/32	1	.6280	.6253	.7192	.7184	.6240	.6230
WSI-1112-12	11/16	25/32	3/4	.6906	.6879	.7817	.7809	.6865	.6855
WSI-1214-08	3/4	7/8	1/2	.7541	.7507	.8755	.8747	.7491	.7479
WSI-1214-12	3/4	7/8	3/4	.7541	.7507	.8755	.8747	.7491	.7479
WSI-1214-16	3/4	7/8	1	.7541	.7507	.8755	.8747	.7491	.7479
WSI-1214-24	3/4	7/8	1 1/2	.7541	.7507	.8755	.8747	.7491	.7479
WSI-1416-04	7/8	1	1/4	.8791	.8757	1.0005	.9997	.8741	.8729
WSI-1416-06	7/8	1	3/8	.8791	.8757	1.0005	.9997	.8741	.8729
WSI-1416-08	7/8	1	1/2	.8791	.8757	1.0005	.9997	.8741	.8729
WSI-1416-10	7/8	1	5/8	.8791	.8757	1.0005	.9997	.8741	.8729
WSI-1416-12	7/8	1	3/4	.8791	.8757	1.0005	.9997	.8741	.8729
WSI-1416-16	7/8	1	1	.8791	.8757	1.0005	.9997	.8741	.8729
WSI-1416-24	7/8	1	1 1/2	.8791	.8757	1.0005	.9997	.8741	.8729
WSI-1618-06	1	1 1/8	3/8	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WSI-1618-08	1	1 1/8	1/2	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WSI-1618-12	1	1 1/8	3/4	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WSI-1618-16	1	1 1/8	1	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WSI-1618-20	1	1 1/8	1 5/16	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WSI-1618-22	1	1 1/8	1 3/8	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WSI-1618-24	1	1 1/8	1 1/2	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WSI-1820-12	1 1/8	1 9/32	3/4	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
WSI-2022-14	1 1/4	1 13/32	7/8	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
WSI-2022-16	1 1/4	1 13/32	1	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
WSI-2022-20	1 1/4	1 13/32	1 1/4	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
WSI-2022-24	1 1/4	1 13/32	1 1/2	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
WSI-2224-16	1 3/8	1 17/32	1	1.3798	1.3758	1.5318	1.5308	1.3738	1.3722

* after pressfit. Testing methods ► page 55



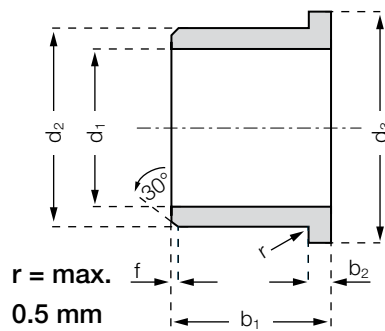
Sleeve bearing

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
WSI-2224-24	1 3/8	1 17/32	1 1/2	1.3798	1.3758	1.5318	1.5308	1.3738	1.3722
WSI-2426-12	1 1/2	1 21/32	3/4	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
WSI-2426-16	1 1/2	1 21/32	1	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
WSI-2426-24	1 1/2	1 21/32	1 1/2	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
WSI-2426-44	1 1/2	1 21/32	2 3/4	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
WSI-2629-16	1 5/8	1 25/32	1	1.6297	1.6258	1.7818	1.7808	1.6238	1.6222
WSI-2629-20	1 5/8	1 25/32	1 1/4	1.6297	1.6258	1.7818	1.7808	1.6238	1.6222
WSI-2831-16	1 3/4	1 15/16	1	1.7547	1.7507	1.9381	1.9371	1.7487	1.7471
WSI-2831-24	1 3/4	1 15/16	1 1/2	1.7547	1.7507	1.9381	1.9371	1.7487	1.7471
WSI-2831-32	1 3/4	1 15/16	2	1.7547	1.7507	1.9381	1.9371	1.7487	1.7471
WSI-2831-48	1 3/4	1 15/16	3	1.7547	1.7507	1.9381	1.9371	1.7487	1.7471
WSI-3235-16	2	2 3/16	1	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
WSI-3235-24	2	2 3/16	1 1/2	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
WSI-3235-32	2	2 3/16	2	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
WSI-3639-32	2 1/4	2 7/16	2	2.2577	2.2531	2.4377	2.4365	2.2507	2.2489

* after pressfit. Testing methods ► page 55

Flange bearing



Order key

WFI-0203-03



Chamfer in relation to the d1

d1 [Inch]:	Ø 0,040–0,236	Ø 0,236–0,472	Ø 0,472–1,18	Ø > 1,18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
WFI-0203-03	1/8	3/16	3/16	.312	.032	.1269	.1251	.1878	.1873	.1243	.1236
WFI-0203-04	1/8	3/16	1/4	.312	.032	.1269	.1251	.1878	.1873	.1243	.1236
WFI-0203-06	1/8	3/16	3/8	.312	.032	.1269	.1251	.1878	.1873	.1243	.1236
WFI-0304-02	3/16	1/4	1/8	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
WFI-0304-04	3/16	1/4	1/4	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
WFI-0304-06	3/16	1/4	3/8	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
WFI-0304-08	3/16	1/4	1/2	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
WFI-0405-04	1/4	5/16	1/4	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
WFI-0405-05	1/4	5/16	5/16	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
WFI-0405-06	1/4	5/16	3/8	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
WFI-0405-08	1/4	5/16	1/2	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
WFI-0405-12	1/4	5/16	3/4	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
WFI-0506-04	5/16	3/8	1/4	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
WFI-0506-06	5/16	3/8	3/8	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
WFI-0506-08	5/16	3/8	1/2	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
WFI-0506-12	5/16	3/8	3/4	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
WFI-0607-04	3/8	15/32	1/4	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
WFI-0607-06	3/8	15/32	3/8	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
WFI-0607-08	3/8	15/32	1/2	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
WFI-0607-12	3/8	15/32	3/4	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
WFI-0708-08	7/16	17/32	1/2	.750	.046	.4406	.4379	.5316	.5309	.4365	.4355
WFI-0809-04	1/2	19/32	1/4	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
WFI-0809-06	1/2	19/32	3/8	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
WFI-0809-08	1/2	19/32	1/2	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
WFI-0809-12	1/2	19/32	3/4	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980

* after pressfit. Testing methods ► page 55

delivery time available from stock
 prices price list online www.igus.co.uk/en/w300
order example **part number** WFI-0203-03



Flange bearing

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
WFI-0809-16	1/2	19/32	1	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
WFI-1011-045	5/8	23/32	9/32	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
WFI-1011-08	5/8	23/32	1/2	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
WFI-1011-12	5/8	23/32	3/4	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
WFI-1011-16	5/8	23/32	1	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
WFI-1011-24	5/8	23/32	1 1/2	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
WFI-1214-08	3/4	7/8	1/2	1.125	.062	.7541	.7507	.8755	.8747	.7491	.7479
WFI-1214-10	3/4	7/8	5/8	1.125	.062	.7541	.7507	.8755	.8747	.7491	.7479
WFI-1214-12	3/4	7/8	3/4	1.125	.062	.7541	.7507	.8755	.8747	.7491	.7479
WFI-1214-16	3/4	7/8	1	1.125	.062	.7541	.7507	.8755	.8747	.7491	.7479
WFI-1214-24	3/4	7/8	1 1/2	1.125	.062	.7541	.7507	.8755	.8747	.7491	.7479
WFI-1416-04	7/8	1	1/4	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
WFI-1416-075	7/8	1	15/32	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
WFI-1416-08	7/8	1	1/2	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
WFI-1416-115	7/8	1	23/32	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
WFI-1416-12	7/8	1	3/4	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
WFI-1416-16	7/8	1	1	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
WFI-1416-20	7/8	1	1 1/4	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
WFI-1416-24	7/8	1	1 1/2	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
WFI-141618-10	7/8	1	5/8	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
WFI-141620-11	7/8	1	11/16	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
WFI-1618-08	1	1 1/8	1/2	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WFI-1618-12	1	1 1/8	3/4	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WFI-1618-16	1	1 1/8	1	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WFI-1618-20	1	1 1/8	1 1/4	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WFI-1618-24	1	1 1/8	1 1/2	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
WFI-1820-08	1 1/8	1 9/32	1/2	1.562	.078	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
WFI-1820-12	1 1/8	1 9/32	3/4	1.562	.078	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
WFI-1820-24	1 1/8	1 9/32	1 1/2	1.562	.078	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
WFI-2022-12	1 1/4	1 13/32	3/4	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
WFI-2022-14	1 1/4	1 13/32	7/8	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
WFI-2022-16	1 1/4	1 13/32	1	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
WFI-2022-20	1 1/4	1 13/32	1 1/4	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
WFI-2022-24	1 1/4	1 13/32	1 1/2	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
WFI-2224-16	1 3/8	1 17/32	1	1.875	.078	1.3798	1.3758	1.5318	1.5308	1.3738	1.3722
WFI-2426-12	1 1/2	1 21/32	3/4	2.000	.078	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
WFI-2426-16	1 1/2	1 21/32	1	2.000	.078	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
WFI-2426-24	1 1/2	1 21/32	1 1/2	2.000	.078	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
WFI-2831-16	1 3/4	1 15/16	1	2.375	.093	1.7547	1.7507	1.9381	1.9371	1.7487	1.7471
WFI-2831-24	1 3/4	1 15/16	1 1/2	2.375	.093	1.7547	1.7507	1.9381	1.9371	1.7487	1.7471
WFI-2831-32	1 3/4	1 15/16	2	2.375	.093	1.7547	1.7507	1.9381	1.9371	1.7487	1.7471
WFI-3235-16	2	2 3/16	1	2.625	.093	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969

* after pressfit. Testing methods ► page 55



Flange bearing

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
WFI-3235-24	2	2 3/16	1 1/2	2.625	.093	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
WFI-3235-32	2	2 3/16	2	2.625	.093	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969

* after pressfit. Testing methods ► page 55



delivery available
time from stock

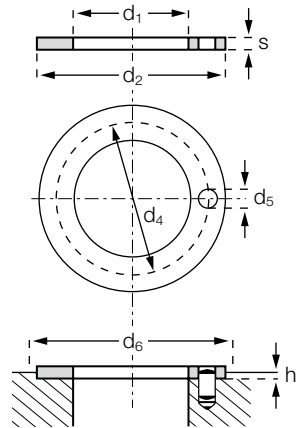


prices price list online
www.igus.co.uk/en/w300



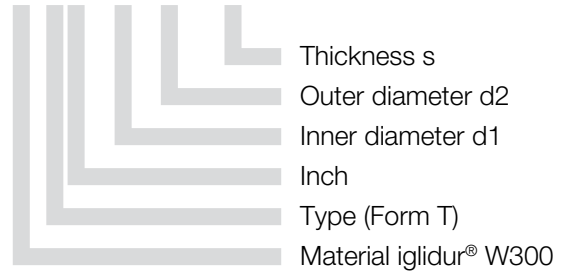
order part number
example WFI-3235-24

Thrust washer



Order key

WTI-0814-01



Dimensions according to ISO 3547-1 and special dimensions

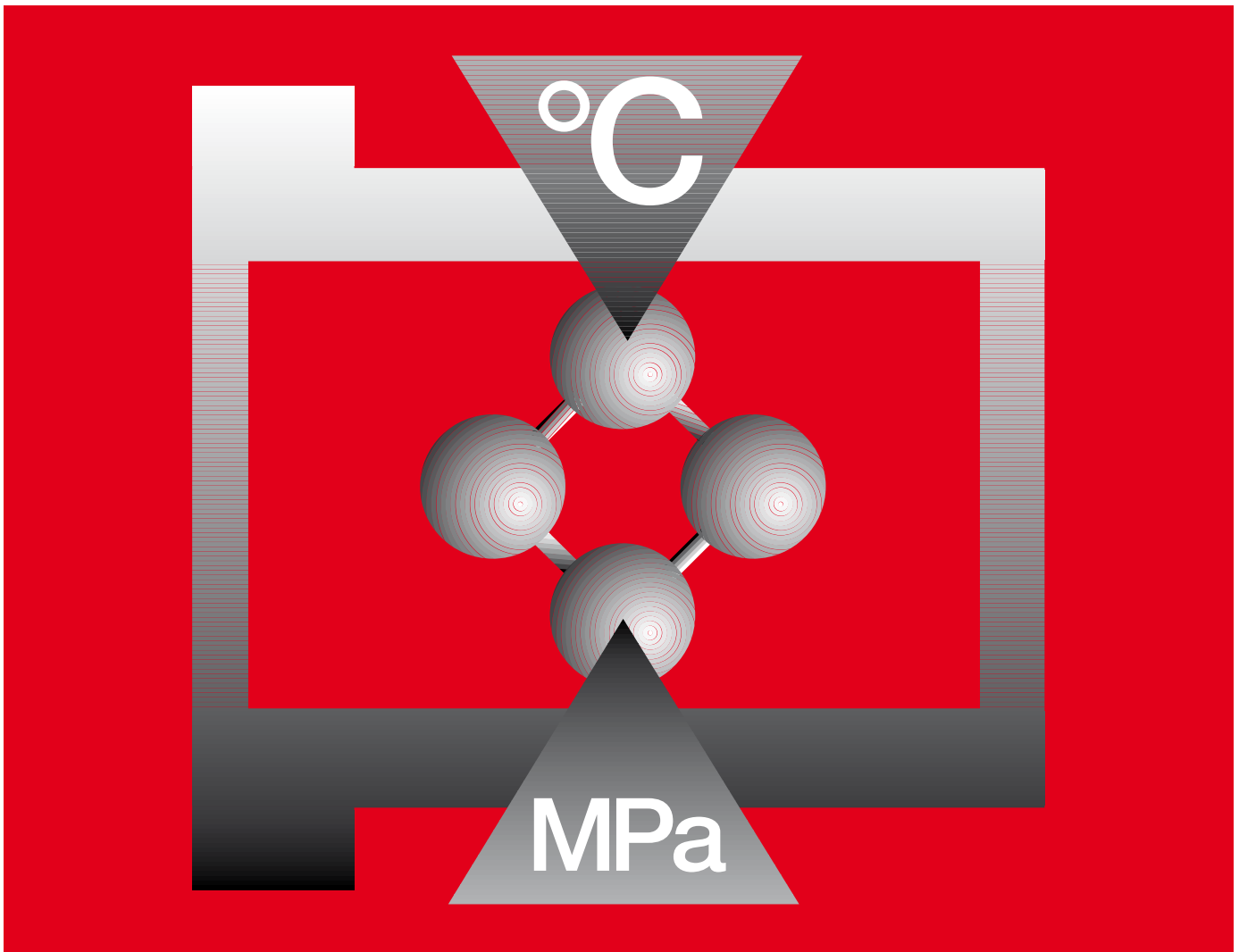
Dimensions [Inch]

Part number	d1 +.010	d2 -.010	s -.0020	d4 ±.005	d5 .015 + .005	h +.008	d6 +.005
WTI-0814-01	.500	.875	.0585	.692	.067	.040	.875
WTI-1018-01	.625	1.125	.0585	.880	.099	.040	1.125
WTI-1220-01	.750	1.250	.0585	1.005	.099	.040	1.250
WTI-1424-01	.875	1.500	.0585	1.192	.130	.040	1.500
WTI-1628-01	1.000	1.750	.0585	1.380	.130	.040	1.750
WTI-2034-01	1.250	2.125	.0585	1.692	.161	.040	2.125
WTI-2440-01	1.500	2.500	.0585	2.005	.192	.040	2.500
WTI-2844-01	1.750	2.750	.0585	2.255	.192	.040	2.750
WTI-3248-01	2.000	3.000	.0895	2.505	.192	.070	3.000

delivery available from stock

prices price list online
www.igus.co.uk/en/w300

order part number
example WTI-0814-01



iglidur® X – The High-Tech Problem Solver: chemical- and temperature-resistant up to +250 °C



Over 250 dimensions available from stock

Temperature resistant from –100 °C to +250 °C in continuous operation

Universal resistance to chemicals

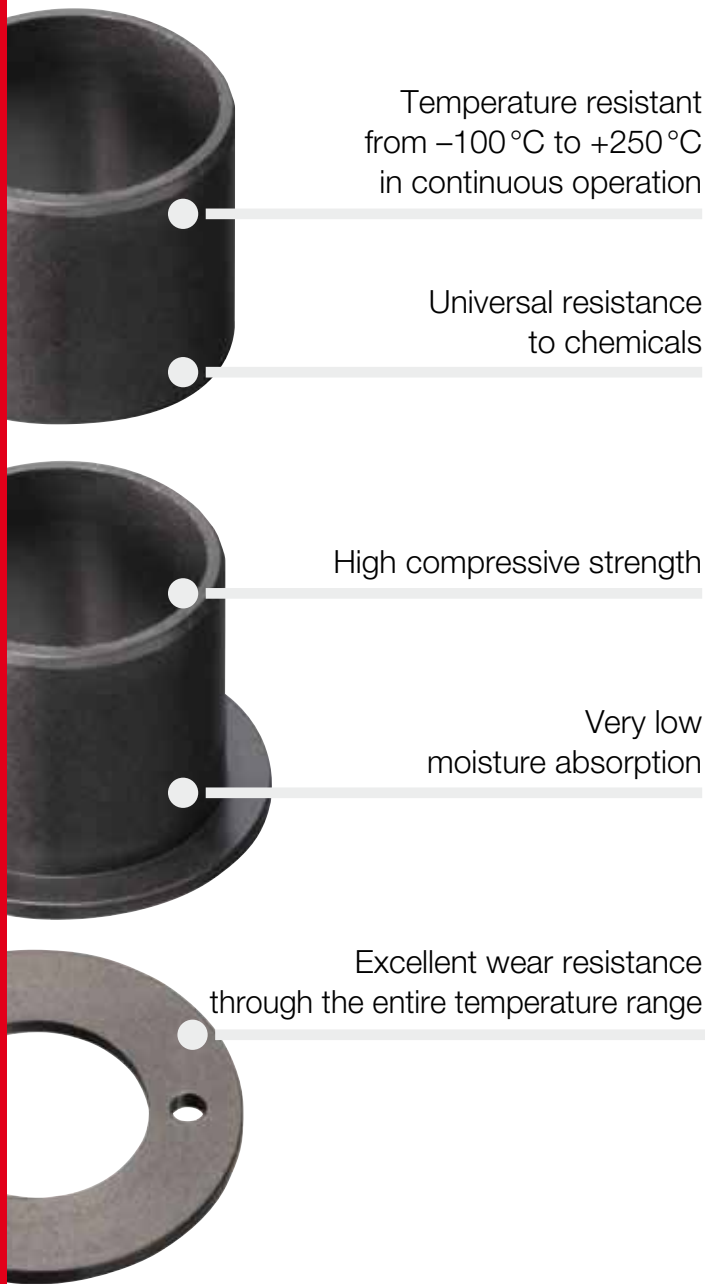
High compressive strength

Very low moisture absorption

Excellent wear resistance through the entire temperature range

iglidur® X | The High-Tech Problem Solver

Chemical- and temperature resistant up to +250 °C. iglidur® X is defined by its combination of high temperature resistance with compressive strength, along with high resistance to chemicals. iglidur® X is designed for higher speeds than other iglidur® bearings.



When to use it?

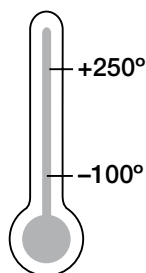
- For pressure loads up to 150 MPa
- For linear movements with stainless steel at high temperatures
- Universal resistance to chemicals
- Temperature resistant from -100 °C to +250 °C in continuous operation (short term to +315 °C)
- Very low moisture absorption
- High wear resistance over the entire temperature range



When not to use it?

- For very low wear at high loads
 - ▶ iglidur® Q, page 461
 - ▶ iglidur® Z, page 299
- For economical underwater applications
 - ▶ iglidur® H, page 325
 - ▶ iglidur® H370, page 347
- For edge pressure
 - ▶ iglidur® Z, page 299

Temperature



Product range

3 types
> 250 dimensions
Ø 2–75 mm



iglidur® X | Application Examples



Typical sectors of industry and application areas

- Beverage technology ● Woodworking
- Plastic processing industry ● Aerospace engineering ● Cleanroom etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/bottle-filling



► www.igus.co.uk/drillrig



► www.igus.co.uk/ultraviolet-radiation

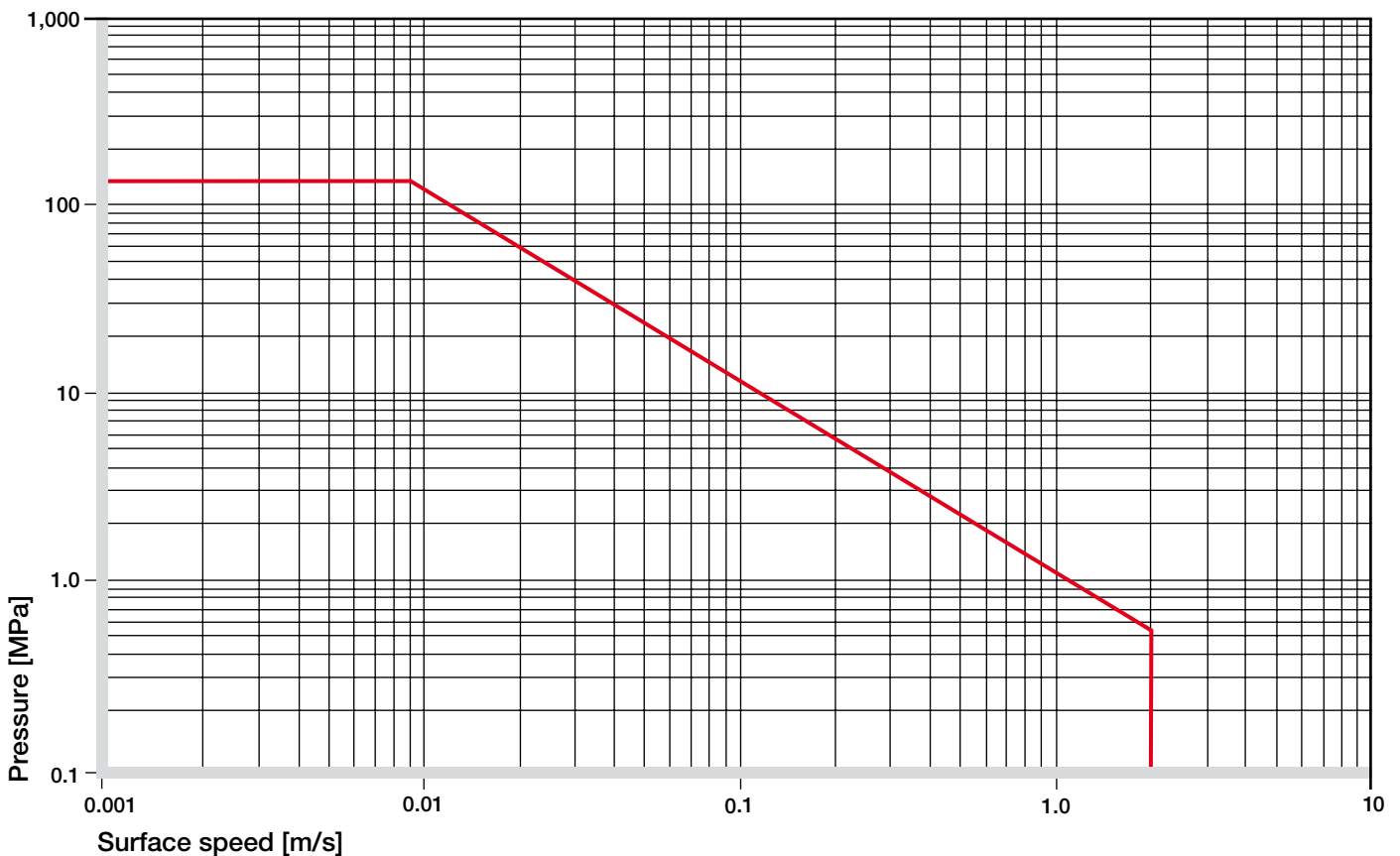


► www.igus.co.uk/flangedball-valves

Material data

General properties	Unit	iglidur® X	Testing method
Density	g/cm ³	1.44	
Colour		black	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.5	
Coefficient of sliding friction, dynamic against steel	μ	0.09–0.27	
pv value, max. (dry)	MPa · m/s	1.32	
Mechanical properties			
Modulus of elasticity	MPa	8,100	DIN 53457
Tensile strength at +20°C	MPa	170	DIN 53452
Compressive strength	MPa	100	
Max. static surface pressure (+20°C)	MPa	150	
Shore-D Hardness		85	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+250	
Max. short term application temperature	°C	+315	
Min. application temperature	°C	-100	
Thermal conductivity	W/m · K	0.6	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	5	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	< 10 ⁵	DIN IEC 93
Surface resistance	Ω	< 10 ³	DIN 53482

Table 01: Material data

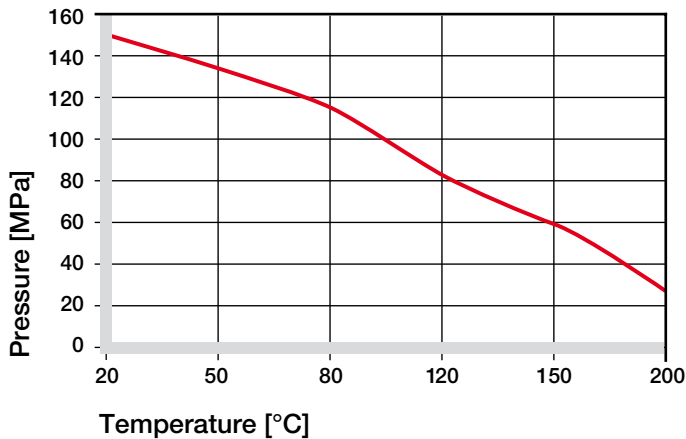


Graph 01: Permissible pv values for iglidur® X with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

iglidur® X | Technical Data

Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® X plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +150 °C the permissible surface pressure is almost 60 MPa.

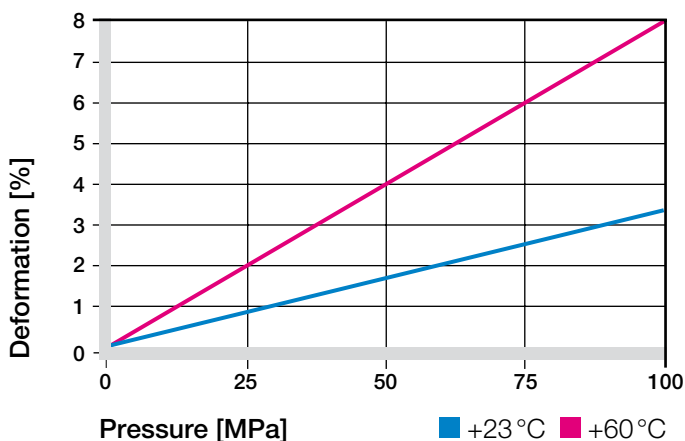


Graph 02: Recommended maximum surface pressure as a function of temperature (150 MPa at +20 °C)

iglidur® X has an excellent combination of high temperature resistance, high compressive strength, and excellent resistance to chemicals. The aspect of temperature resistance and pressure susceptibility is also reflected in the pv diagram.

Graph 03 shows how iglidur® X plain bearings deform elastically under load.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® X is designed for higher speeds than other iglidur® bearings. This is due to its high temperature resistance and excellent thermal conductivity. One benefit of this is seen in the maximum pv value of 1.32 MPa · m/s.

However, in this case, only the smallest radial loads may act on the bearings. At the given speeds, friction can cause a temperature increase to maximum permissible levels.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1.5	1.1	5
Short term	3.5	2.5	10

Table 02: Maximum running speed

Temperatures

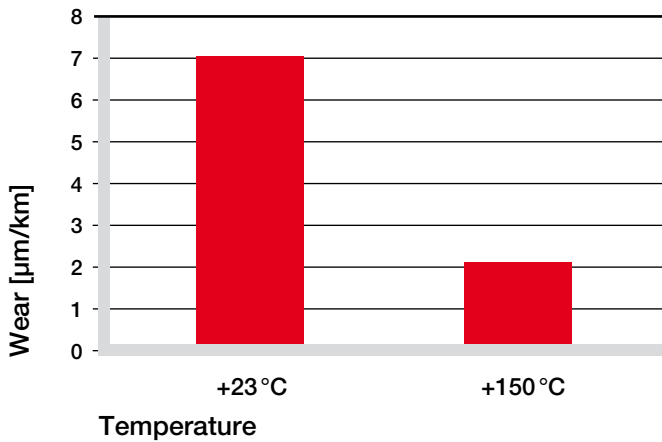
In terms of temperature resistance iglidur® X has also taken on a leading position. Having a permissible long term application, temperature of +250 °C, iglidur® X will even withstand +315 °C short term. As with all thermoplastics, the compression resistance of iglidur® X decreases with increasing temperature. However, the wear drops considerably when used within the observed temperature range of +23 °C to +150 °C.

In certain cases, relaxation of the bearing can even occur at temperatures of more than +170 °C. This leads, after re-cooling, to the bearing moving out of the housing. At temperatures over +170 °C the axial security of the bearing in the housing needs to be tested. If necessary, secondary measures must be taken to mechanically secure the bearing. Please contact us if you have questions on bearing use.

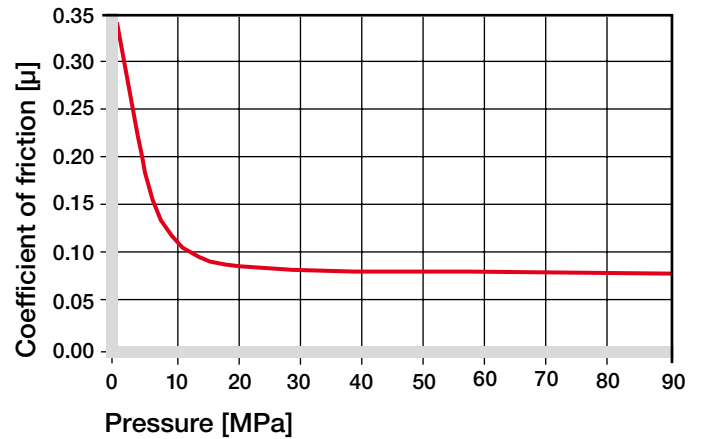
► Application Temperatures, page 46

iglidur® X	Application temperature
Minimum	-100 °C
Max. long term	+250 °C
Max. short term	+315 °C
Add. securing is required from	+135 °C

Table 03: Temperature limits



Graph 04: Wear, rotation with $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$, Cf53 hardened and ground steel shaft

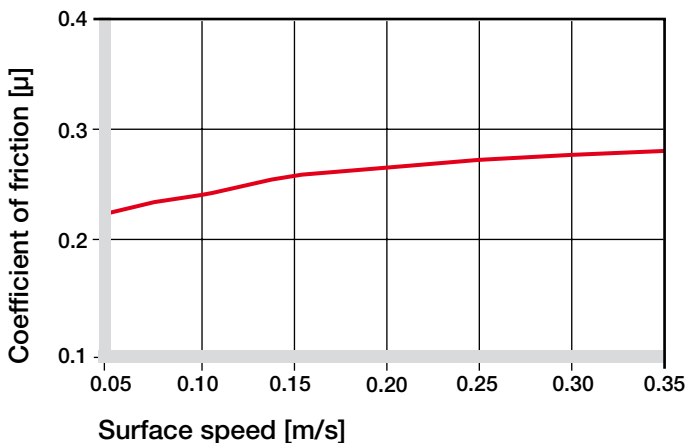


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

Friction and Wear

Similar to wear resistance, the coefficient of friction also changes with the load. The coefficient of friction increases with an increase in surface speed. On the other hand, an increased load has an inverse effect: the coefficient of friction decreases (see Graphs 05 and 06). This explains the excellent performance of iglidur® X plain bearings for high loads.

- Coefficients of Friction and Surfaces, **page 48**
- Wear Resistance, **page 49**

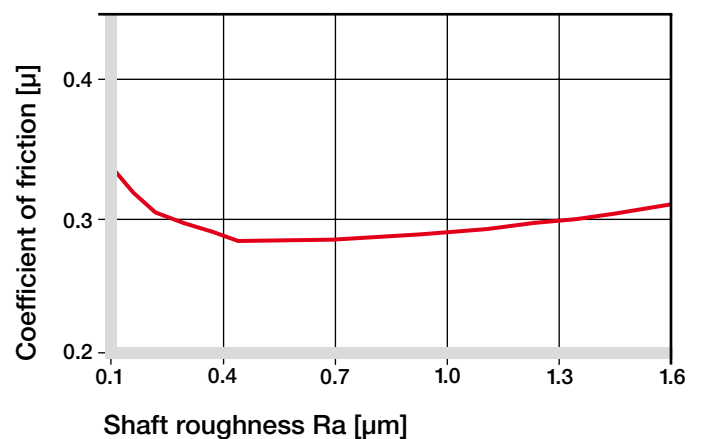


Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

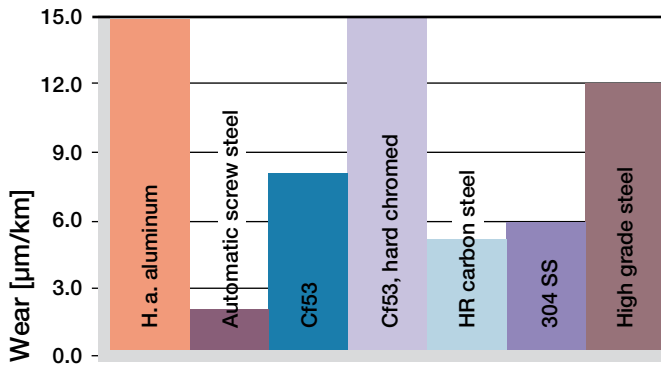
Friction and wear, to a high degree, are also dependent on the shaft material. Shafts that are too smooth increase the coefficient of friction of the bearing. Ground surfaces with an average roughness R_a of 0.6 to $0.8 \mu\text{m}$ are ideal. Graphs 07 to 10 show results of testing different shaft materials with plain bearings made of iglidur® X. For low loads in rotating operation, the best wear values are found with 303 Stainless and HR Carbon Steel shafts. However, above a load of 2 MPa the bearing wear greatly increases with these two shaft materials. For the higher load range, hard chromed shafts or Cf53 shafts give good results. In oscillating operation at low loads, similar wear values for Cf53 and 303 stainless steel shafts occur. The wear is somewhat higher than during rotational movements. If the shaft material you plan to use is not contained in this list, please contact us.

- Shaft Materials, **page 51**

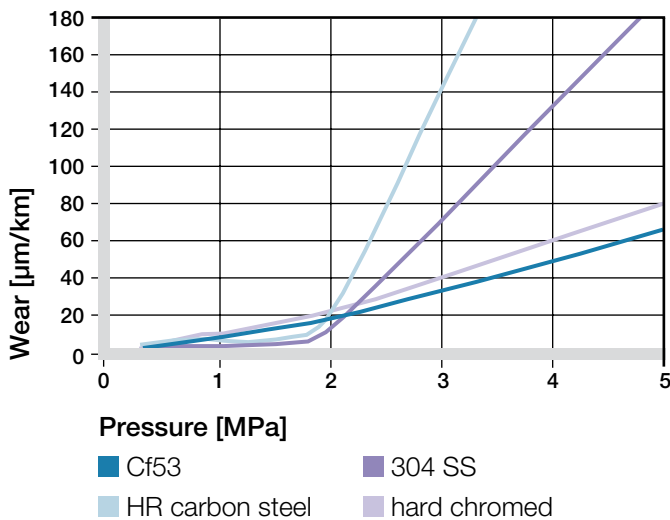


Graph 07: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

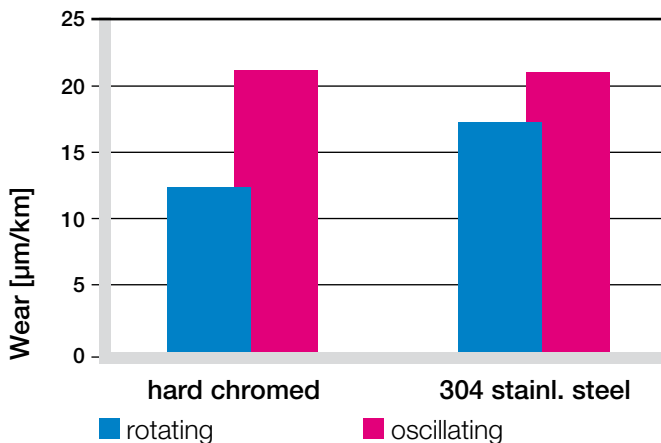
iglidur® X | Technical Data



Graph 08: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 09: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 10: Wear for rotating and oscillating applications with different shaft materials, $p = 2 \text{ MPa}$

iglidur® X	Dry	Greases	Oil	Water
C.o.f. μ	0,09–0,27	0,09	0,04	0,04

Table 04: Coefficient of friction against steel ($R_a = 1 \text{ }\mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® X plain bearings have almost universal chemical resistance. The material is only attacked by concentrated acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+
Strong acids	–
Diluted alkalines	+
Strong alkalines	+

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® X are resistant to radiation up to an intensity of $1 \cdot 10^5 \text{ Gy}$. iglidur® X is the most radioactive resistant material of the iglidur® product range. iglidur® X is extremely resistant to hard gamma radiation and withstands a radiation dose of 1,000 Mrad without detectable change in its properties. The material also withstands an alpha or beta radiation of 10,000 Mrad with practically no damage.

UV Resistance

The excellent material properties of iglidur® X do not change under UV radiation and other weathering effects.

Vacuum

In a vacuum environment iglidur® X plain bearings can be used virtually without restrictions. Outgassing takes place to a very limited extent.

Electrical Properties

iglidur® X plain bearings are electrically conductive.

Volume resistance	$< 10^5 \text{ }\Omega\text{cm}$
Surface resistance	$< 10^3 \text{ }\Omega\text{cm}$

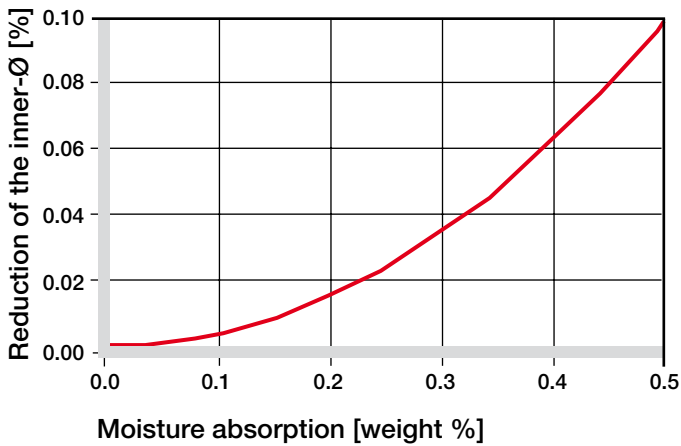
Moisture Absorption

The moisture absorption of iglidur[®] X plain bearings is very low. It is approximately 0.1% by weight in the standard atmosphere. So even in applications under water, iglidur[®] X bearings can be used without alterations of the assembly conditions. The maximum moisture absorption is 0.5% by weight.

Maximum moisture absorption

At +23 °C/50% r.h.	0.1% weight
Max. moisture absorption	0.5% weight

Table 06: Moisture absorption



Graph 11: Effect of moisture absorption plain bearings

Installation Tolerances

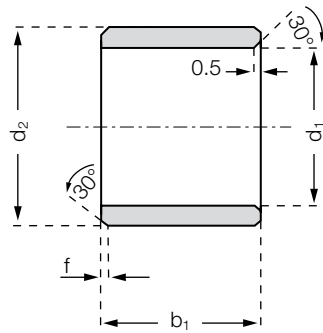
iglidur[®] X plain bearings are meant to be oversized before pressfit. The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet our specified tolerances.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur [®] X F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

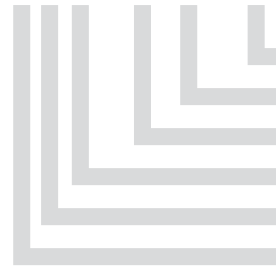
Table 07: Important tolerances plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

XSM-0203-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® X

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
XSM-0203-03	2.0	+0.006 +0.046	3.5	3.0
XSM-0304-03	3.0	+0.006 +0.046	4.5	3.0
XSM-0304-06	3.0	+0.006 +0.046	4.5	6.0
XSM-0405-04	4.0	+0.010 +0.058	5.5	4.0
XSM-0507-035	5.0	+0.010 +0.058	7.0	3.5
XSM-0507-05	5.0	+0.010 +0.058	7.0	5.0
XSM-0507-08	5.0	+0.010 +0.058	7.0	8.0
XSM-0608-06	6.0	+0.010 +0.058	8.0	6.0
XSM-0608-08	6.0	+0.010 +0.058	8.0	8.0
XSM-0608-10	6.0	+0.010 +0.058	8.0	10.0
XSM-0608-13	6.0	+0.010 +0.058	8.0	13.8
XSM-0709-12	7.0	+0.013 +0.071	9.0	12.0
XSM-0810-06	8.0	+0.013 +0.071	10.0	6.0
XSM-0810-08	8.0	+0.013 +0.071	10.0	8.0
XSM-0810-10	8.0	+0.013 +0.071	10.0	10.0
XSM-0810-12	8.0	+0.013 +0.071	10.0	12.0
XSM-0810-15	8.0	+0.013 +0.071	10.0	15.0
XSM-1012-06	10.0	+0.013 +0.071	12.0	6.0
XSM-1012-08	10.0	+0.013 +0.071	12.0	8.0
XSM-1012-10	10.0	+0.013 +0.071	12.0	10.0
XSM-1012-12	10.0	+0.013 +0.071	12.0	12.0
XSM-1012-20	10.0	+0.013 +0.071	12.0	20.0
XSM-1214-035	12.0	+0.016 +0.086	14.0	3.5
XSM-1214-06	12.0	+0.016 +0.086	14.0	6.0
XSM-1214-08	12.0	+0.016 +0.086	14.0	8.0

Part number	d1	d1-Tolerance*	d2	b1 h13
XSM-1214-10	12.0	+0.016 +0.086	14.0	10.0
XSM-1214-12	12.0	+0.016 +0.086	14.0	12.0
XSM-1214-15	12.0	+0.016 +0.086	14.0	15.0
XSM-1214-20	12.0	+0.016 +0.086	14.0	20.0
XSM-1416-12	14.0	+0.016 +0.086	16.0	12.0
XSM-1416-15	14.0	+0.016 +0.086	16.0	15.0
XSM-1416-20	14.0	+0.016 +0.086	16.0	20.0
XSM-1517-10	15.0	+0.016 +0.086	17.0	10.0
XSM-1517-15	15.0	+0.016 +0.086	17.0	15.0
XSM-1517-20	15.0	+0.016 +0.086	17.0	20.0
XSM-1618-10	16.0	+0.016 +0.086	18.0	10.0
XSM-1618-12	16.0	+0.016 +0.086	18.0	12.0
XSM-1618-15	16.0	+0.016 +0.086	18.0	15.0
XSM-1618-20	16.0	+0.016 +0.086	18.0	20.0
XSM-1618-35	16.0	+0.016 +0.086	18.0	35.0
XSM-1719-20	17.0	+0.016 +0.086	19.0	20.0
XSM-1820-15	18.0	+0.016 +0.086	20.0	15.0
XSM-1820-20	18.0	+0.016 +0.086	20.0	20.0
XSM-2022-140	20.0	+0.020 +0.104	22.0	14.0
XSM-2022-145	20.0	+0.020 +0.104	22.0	14.5
XSM-2022-18	20.0	+0.020 +0.104	22.0	18.0
XSM-2022-20	20.0	+0.020 +0.104	22.0	20.0
XSM-2023-07	20.0	+0.020 +0.104	23.0	7.0
XSM-2023-10	20.0	+0.020 +0.104	23.0	10.0
XSM-2023-15	20.0	+0.020 +0.104	23.0	15.0

* after pressfit. Testing methods ► page 55



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order part number
example XSM-0203-03



Sleeve bearing

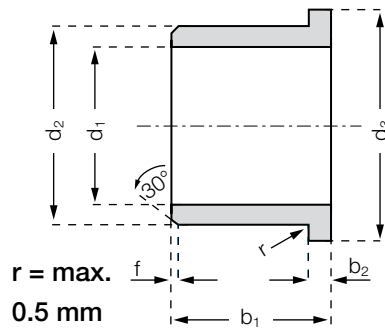
Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
XSM-2023-20	20.0	+0.020 +0.104	23.0	20.0
XSM-2023-25	20.0	+0.020 +0.104	23.0	25.0
XSM-2023-30	20.0	+0.020 +0.104	23.0	30.0
XSM-2225-15	22.0	+0.020 +0.104	25.0	15.0
XSM-2225-20	22.0	+0.020 +0.104	25.0	20.0
XSM-2426-20	24.0	+0.020 +0.104	26.0	20.0
XSM-2427-20	24.0	+0.020 +0.104	27.0	20.0
XSM-2528-077	25.0	+0.020 +0.104	28.0	7.7
XSM-2528-09	25.0	+0.020 +0.104	28.0	9.0
XSM-2528-12	25.0	+0.020 +0.104	28.0	12.0
XSM-2528-13	25.0	+0.020 +0.104	28.0	13.0
XSM-2528-15	25.0	+0.020 +0.104	28.0	15.0
XSM-2528-20	25.0	+0.020 +0.104	28.0	20.0
XSM-2528-30	25.0	+0.020 +0.104	28.0	30.0
XSM-2730-05	27.0	+0.020 +0.104	30.0	5.7
XSM-2832-20	28.0	+0.020 +0.104	32.0	20.0
XSM-2832-30	28.0	+0.020 +0.104	32.0	30.0
XSM-3034-20	30.0	+0.020 +0.104	34.0	20.0
XSM-3034-25	30.0	+0.020 +0.104	34.0	25.0
XSM-3034-30	30.0	+0.020 +0.104	34.0	30.0

Part number	d1	d1-Tolerance*	d2	b1 h13
XSM-3034-40	30.0	+0.020 +0.104	34.0	40.0
XSM-3236-25	32.0	+0.025 +0.125	36.0	25.0
XSM-3236-30	32.0	+0.025 +0.125	36.0	30.0
XSM-3539-20	35.0	+0.025 +0.125	39.0	20.0
XSM-3539-30	35.0	+0.025 +0.125	39.0	30.0
XSM-3539-40	35.0	+0.025 +0.125	39.0	40.0
XSM-3539-50	35.0	+0.025 +0.125	39.0	50.0
XSM-4044-30	40.0	+0.025 +0.125	44.0	30.0
XSM-4044-40	40.0	+0.025 +0.125	44.0	40.0
XSM-4044-50	40.0	+0.025 +0.125	44.0	50.0
XSM-4550-50	45.0	+0.025 +0.125	50.0	50.0
XSM-5055-30	50.0	+0.025 +0.125	55.0	30.0
XSM-5055-40	50.0	+0.025 +0.125	55.0	40.0
XSM-5055-60	50.0	+0.025 +0.125	55.0	60.0
XSM-5560-50	55.0	+0.030 +0.150	60.0	50.0
XSM-6065-45	60.0	+0.030 +0.150	65.0	45.0
XSM-6065-60	60.0	+0.030 +0.150	65.0	60.0
XSM-6570-50	65.0	+0.030 +0.150	70.0	50.0
XSM-7075-70	70.0	+0.030 +0.150	75.0	70.0

* after pressfit. Testing methods ► page 55

Flange bearing



Order key

XFM-0304-05



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® X

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
XFM-020406-03	2.0	+0.006 +0.046	4.0	6.0	3.0	1.0
XFM-0304-05	3.0	+0.006 +0.046	4.5	7.5	5.0	0.75
XFM-0405-04	4.0	+0.010 +0.058	5.5	9.5	4.0	0.75
XFM-0405-06	4.0	+0.010 +0.058	5.5	9.5	6.0	0.75
XFM-040508-06	4.0	+0.010 +0.058	5.5	8.0	6.0	0.75
XFM-0507-05	5.0	+0.010 +0.058	7.0	11.0	5.0	1.0
XFM-0608-08	6.0	+0.010 +0.058	8.0	12.0	8.0	1.0
XFM-0608-10	6.0	+0.010 +0.058	8.0	12.0	10.0	1.0
XFM-0810-05	8.0	+0.013 +0.071	10.0	15.0	5.5	1.0
XFM-0810-075	8.0	+0.013 +0.071	10.0	15.0	7.5	1.0
XFM-0810-08	8.0	+0.013 +0.071	10.0	15.0	8.0	1.0
XFM-0810-09	8.0	+0.013 +0.071	10.0	15.0	9.0	1.0
XFM-081012-04	8.0	+0.013 +0.071	10.0	12.0	4.0	1.0
XFM-081014-31	8.0	+0.013 +0.071	10.0	14.0	31.5	1.0
XFM-1012-06	10.0	+0.013 +0.071	12.0	18.0	6.0	1.0
XFM-1012-08	10.0	+0.013 +0.071	12.0	15.0	8.0	1.0
XFM-1012-09	10.0	+0.013 +0.071	12.0	18.0	9.0	1.0
XFM-1012-15	10.0	+0.013 +0.071	12.0	18.0	15.0	1.0
XFM-1012-18	10.0	+0.013 +0.071	12.0	18.0	18.0	1.0
XFM-1012-22	10.0	+0.013 +0.071	12.0	18.0	22.0	1.0
XFM-1214-055	12.0	+0.016 +0.086	14.0	20.0	5.5	1.0
XFM-121418-059	12.0	+0.016 +0.086	14.0	18.0	5.9	1.0
XFM-1214-09	12.0	+0.016 +0.086	14.0	20.0	9.0	1.0
XFM-1214-12	12.0	+0.016 +0.086	14.0	20.0	12.0	1.0
XFM-1214-15	12.0	+0.016 +0.086	14.0	20.0	15.0	1.0

* after pressfit. Testing methods ► page 55



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order part number
example XFM-0304-05



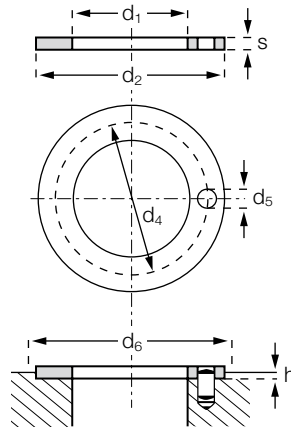
Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
XFM-121418-039	12.0	+0.016 +0.086	14.0	18.0	3.9	1.0
XFM-1416-10	14.0	+0.016 +0.086	16.0	22.0	10.0	1.0
XFM-1416-12	14.0	+0.016 +0.086	16.0	22.0	12.0	1.0
XFM-1416-17	14.0	+0.016 +0.086	16.0	22.0	17.0	1.0
XFM-1517-06	15.0	+0.015 +0.086	17.0	23.0	6.0	1.0
XFM-1517-12	15.0	+0.016 +0.086	17.0	23.0	12.0	1.0
XFM-1517-17	15.0	+0.016 +0.086	17.0	23.0	17.0	1.0
XFM-1618-12	16.0	+0.016 +0.086	18.0	24.0	12.0	1.0
XFM-1618-17	16.0	+0.016 +0.086	18.0	24.0	17.0	1.0
XFM-1820-12	18.0	+0.016 +0.086	20.0	26.0	12.0	1.0
XFM-1820-17	18.0	+0.016 +0.086	20.0	26.0	17.0	1.0
XFM-2023-075	20.0	+0.020 +0.104	23.0	30.0	7.5	1.5
XFM-2023-11	20.0	+0.020 +0.104	23.0	30.0	11.0	1.5
XFM-2023-16	20.0	+0.020 +0.104	23.0	30.0	16.5	1.5
XFM-2023-21	20.0	+0.020 +0.104	23.0	30.0	21.0	1.5
XFM-2528-13	25.0	+0.020 +0.104	28.0	35.0	13.5	1.5
XFM-2528-21	25.0	+0.020 +0.104	28.0	35.0	21.0	1.5
XFM-252833-08	25.0	+0.020 +0.104	28.0	33.0	8.0	1.0
XFM-2730-20	27.0	+0.020 +0.104	30.0	38.0	20.0	1.5
XFM-3034-16	30.0	+0.020 +0.104	34.0	42.0	16.0	2.0
XFM-3034-26	30.0	+0.020 +0.104	34.0	42.0	26.0	2.0
XFM-3034-40	30.0	+0.020 +0.104	34.0	42.0	40.0	2.0
XFM-3236-15	32.0	+0.025 +0.125	36.0	45.0	15.0	2.0
XFM-3236-26	32.0	+0.025 +0.125	36.0	45.0	26.0	2.0
XFM-3539-26	35.0	+0.025 +0.125	39.0	47.0	26.0	2.0
XFM-4044-30	40.0	+0.025 +0.125	44.0	52.0	30.0	2.0
XFM-4044-40	40.0	+0.025 +0.125	44.0	52.0	40.0	2.0
XFM-4550-50	45.0	+0.025 +0.125	50.0	58.0	50.0	2.0
XFM-5055-40	50.0	+0.025 +0.125	55.0	63.0	40.0	2.0
XFM-6065-40	60.0	+0.030 +0.150	65.0	73.0	40.0	2.0
XFM-7075-40	70.0	+0.030 +0.150	75.0	83.0	40.0	2.0
XFM-7580-50	75.0	+0.030 +0.150	80.0	88.0	50.0	2.0

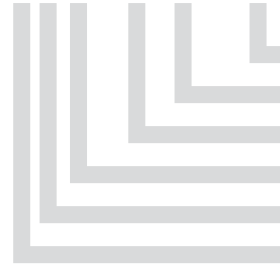
* after pressfit. Testing methods ► page 55

Thrust washer



Order key

XTM-0620-015



Thickness s
Outer diameter d2
Inner diameter d1
Metric
Type (Form T)
Material iglidur® X

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

Part number	d1 +0.25	d2 -0.25	s -0.05	d4 -0.12 +0.12	d5 +0.375 +0.125	h +0.2 -0.2	d6 +0.12
XTM-0620-015	6.0	20.0	1.5	13.0	1.5	1.0	20.0
XTM-0818-015	8.0	18.0	1.5	13.0	1.5	1.0	18.0
XTM-1018-010	10.0	18.0	1.0	**	**	0.7	18.0
XTM-1224-015	12.0	24.0	1.5	18.0	1.5	1.0	24.0
XTM-1426-015	14.0	26.0	1.5	20.0	2.0	1.0	26.0
XTM-1524-015	15.0	24.0	1.5	19.5	1.5	1.0	24.0
XTM-1630-015	16.0	30.0	1.5	22.0	2.0	1.0	30.0
XTM-1832-015	18.0	32.0	1.5	25.0	2.0	1.0	32.0
XTM-2036-015	20.0	36.0	1.5	28.0	3.0	1.0	36.0
XTM-2238-015	22.0	38.0	1.5	30.0	3.0	1.0	38.0
XTM-2442-015	24.0	42.0	1.5	33.0	3.0	1.0	42.0
XTM-2644-015	26.0	44.0	1.5	35.0	3.0	1.0	44.0
XTM-3254-015	32.0	54.0	1.5	43.0	4.0	1.0	54.0
XTM-3862-015	38.0	62.0	1.5	50.0	4.0	1.0	62.0
XTM-4266-015	42.0	66.0	1.5	54.0	4.0	1.0	66.0
XTM-4874-020	48.0	74.0	2.0	61.0	4.0	1.5	74.0
XTM-5278-020	52.0	78.0	2.0	65.0	4.0	1.5	78.0
XTM-6290-020	62.0	90.0	2.0	76.0	4.0	1.5	90.0

** design without fixing bore



delivery available
time from stock

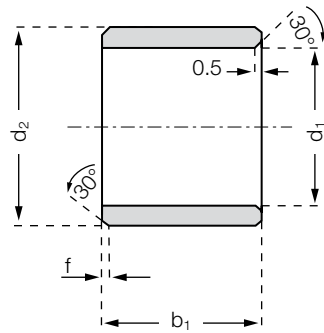


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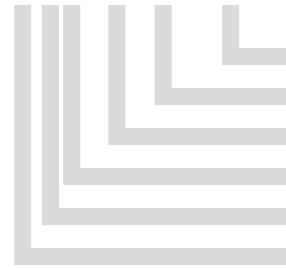
order part number
example XTM-0620-015

Sleeve bearing



Order key

XSI-0203-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form S)
- Material iglidur® X

Chamfer in relation to the d1

d1 [Inch]:	Ø 0,040–0,236	Ø 0,236–0,472	Ø 0,472–1,18	Ø > 1,18
f [Inch]:	0.012	0.019	0.031	0047

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
XSI-0203-03	1/8	3/16	3/16	.1269	.1251	.1878	.1873	.1243	.1236
XSI-0203-05	1/8	3/16	5/16	.1269	.1251	.1878	.1873	.1243	.1236
XSI-0203-06	1/8	3/16	3/8	.1269	.1251	.1878	.1873	.1243	.1236
XSI-0304-03	3/16	1/4	3/16	.1892	.1873	.2503	.2497	.1865	.1858
XSI-0304-04	3/16	1/4	1/4	.1892	.1873	.2503	.2497	.1865	.1858
XSI-0304-06	3/16	1/4	3/8	.1892	.1873	.2503	.2497	.1865	.1858
XSI-0304-08	3/16	1/4	1/2	.1892	.1873	.2503	.2497	.1865	.1858
XSI-0405-04	1/4	5/16	1/4	.2521	.2498	.3128	.3122	.2490	.2481
XSI-0405-06	1/4	5/16	3/8	.2521	.2498	.3128	.3122	.2490	.2481
XSI-0405-08	1/4	5/16	1/2	.2521	.2498	.3128	.3122	.2490	.2481
XSI-0506-04	5/16	3/8	1/4	.3148	.3125	.3753	.3747	.3115	.3106
XSI-0506-06	5/16	3/8	3/8	.3148	.3125	.3753	.3747	.3115	.3106
XSI-0506-08	5/16	3/8	1/2	.3148	.3125	.3753	.3747	.3115	.3106
XSI-0607-04	3/8	15/32	1/4	.3773	.3750	.4691	.4684	.3740	.3731
XSI-0607-05	3/8	15/32	5/16	.3773	.3750	.4691	.4684	.3740	.3731
XSI-0607-06	3/8	15/32	3/8	.3773	.3750	.4691	.4684	.3740	.3731
XSI-0607-08	3/8	15/32	1/2	.3773	.3750	.4691	.4684	.3740	.3731
XSI-0607-10	3/8	15/32	5/8	.3773	.3750	.4691	.4684	.3740	.3731
XSI-0708-04	7/16	17/32	1/4	.4406	.4379	.5316	.5309	.4365	.4355
XSI-0708-08	7/16	17/32	1/2	.4406	.4379	.5316	.5309	.4365	.4355
XSI-0708-10	7/16	17/32	5/8	.4406	.4379	.5316	.5309	.4365	.4355
XSI-0708-12	7/16	17/32	3/4	.4406	.4379	.5316	.5309	.4365	.4355
XSI-0809-04	1/2	19/32	1/4	.5030	.5003	.5941	.5934	.4990	.4980
XSI-0809-06	1/2	19/32	3/8	.5030	.5003	.5941	.5934	.4990	.4980
XSI-0809-08	1/2	19/32	1/2	.5030	.5003	.5941	.5934	.4990	.4980

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
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order part number
example XSI-0203-03



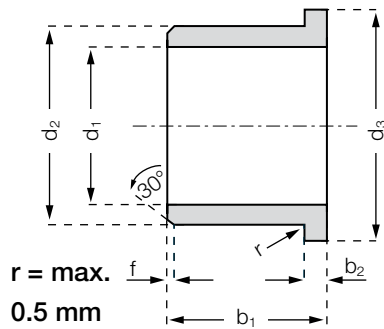
Sleeve bearing

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
XSI-0809-10	1/2	19/32	5/8	.5030	.5003	.5941	.5934	.4990	.4980
XSI-0809-12	1/2	19/32	3/4	.5030	.5003	.5941	.5934	.4990	.4980
XSI-0809-16	1/2	19/32	1	.5030	.5003	.5941	.5934	.4990	.4980
XSI-0910-08	9/16	21/32	1/2	.5655	.5627	.6566	.6559	.5615	.5605
XSI-0910-12	9/16	21/32	3/4	.5655	.5627	.6566	.6559	.5615	.5605
XSI-1011-04	5/8	23/32	1/4	.6280	.6253	.7192	.7184	.6240	.6230
XSI-1011-06	5/8	23/32	3/8	.6280	.6253	.7192	.7184	.6240	.6230
XSI-1011-08	5/8	23/32	1/2	.6280	.6253	.7192	.7184	.6240	.6230
XSI-1011-10	5/8	23/32	5/8	.6280	.6253	.7192	.7184	.6240	.6230
XSI-1011-12	5/8	23/32	3/4	.6280	.6253	.7192	.7184	.6240	.6230
XSI-1011-16	5/8	23/32	1	.6280	.6253	.7192	.7184	.6240	.6230
XSI-1112-14	11/16	25/32	7/8	.6906	.6879	.7817	.7809	.6865	.6855
XSI-1214-06	3/4	7/8	3/8	.7541	.7507	.8755	.8747	.7491	.7479
XSI-1214-08	3/4	7/8	1/2	.7541	.7507	.8755	.8747	.7491	.7479
XSI-1214-12	3/4	7/8	3/4	.7541	.7507	.8755	.8747	.7491	.7479
XSI-1214-16	3/4	7/8	1	.7541	.7507	.8755	.8747	.7491	.7479
XSI-1416-12	7/8	1	3/4	.8791	.8757	1.0005	.9997	.8741	.8729
XSI-1416-16	7/8	1	1	.8791	.8757	1.0005	.9997	.8741	.8729
XSI-1618-08	1	1 1/8	1/2	1.0041	1.0007	1.1255	1.1247	.9991	.9979
XSI-1618-12	1	1 1/8	3/4	1.0041	1.0007	1.1255	1.1247	.9991	.9979
XSI-1618-16	1	1 1/8	1	1.0041	1.0007	1.1255	1.1247	.9991	.9979
XSI-1618-24	1	1 1/8	1 1/2	1.0041	1.0007	1.1255	1.1247	.9991	.9979
XSI-1820-12	1 1/8	1 9/32	3/4	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
XSI-2022-10	1 1/4	1 13/32	5/8	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
XSI-2022-20	1 1/4	1 13/32	1 1/4	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
XSI-2426-12	1 1/2	1 21/32	3/4	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
XSI-2426-16	1 1/2	1 21/32	1	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
XSI-2426-24	1 1/2	1 21/32	1 1/2	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
XSI-2629-20	1 5/8	1 25/32	1 1/4	1.6297	1.6258	1.7818	1.7808	1.6238	1.6222
XSI-2831-16	1 3/4	1 15/16	1	1.7547	1.7507	1.9381	1.9371	1.7487	1.7471
XSI-3235-24	2	2 3/16	1 1/2	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
XSI-3235-32	2	2 3/16	2	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
XSI-3639-32	2 1/4	2 7/16	2	2.2577	2.2531	2.4377	2.4365	2.2507	2.2489
XSI-4447-32	2 3/4	2 15/16	2	2.7570	2.7523	2.9370	2.9358	2.7500	2.7490

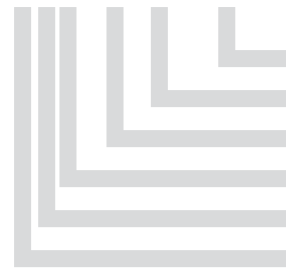
* after pressfit. Testing methods ► page 55

Flange bearing



Order key

XFI-0203-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form F)
- Material iglidur® X

Chamfer in relation to the d1

d1 [Inch]:	Ø 0,040–0,236	Ø 0,236–0,472	Ø 0,472–1,18	Ø > 1,18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
XFI-0203-03	1/8	3/16	3/16	.312	.032	.1269	.1251	.1878	.1873	.1243	.1236
XFI-0203-06	1/8	3/16	3/8	.312	.032	.1269	.1251	.1878	.1873	.1243	.1236
XFI-0304-04	3/16	1/4	1/4	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
XFI-0304-06	3/16	1/4	3/8	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
XFI-0304-08	3/16	1/4	1/2	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
XFI-0405-03	1/4	5/16	3/16	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
XFI-0405-04	1/4	5/16	1/4	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
XFI-0405-06	1/4	5/16	3/8	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
XFI-0405-08	1/4	5/16	1/2	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
XFI-0405-12	1/4	5/16	3/4	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
XFI-0506-04	5/16	3/8	1/4	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
XFI-0506-06	5/16	3/8	3/8	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
XFI-0506-08	5/16	3/8	1/2	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
XFI-0607-04	3/8	15/32	1/4	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
XFI-0607-06	3/8	15/32	3/8	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
XFI-0607-08	3/8	15/32	1/2	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
XFI-0607-12	3/8	15/32	3/4	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
XFI-0708-08	7/16	17/32	1/2	.750	.046	.4406	.4379	.5316	.5309	.4365	.4355
XFI-0809-04	1/2	19/32	1/4	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
XFI-0809-06	1/2	19/32	3/8	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
XFI-0809-08	1/2	19/32	1/2	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
XFI-0809-12	1/2	19/32	3/4	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
XFI-0809-16	1/2	19/32	1	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
XFI-1011-08	5/8	23/32	1/2	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
XFI-1011-12	5/8	23/32	3/4	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230

* after pressfit. Testing methods ► page 55



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order part number
example XFI-0203-03



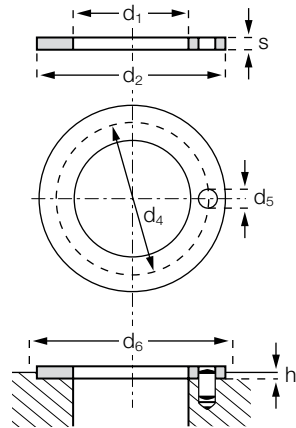
Flange bearing

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
XFI-1011-16	5/8	23/32	1	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
XFI-1011-24	5/8	23/32	1 1/2	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
XFI-1214-08	3/4	7/8	1/2	1.125	.062	.7541	.7507	.8755	.8747	.7491	.7479
XFI-1214-12	3/4	7/8	3/4	1.125	.062	.7541	.7507	.8755	.8747	.7491	.7479
XFI-1214-16	3/4	7/8	1	1.125	.062	.7541	.7507	.8755	.8747	.7491	.7479
XFI-1214-28	3/4	7/8	1 3/4	1.125	.062	.7541	.7507	.8755	.8747	.7491	.7479
XFI-1416-12	7/8	1	3/4	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
XFI-1416-16	7/8	1	1	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
XFI-1618-08	1	1 1/8	1/2	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
XFI-1618-12	1	1 1/8	3/4	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
XFI-1618-16	1	1 1/8	1	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
XFI-1618-24	1	1 1/8	1 1/2	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
XFI-1820-12	1 1/8	1 9/32	3/4	1.562	.078	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
XFI-2022-20	1 1/4	1 13/32	1 1/4	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
XFI-2022-32	1 1/4	1 13/32	2	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
XFI-2426-12	1 1/2	1 21/32	3/4	2.000	.078	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
XFI-2426-16	1 1/2	1 21/32	1	2.000	.078	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
XFI-2426-24	1 1/2	1 21/32	1 1/2	2.000	.078	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
XFI-2426-26	1 1/2	1 21/32	1 5/8	2.000	.078	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
XFI-2831-16	1 3/4	1 15/16	1	2.375	.093	1.7547	1.7507	1.9381	1.9371	1.7487	1.7471
XFI-3235-32	2	2 3/16	2	2.625	.093	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
XFI-4447-32	2 3/4	2 15/16	2	3.375	.093	2.7570	2.7523	2.9370	2.9358	2.7500	2.7490

* after pressfit. Testing methods ► page 55

Thrust washer



Order key

XTI-0814-01



- Thickness s
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form T)
- Material iglidur® X

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [Inch]

Part number	d1 +.010	d2 -.010	s -.0020	d4 ±.005	d5 .015 + .005	h +.008	d6 +.005
XTI-0814-01	.500	.875	.0585	.692	.067	.040	.875
XTI-1018-01	.625	1.125	.0585	.880	.099	.040	1.125
XTI-1220-01	.750	1.250	.0585	1.005	.099	.040	1.250
XTI-1424-01	.875	1.500	.0585	1.192	.130	.040	1.500
XTI-1628-01	1.000	1.750	.0585	1.380	.130	.040	1.750
XTI-1826-01	1.125	1.625	.0585	–	–	.040	1.625
XTI-2034-01	1.250	2.125	.0585	1.692	.161	.040	2.125
XTI-2440-01	1.500	2.500	.0585	2.005	.192	.040	2.500
XTI-2844-01	1.750	2.750	.0585	2.255	.192	.040	2.750
XTI-3248-01	2.000	3.000	.0895	2.505	.192	.070	3.000

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prices price list online
www.igus.co.uk/en/x

order part number
example XTI-0814-01



iglidur® K **NEW!***

versatile, wear-resistant
universal material

Standard range from stock ► from page 175



iglidur® P

versatile, waterproof

Standard range from stock ► from page 185



iglidur® GLW

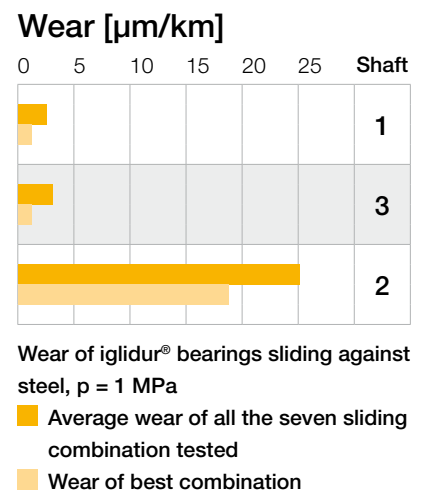
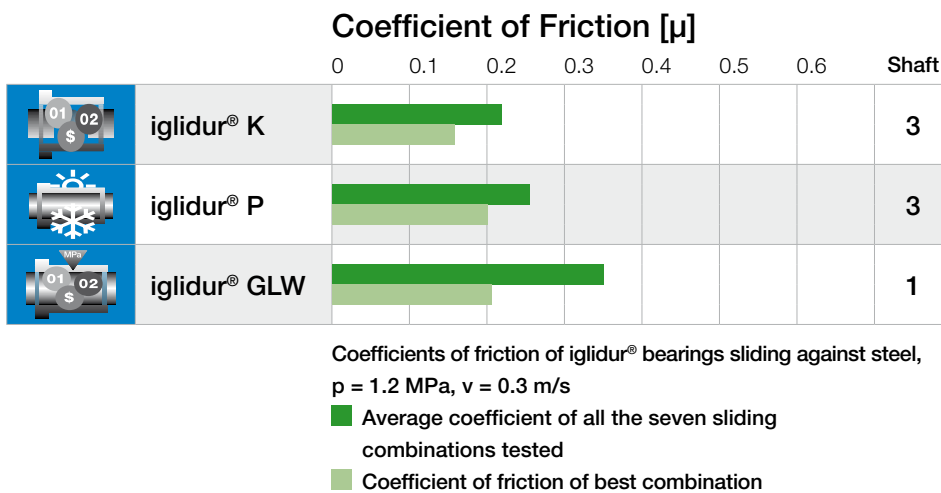
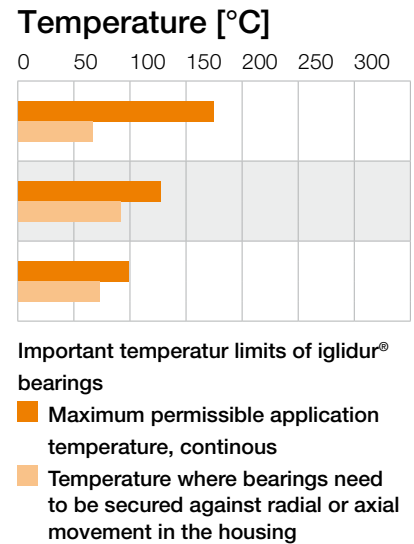
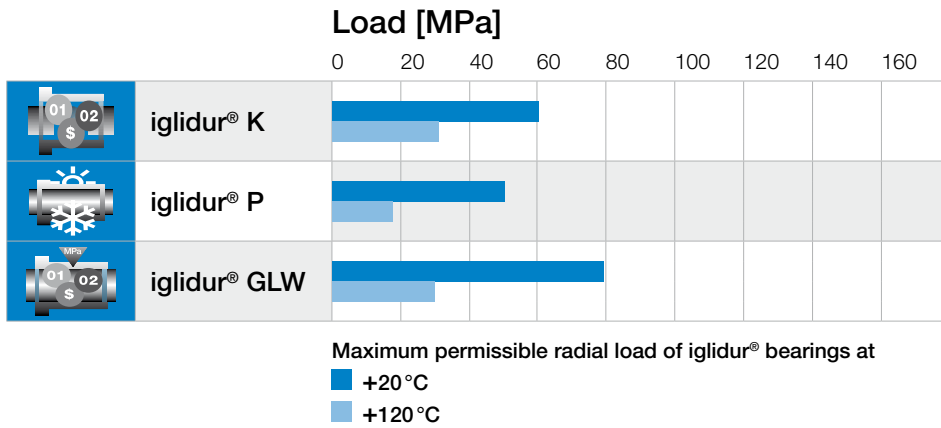
strong and low-cost material
for high quantities

On request ► from page 197

* in this catalog

iglidur®
Specialists –
General
Purpose

	 iglidur® K	 iglidur® P	 iglidur® GLW
 Long life dry running	●	●	
 For high loads			●
 For high temperatures			
 Low friction/high speed	●		
 Dirt resistant		●	●
 Chemicals resistant			
 Low water absorption	●	●	
 Food-suitable			
 Vibration-dampening			
 Edge pressure			
 For under water use			
 Cost-effective	●	●	●
from page	175	185	197



Shaft material:

1 = Cf53

2 = hard chromed

3 = Aluminum, hc

4 = Automatic screw steel

5 = HR carbon steel

6 = 304 SS

7 = High grade steel

Material data				
General properties	Unit	iglidur® K	iglidur® P	iglidur® GLW
Density	g/cm ³	1.52	1.58	1.36
Colour		yellow beige	black	black
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.1	< 0.2	1.3
Max. moisture absorption	% weight	0.6	0.4	5.5
Coefficient of sliding friction, dynamic against steel	μ	0.06–0.20	0.06–0.21	0.1–0.24
pv value, max. (dry)	MPa · m/s	0.30	0.39	0.3
Mechanical properties				
Modulus of elasticity	MPa	3,500	5,300	7,700
Tensile strength at +20 °C	MPa	80	120	235
Compressive strength	MPa	60	66	74
Max. recommended surface pressure (+20 °C)	MPa	60	50	80
Shore D hardness		72	75	78
Physical and thermal properties				
Max. long term application temperature	°C	+170	+130	+100
Max. short term application temperature	°C	+240	+200	+160
Min. application temperature	°C	-40	-40	-40
Thermal conductivity	W/m · K	0.25	0.25	0.24
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	n.b.	4	17
Electrical properties				
Specific volume resistance	Ωcm	> 10 ¹²	> 10 ¹³	> 10 ¹¹
Surface resistance	Ω	> 10 ¹²	> 10 ¹²	> 10 ¹¹

Material resistance (at +20 °C)			
Chemical resistance	iglidur® K	iglidur® P	iglidur® GLW
Alcohol	+ to 0	+	+ to 0
Hydrocarbons	+	-	+
Greases, oils without additives	+	+	+
Fuels	+	+	+
Diluted acids	0 to -	0	0 to -
Strong acids	-	-	-
Diluted alkalines	+	-	+
Strong alkalines	0	-	0
Radiation resistance [Gy] to	5 · 10²	5 · 10²	3 · 10²

+ resistant 0 conditionally resistant - not resistant



iglidur® K – versatile, wear-resistant universal material



Standard range from stock

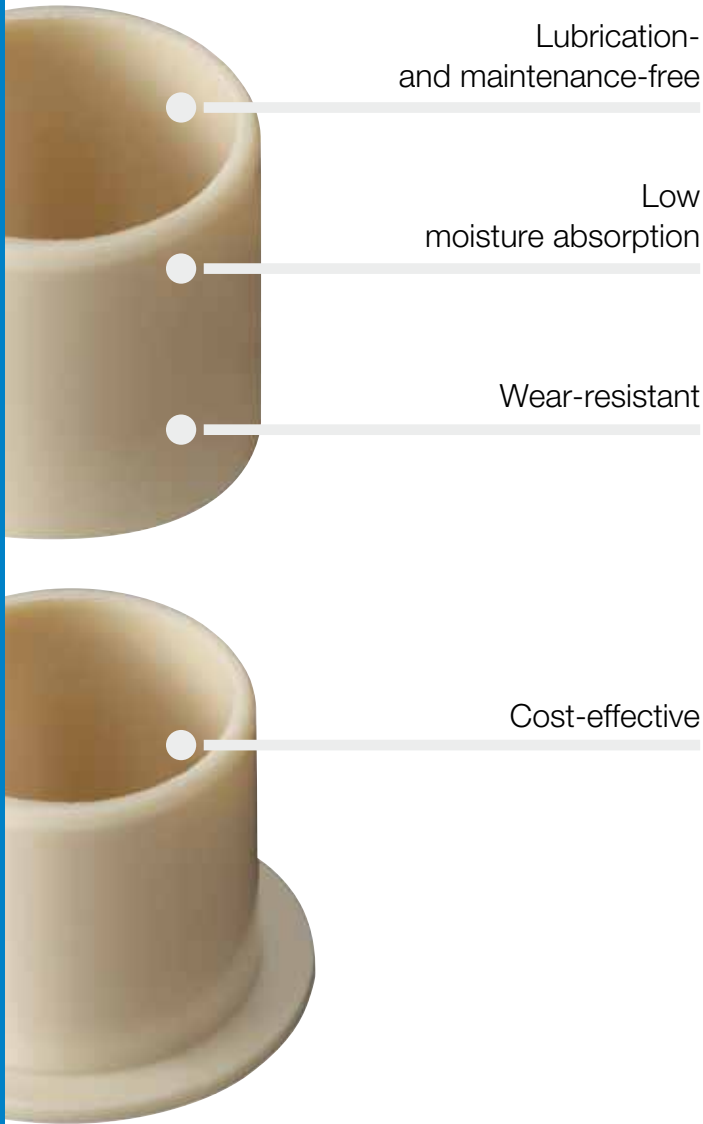
Lubrication- and maintenance-free

Low moisture absorption

Wear-resistant

Cost-effective

Versatile, wear-resistant universal material. iglidur® K is the new general purpose bearing for medium temperatures, low moisture absorption and good environmental resistance.



When to use it?

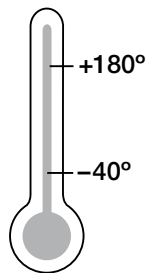
- When you need a cost-effective general purpose bearing
- For use in wet environments
- When good wear resistance is required at medium loads



When not to use it?

- When highest wear resistance is necessary
▶ **iglidur® W300, page 131**
- If high media-resistance is required
▶ **iglidur® X6, page 289**
- When a high-temperature bearing is needed
▶ **iglidur® H, page 325**

Temperature



Product range

2 types
Ø 6–20 mm
more dimensions
on request



iglidur® K | Application Examples



Typical sectors of industry and application areas

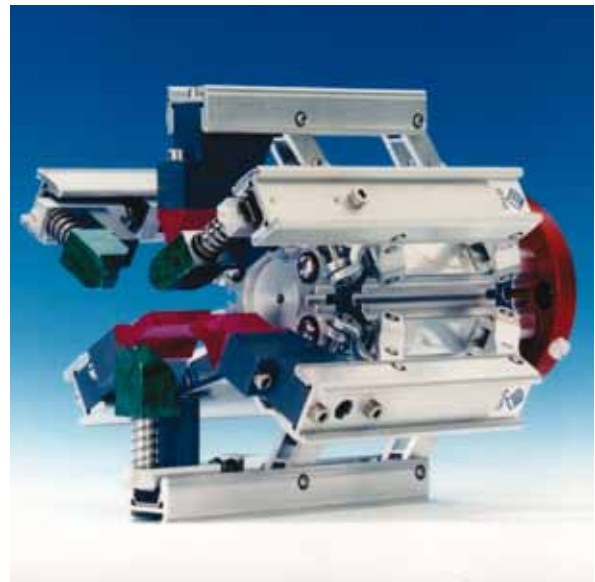
- Printing industry ● Electronics industry
- Packaging ● Medical
- Polymer processing machines etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/satellite-receiver

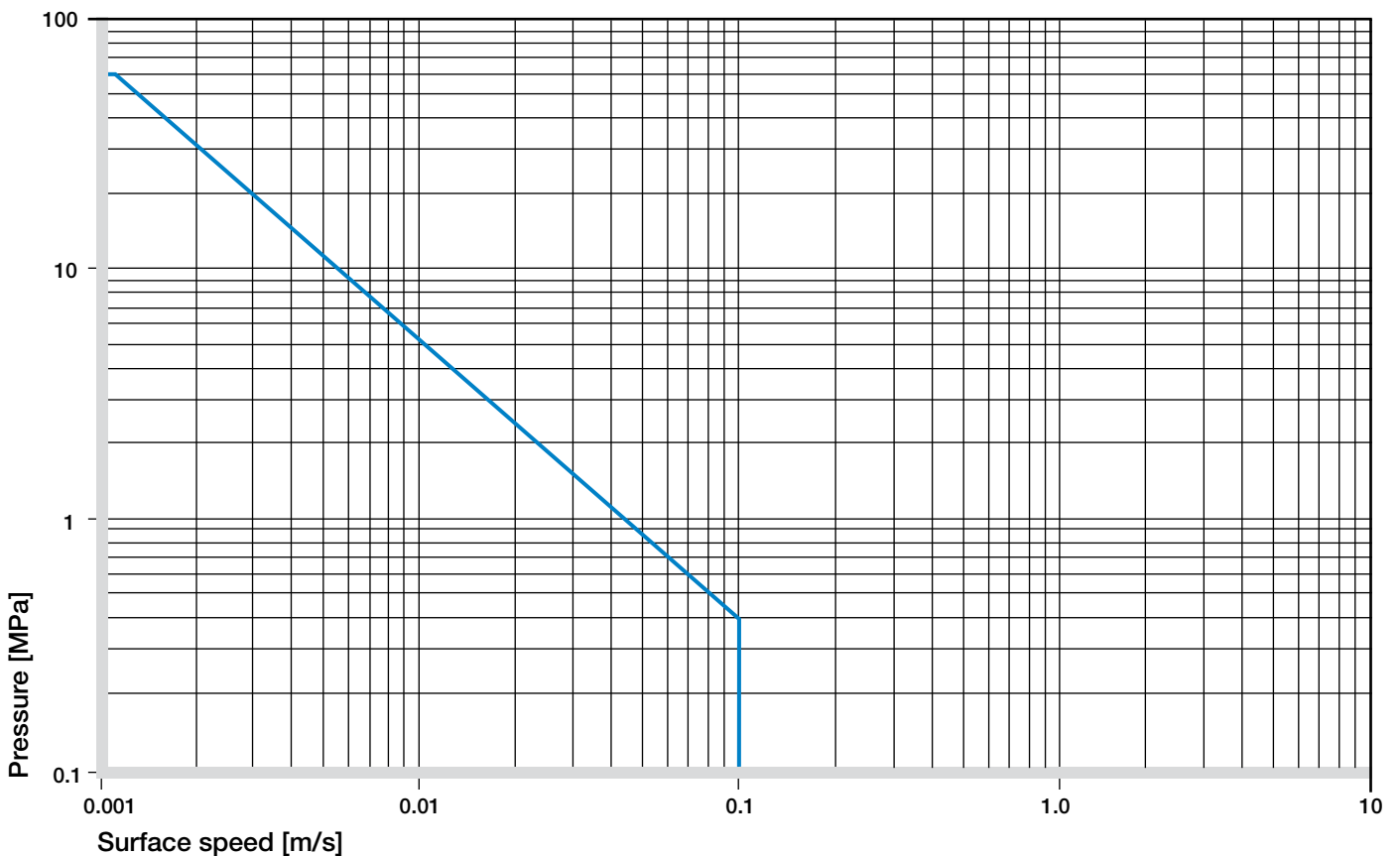


► www.igus.co.uk/mechanical-hand

Material data

General properties	Unit	iglidur® K	Testing method
Density	g/cm ³	1.52	
Colour		yellow beige	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.6	
Coefficient of sliding friction, dynamic against steel	μ	0,06–0,20	
pv value, max. (dry)	MPa · m/s	0.30	
Mechanical properties			
Modulus of elasticity	MPa	3,500	DIN 53457
Tensile strength at +20°C	MPa	80	DIN 53452
Compressive strength	MPa	60	
Max. recommended surface pressure (+20°C)	MPa	60	
Shore D hardness		72	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+170	
Max. short term application temperature	°C	+240	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	3	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹²	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

Table 01: Material data

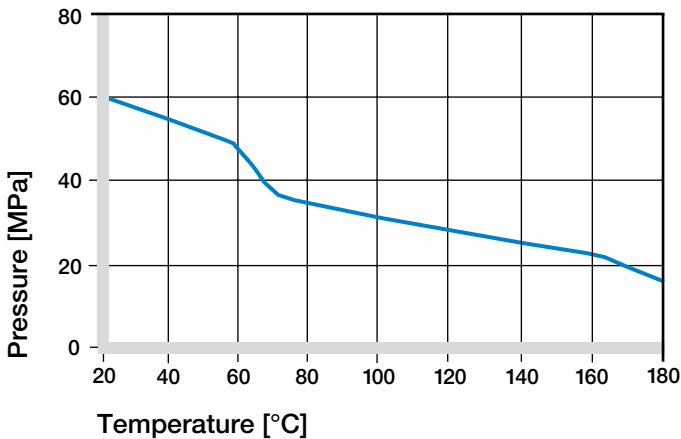


Graph 01: Permissible pv values for iglidur® K with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

iglidur® K | Technical Data

Mechanical Properties

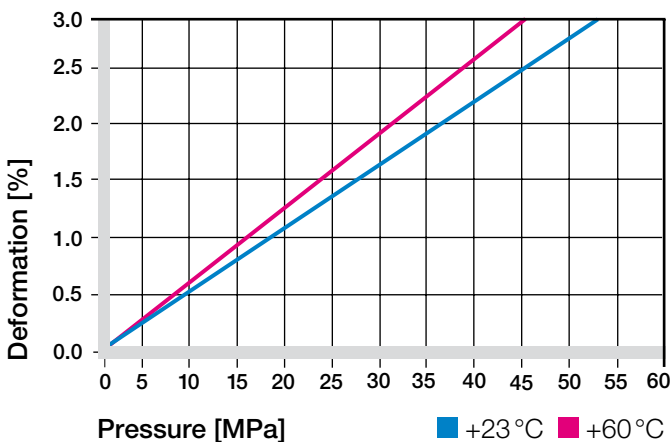
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® K plain bearings decreases. Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +150 °C the permissible surface pressure is almost 25 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (60 MPa at +20°C)

Graph 03 shows the elastic deformation of iglidur® K during radial loading. At the recommended maximum surface pressure of 60 MPa the deformation is less than 5%. Plastic deformation can occur, this depends on the applied pressure.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® K has been developed for low to medium surface speeds. The maximum values shown in table 02 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	3
Short term	2	1.4	4

Table 02: Maximum running speed

Temperatures

iglidur® K plain bearings can be used at temperatures from -40 °C up to +170 °C. The short term maximum temperature is +240 °C. The ambient temperatures of the application also have an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +100 °C.

► Application Temperatures, page 46

iglidur® K	Application temperature
Minimum	-40 °C
Max. long term	+170 °C
Max. short term	+240 °C
Add. securing is required from	+70 °C

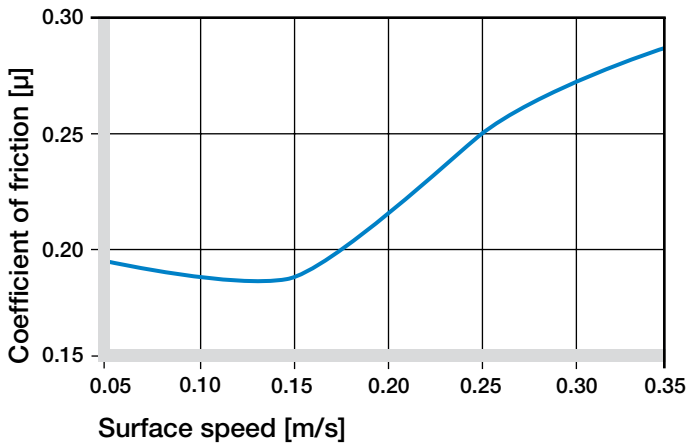
Table 03: Temperature limits

Friction and Wear

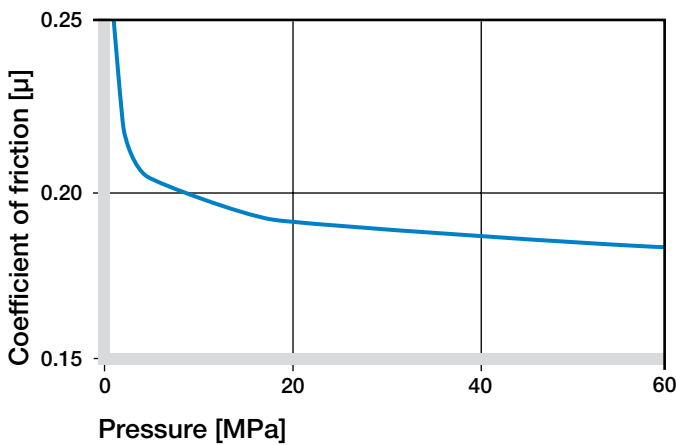
Similar to wear resistance, the coefficient of friction μ also changes with the load. The coefficient of friction decreases with increasing pressure (Graph 05), whereas an increase in surface speed causes an increase of the coefficient of friction (Graph 04). A noticeable increase is found over 0.15 m/s.

► Coefficients of Friction and Surfaces, page 48

► Wear Resistance, page 49



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglidur® K a ground surface with an average roughness $R_a = 0,15\text{--}0,20 \text{ μm}$ is recommended.

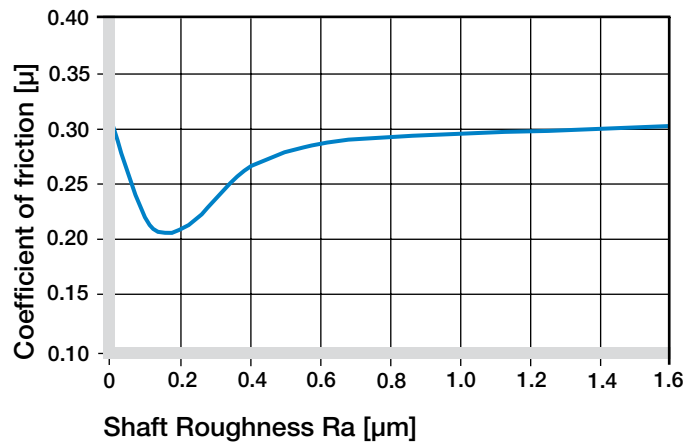
Graphs 06 and 07 show results of testing different shaft materials with plain bearings made of iglidur® K. It can be seen from Graph 07 that iglidur® K can be combined with a large number of different shaft materials. Only hard-chromed shafts are unsuitable. It is important to notice that with increasing loads, the recommended hardness of the shaft increases. The “soft” shafts tend to wear more easily and thus increase the wear of the overall system, if the loads exceed 2 MPa.

The comparison of rotational movements to oscillating movements shows that the wear is almost identical at a pressure up to 5 MPa. The higher the loads, the greater the difference.

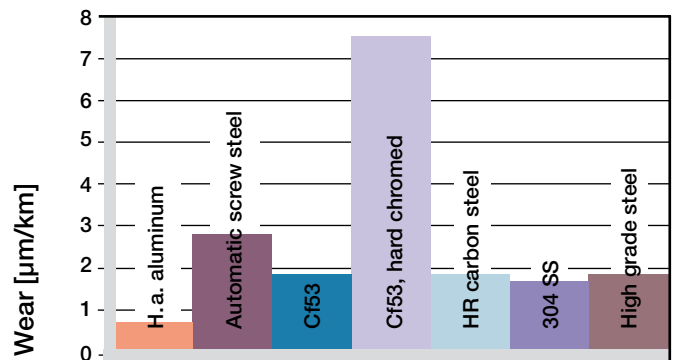
► Shaft Materials, page 51

iglidur® K	Dry	Greases	Oil	Water
C. o. f. μ	0,06–0,21	0,09	0,04	0,04

Table 04: Coefficient of friction against steel ($R_a = 1 \text{ μm}$, 50 HRC)

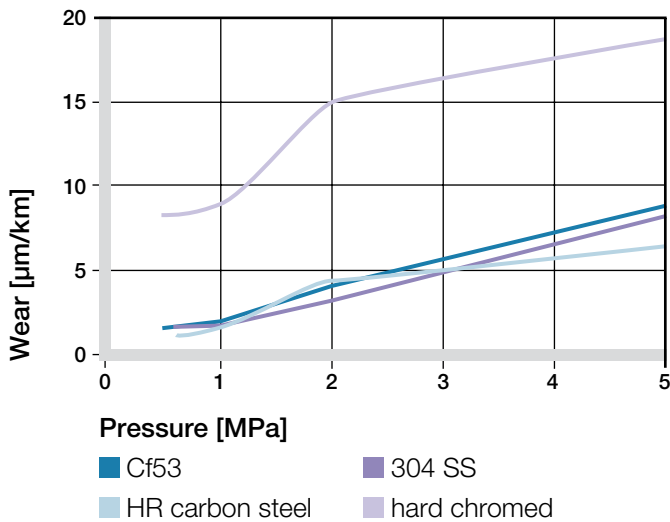


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

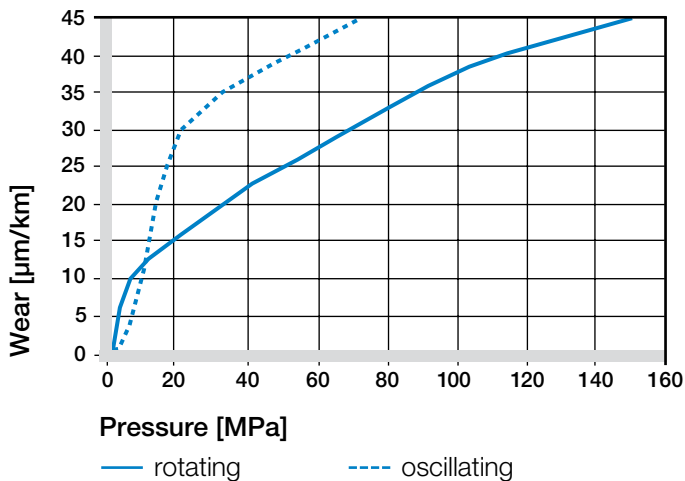


Graph 07: Wear, rotating with different shaft materials, pressure $p = 1 \text{ MPa}$, $v = 0.3 \text{ m/s}$

iglidur® K | Technical Data



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Additional Properties

Chemical Resistance

iglidur® K plain bearings are resistant to diluted alkaline and very weak acids, as well as fuels and all types of lubricants. The low moisture absorption also permits use in wet or damp environments.

► Chemical Table, **page 974**

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to -
Strong acids	-
Diluted alkalines	+
Strong alkalines	0

+ resistant 0 conditionally resistant - not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® K are resistant to radiation up to an intensity of $5 \cdot 10^2$ Gy.

UV Resistance

iglidur® K plain bearings become discoloured under UV radiation. However, hardness, compressive strength and the wear resistance of the material do not change.

Vacuum

When used in a vacuum environment, the iglidur® K plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

iglidur® K plain bearings are electrically insulating.

Volume resistance	> 10^{12} Ωcm
Surface resistance	> 10^{12} Ω

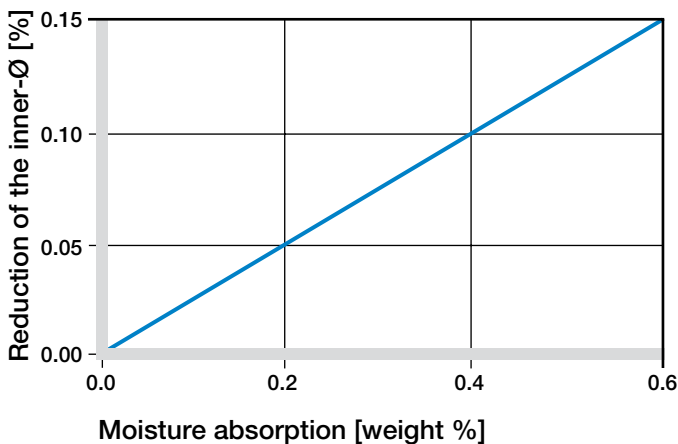
Moisture Absorption

The moisture absorption of iglidur® K plain bearings is approximately 0.1 % in the standard atmosphere. The saturation limit submerged in water is 0.6 %. These values are so low that the swelling only has to be considered in extreme cases.

Maximum moisture absorption

At +23°C/50 % r.h	0.1 % weight
Max. moisture absorption	0.6 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® K plain bearings are meant to be oversized before pressfit. The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet our specified tolerances. In relation to the installation tolerance, the inner diameter changes with the absorption of humidity.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® K E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

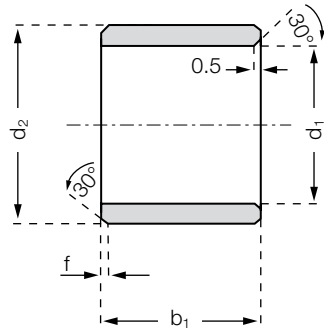
Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

NEW in this catalog!

iglidur® K | Product Range

iglidur®
K

Sleeve bearing



Order key

KSM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® K

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1 [mm]	Tolerance pressfitted in H7	d2 [mm]	b1 [mm]
KSM-0608-06	6	+0.020 +0.068	8	6
KSM-0810-10	8	+0.025 +0.083	10	10
KSM-1012-10	10	+0.025 +0.083	12	10
KSM-1214-12	12	+0.032 +0.102	14	12
KSM-1618-15	16	+0.032 +0.102	18	15
KSM-2023-20	20	+0.040 +0.124	23	20



delivery available
time from stock

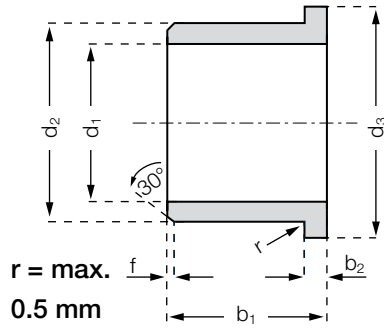


prices price list online
www.igus.co.uk/en/k



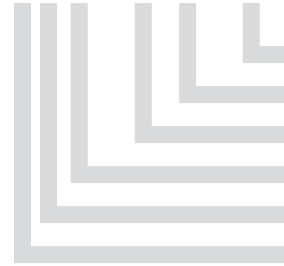
order part number
example KSM-0608-06

Flange bearing



Order key

KFM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® K

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1 [mm]	Tolerance pressfitted in H7	d2 [mm]	d3 [mm]	b1 [mm]	b2 [mm]
KFM-0608-06	6	+0.020 +0.068	8	12	6	1
KFM-0810-10	8	+0.025 +0.083	10	15	10	1
KFM-1012-10	10	+0.025 +0.083	12	18	10	1
KFM-1214-12	12	+0.032 +0.102	14	20	12	1
KFM-1618-17	16	+0.032 +0.102	18	24	17	1
KFM-2023-21	20	+0.040 +0.124	23	30	21.5	1.5



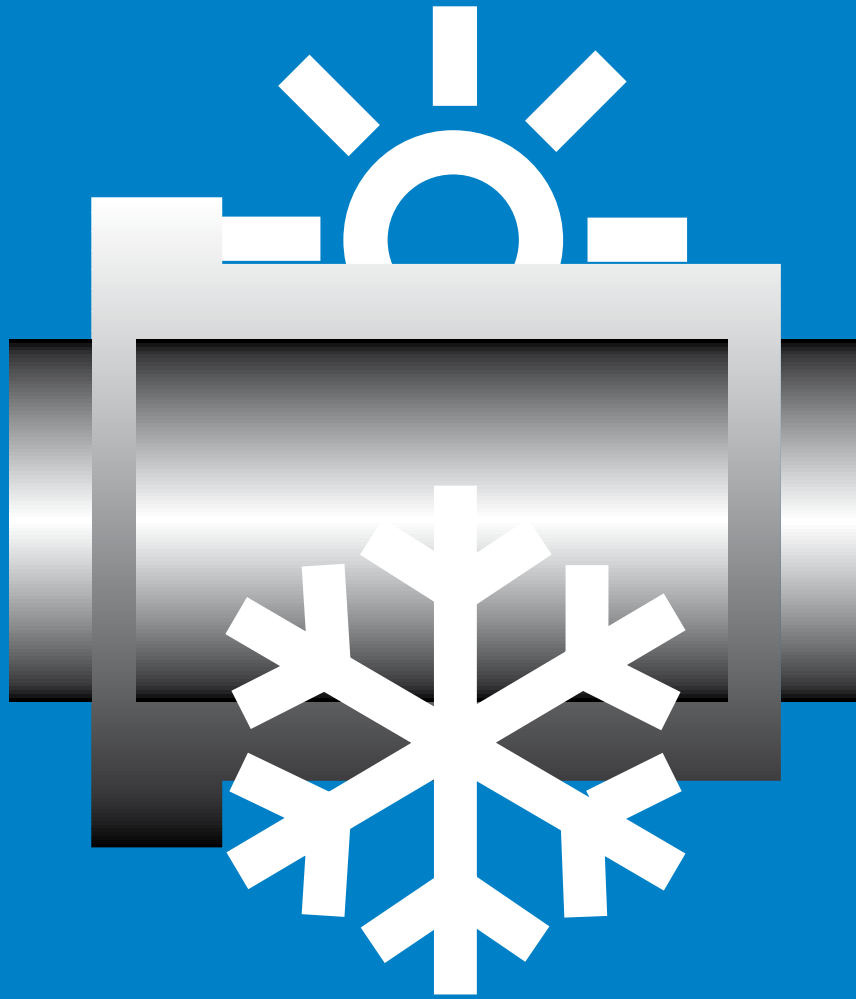
delivery available
time from stock



prices price list online
www.igus.co.uk/en/k



order part number
example KFM-0608-06



iglidur® P – versatile, waterproof



Standard range from stock

Low water absorption

Low wear rates

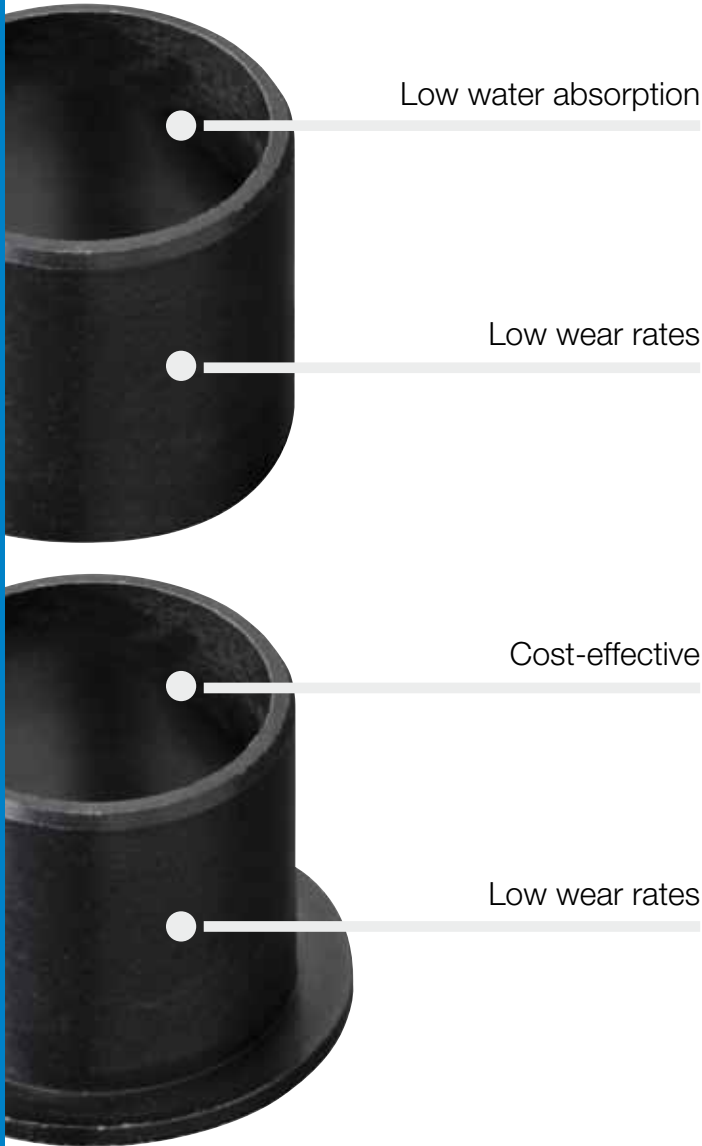
High load capacity

Maintenance-free

Cost-effective

iglidur® P

Versatile, waterproof. With the iglidur® P plain bearing, the user has a cost-effective, maintenance-free plain bearing. Compared to iglidur® G plain bearings made of iglidur® P are better suited to rotating movements and high loads, as well as being effectively waterproof.



When to use it?

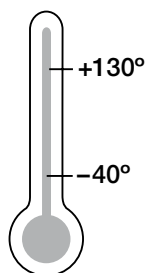
- When very low water absorption is needed
- When a cost-effective bearing for high pressure loads is desired
- For rotating movements under high loads
- When high precision in high humidity and moderately high temperatures are needed



When not to use it?

- When the maximum application temperature is above +120°C
 - ▶ **iglidur® K, page 175**
- When mechanical reaming of the wall surface is necessary
 - ▶ **iglidur® M250, page 107**
- When the highest wear resistance is needed
 - ▶ **iglidur® W300, page 131**

Temperature



Product range

2 types
 Ø 3–95 mm
 more dimensions
 on request



iglidur® P | Application Examples



Typical sectors of industry and application areas

- Solar technology ● Sports and leisure
- Machine Building ● Doors and gates
- Railway industry etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/boat-cranes



► www.igus.co.uk/helicopter-loadsystem

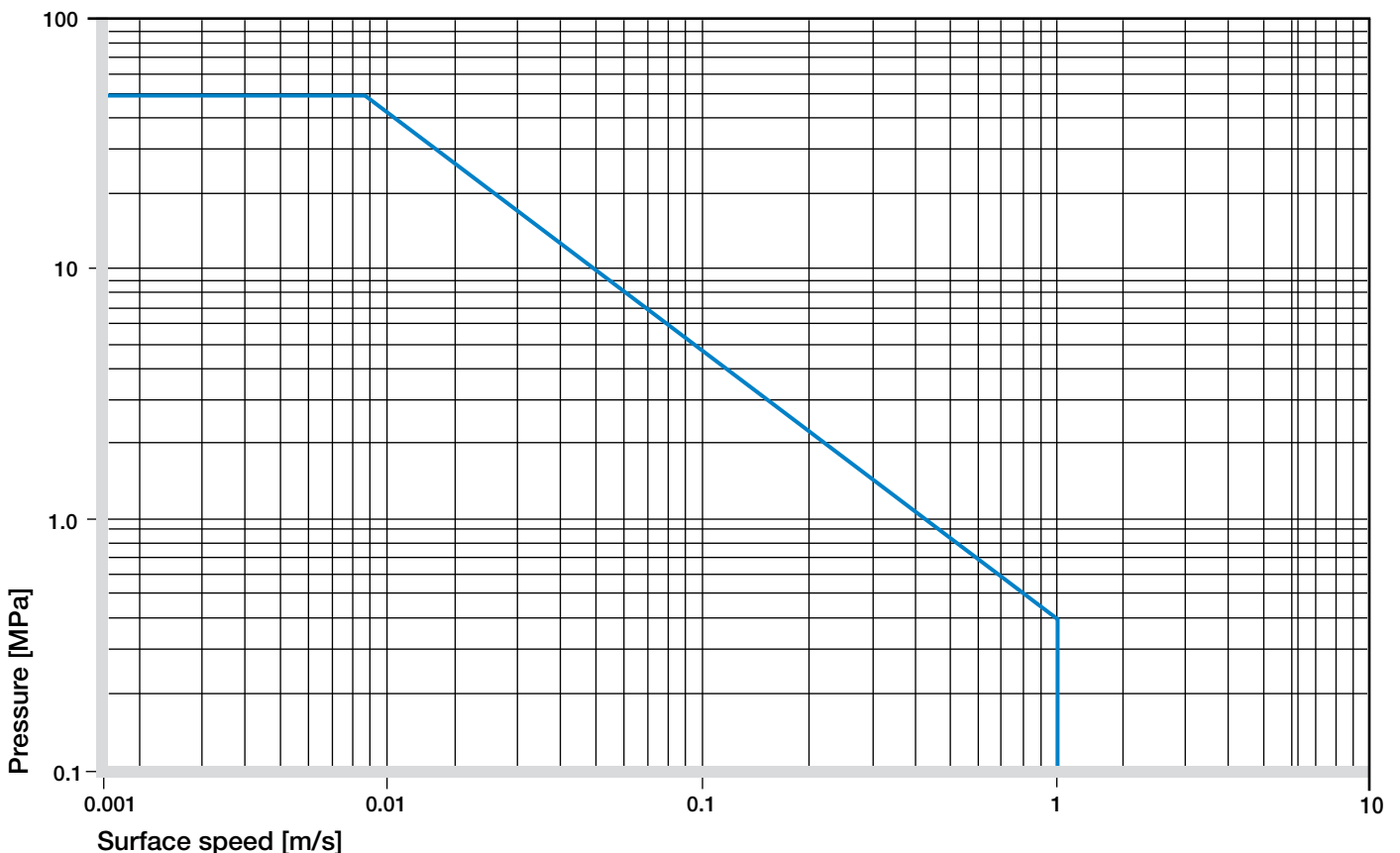


► www.igus.co.uk/road-sweeper

Material data

General properties	Unit	iglidur® P	Testing method
Density	g/cm ³	1.58	
Colour		black	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.2	DIN 53495
Max. moisture absorption	% weight	0.4	
Coefficient of sliding friction, dynamic against steel	μ	0.06–0.21	
pv value, max. (dry)	MPa · m/s	0,39	
Mechanical properties			
Modulus of elasticity	MPa	5,300	DIN 53457
Tensile strength at +20°C	MPa	120	DIN 53452
Compressive strength	MPa	66	
Max. recommended surface pressure (+20°C)	MPa	50	
Shore D hardness		75	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+130	
Max. short term application temperature	°C	+200	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	4	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹³	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

Table 01: Material data

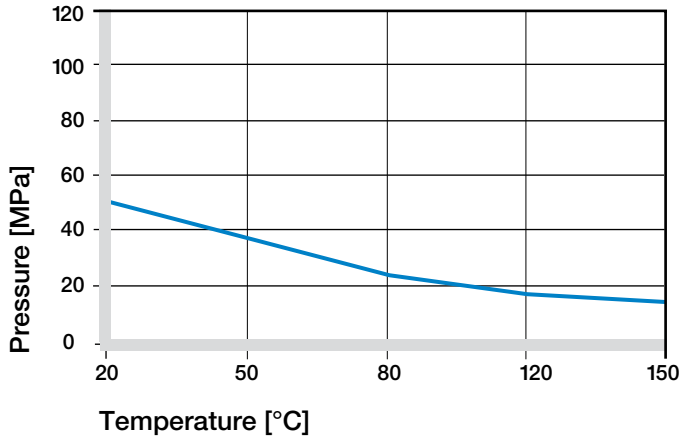


Graph 01: Permissible pv values for iglidur® P with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

iglidur® P | Technical Data

Mechanical Properties

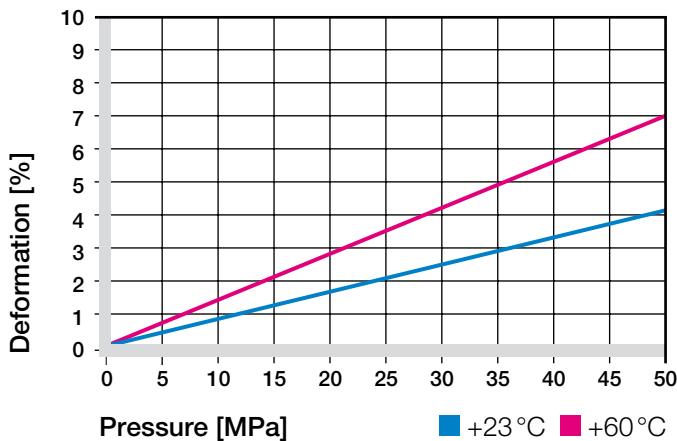
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® P plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +130 °C the permissible surface pressure is almost 15 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (50 MPa at +20 °C)

With the iglidur® P plain bearing, the user has a cost-effective, maintenance-free plain bearing. Compared to iglidur® G, plain bearings made of iglidur® P are better suited for rotating movements and high loads. Graph 03 shows the elastic deformation of iglidur® P for radial loads. At the recommended maximum surface pressure of 50 MPa the deformation is less than 3%.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

Plain bearings made of iglidur® P are maintenance-free plain bearings, which were developed for low to average surface speeds. The maximum values given in table 02 can only be achieved at a very low surface pressure. The maximum speed given is the speed at which an increase up to the continuous use temperature occurs due to friction.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	3
Short term	2	1.4	4

Table 02: Maximum running speed

Temperatures

Even at its highest long term application temperature of +120 °C, iglidur® P does not quite reach the values of iglidur® G. The ambient temperatures in the bearing system also have an effect on the bearing wear. With increasing temperatures, the wear increases.

► Application Temperatures, page 46

iglidur® P	Application temperature
Minimum	-40 °C
Max. long term	+130 °C
Max. short term	+200 °C
Add. securing is required from	+90 °C

Table 03: Temperature limits

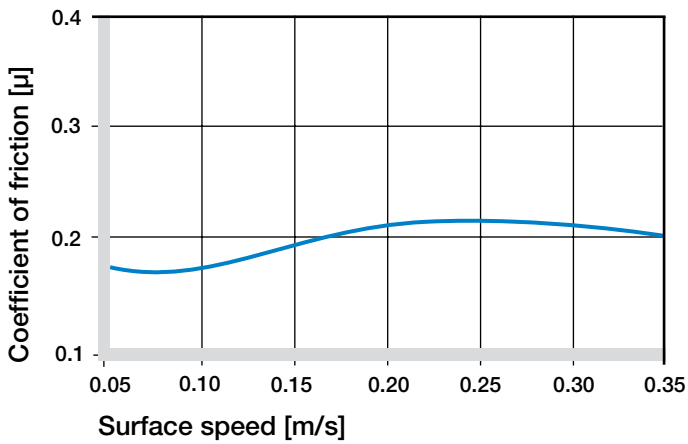
Friction and Wear

Just as the wear resistance, the coefficient of friction changes greatly with increasing load. With regard to iglidur® P, the coefficient of friction increases slightly when the speed increases (Graph 04). Graph 05 shows how the coefficient of friction drops when the load increases. Starting at approximately 6 MPa, the coefficient of friction is already below 0.1.

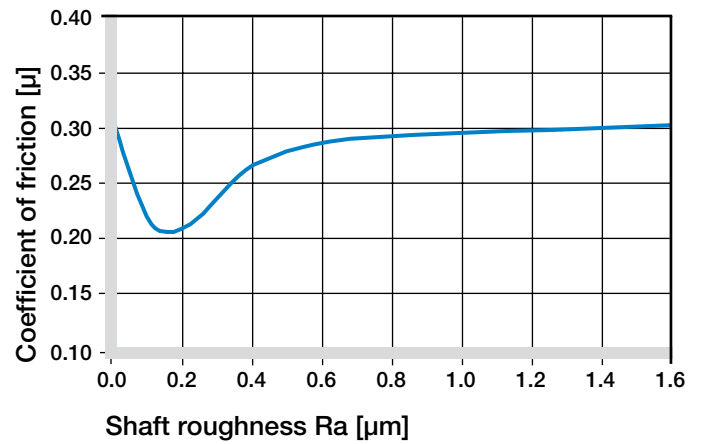
iglidur® P plain bearings obtain a minimum coefficient of friction on shafts with a roughness Ra from 0.1 to 0.2 µm. Both smoother and rougher shaft finishes cause the friction to clearly increase.

► Coefficients of Friction and Surfaces, page 48

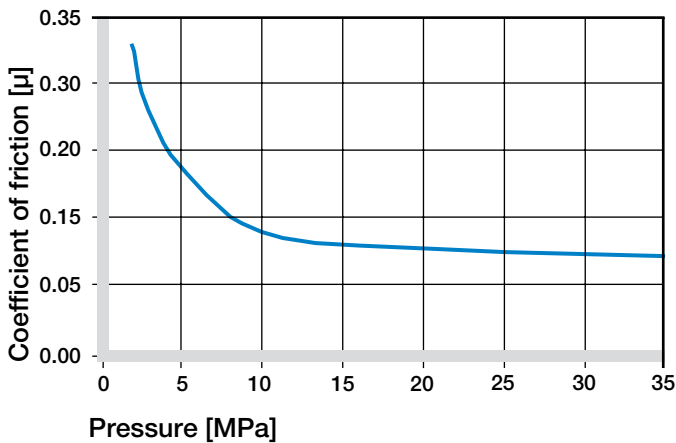
► Wear Resistance, page 49



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

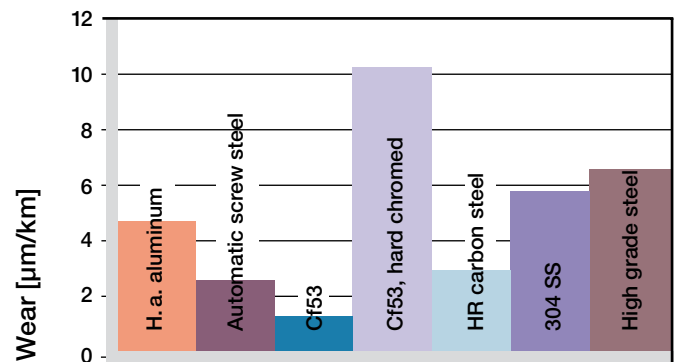


Graph 05: Coefficient of friction as a function of the pressure, $v = 0,01 \text{ m/s}$

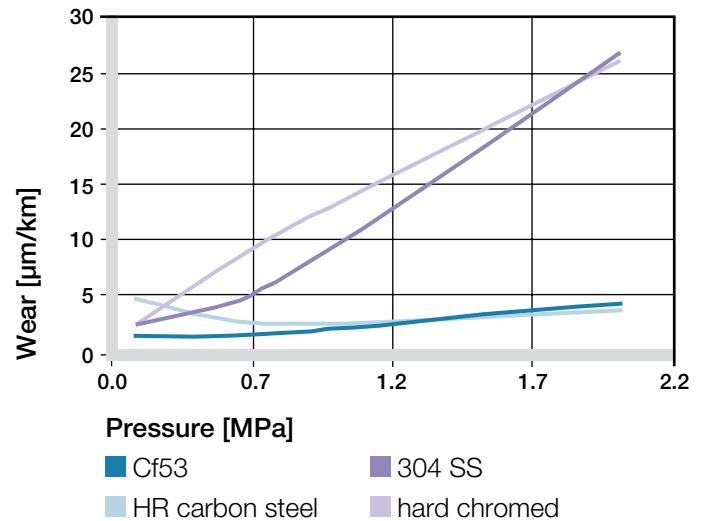
Shaft Materials

Graphs 06 to 10 show results of testing different shaft materials with plain bearings made of iglidur® P. For rotating movements, the wear of iglidur® P with Cold Rolled Steel and HR Carbon Steel shafts is very low. On the other hand, the bearings on 304 Stainless Steel shafts as well as hard-chromed shafts result in higher wear than other shaft materials even in the low load range. For example at a load of 2 MPa, Cold Rolled Steel is six times better than 304 Stainless Steel. For oscillating movements without loads wear rates are lower than for most rotating movements. For this purpose, the Cold Rolled Steel and hard chromed shafts prove to be the best sliding partners. Also, the 304 Stainless Steel shafts that have poor results for rotation are very good in oscillating operation.

► Shaft Materials, [page 51](#)

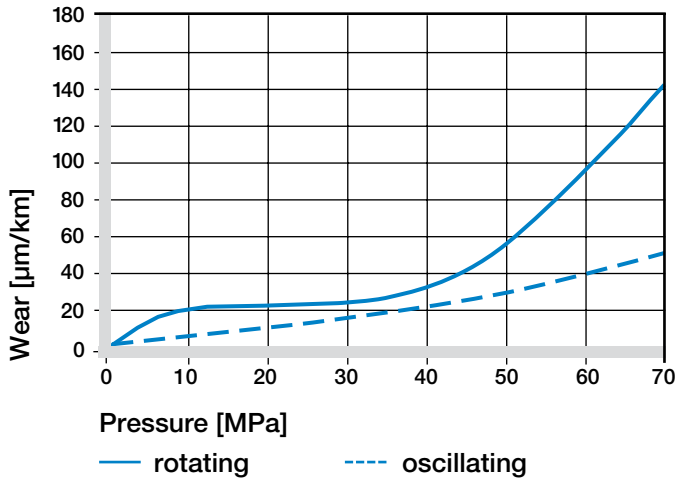


Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$

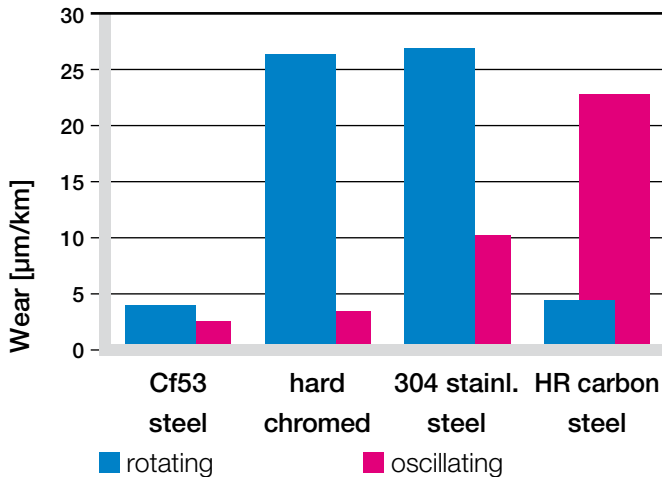


Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure

iglidur® P | Technical Data



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure



Graph 10: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur® P	Dry	Greases	Oil	Water
C.o.f. μ	0,06–0,21	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® P plain bearings have a good resistance to chemicals. They are resistant to most lubricants. iglidur® P is not attacked by most weak organic and inorganic acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	-
Greases, oils without additives	+
Fuels	+
Diluted acids	0
Strong acids	-
Diluted alkalines	-
Strong alkalines	-

+ resistant 0 conditionally resistant - not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® P have limited use under radioactive radiation. They are resistant to radiation up to an intensity of $5 \cdot 10^2$ Gy.

UV Resistance

iglidur® P plain bearings are partially UV resistant.

Vacuum

In a vacuum environment, existing moisture in iglidur® P plain bearings is released as a vapour. Use in vacuum can be limited.

Electrical Properties

iglidur® P plain bearings are electrically insulating.

Volume resistance	$> 10^{13} \Omega\text{cm}$
Surface resistance	$> 10^{12} \Omega\Omega$

Moisture Absorption

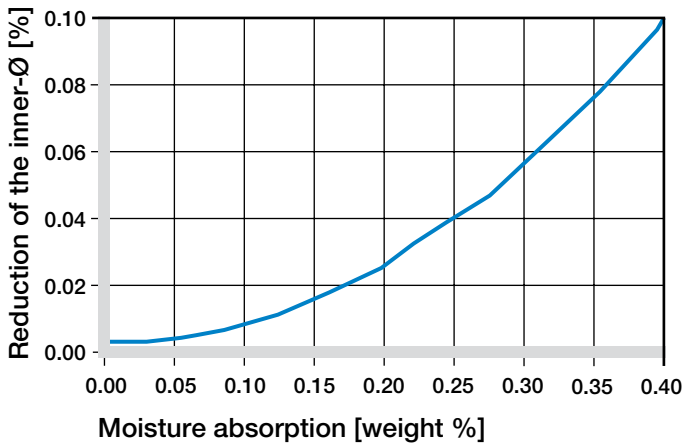
The moisture absorption of iglidur® P plain bearings is approximately 0.2% in standard atmosphere. The saturation limit in water is 0.4%. This low moisture absorption is well below the values of iglidur® G.

Maximum moisture absorption

At +23 °C/50% r.h. 0.2% weight

Max. moisture absorption 0.4% weight

Table 06: Moisture absorption



Graph 11: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® P plain bearings are meant to be oversized before being pressfit. The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter is adjusted to meet the specified tolerances.

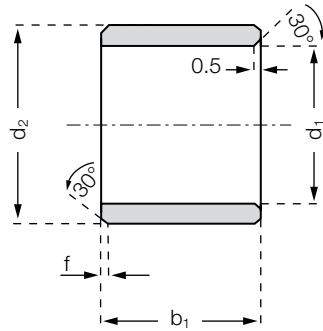
► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® P E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

iglidur® P | Product Range

Sleeve bearing



Order key

PSM-0304-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® P

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
PSM-0304-03	3.0	+0.014 +0.054	4.5	3.0
PSM-0405-04	4.0	+0.020 +0.068	5.5	4.0
PSM-0507-05	5.0	+0.020 +0.068	7.0	5.0
PSM-0608-06	6.0	+0.020 +0.068	8.0	6.0
PSM-0810-08	8.0	+0.025 +0.083	10.0	8.0
PSM-0810-11	8.0	+0.025 +0.083	10.0	11.5
PSM-0810-12	8.0	+0.025 +0.083	10.0	12.0
PSM-1012-10	10.0	+0.025 +0.083	12.0	10.0
PSM-1214-15	12.0	+0.032 +0.102	14.0	15.0
PSM-1214-25	12.0	+0.032 +0.102	14.0	25.0
PSM-1517-15	15.0	+0.032 +0.102	17.0	15.0
PSM-1618-20	16.0	+0.032 +0.102	18.0	20.0
PSM-1618-42	16.0	+0.032 +0.102	18.0	42.0
PSM-1820-15	18.0	+0.032 +0.102	20.0	15.0
PSM-1820-20	18.0	+0.032 +0.102	20.0	20.0
PSM-1820-33	18.0	+0.032 +0.102	20.0	33.0
PSM-2022-22	20.0	+0.040 +0.124	22.0	22.0
PSM-2022-30	20.0	+0.040 +0.124	22.0	30.0
PSM-2022-51	20.0	+0.040 +0.124	22.0	51.0
PSM-2023-15	20.0	+0.040 +0.124	23.0	15.0
PSM-2023-25	20.0	+0.040 +0.124	23.0	25.0
PSM-2023-30	20.0	+0.040 +0.124	23.0	30.0
PSM-2325-37	23.0	+0.040 +0.124	25.0	37.0

Part number	d1	d1-Tolerance*	d2	b1 h13
PSM-2224-45	22.0	+0.040 +0.124	24.0	45.0
PSM-2225-15	22.0	+0.040 +0.124	25.0	15.0
PSM-2225-45	22.0	+0.040 +0.124	25.0	45.0
PSM-2528-30	25.0	+0.040 +0.124	28.0	30.0
PSM-2528-35	25.0	+0.040 +0.124	28.0	35.0
PSM-2630-25	26.0	+0.040 +0.124	30.0	25.0
PSM-2832-20	28.0	+0.040 +0.124	32.0	20.0
PSM-2832-25	28.0	+0.040 +0.124	32.0	25.0
PSM-3034-20	30.0	+0.040 +0.124	34.0	20.0
PSM-3034-30	30.0	+0.040 +0.124	34.0	30.0
PSM-3034-40	30.0	+0.040 +0.124	34.0	40.0
PSM-3034-45	30.0	+0.040 +0.124	34.0	45.0
PSM-3539-40	35.0	+0.050 +0.150	39.0	40.0
PSM-4044-50	40.0	+0.050 +0.150	44.0	50.0
PSM-4044-58	40.0	+0.050 +0.150	44.0	58.0
PSM-5055-40	50.0	+0.050 +0.150	55.0	40.0
PSM-6065-50	60.0	+0.060 +0.180	65.0	50.0
PSM-6065-60	60.0	+0.060 +0.180	65.0	60.0
PSM-6570-50	65.0	+0.060 +0.180	70.0	50.0
PSM-7580-80	75.0	+0.060 +0.180	80.0	80.0
PSM-9095-100	90.0	+0.072 +0.212	95.0	100.0
PSM-95100-100	95.0	+0.072 +0.212	100.0	100.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock

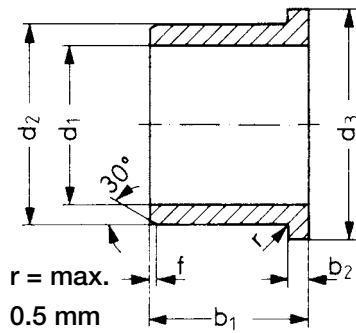


prices price list online
www.igus.co.uk/en/p



order part number
example PSM-0304-03

Flange bearing



Order key

PFM-0405-04



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® P

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
PFM-0405-04	4.0	+0.020 +0.068	5.5	9.5	4.0	0.75
PFM-0507-05	5.0	+0.020 +0.068	7.0	11.0	5.0	1.0
PFM-0608-04	6.0	+0.020 +0.068	8.0	12.0	4.0	1.0
PFM-0810-075	8.0	+0.025 +0.083	10.0	15.0	7.5	1.0
PFM-0810-10	8.0	+0.025 +0.083	10.0	15.0	10.0	1.0
PFM-0810-15	8.0	+0.025 +0.083	10.0	15.0	15.0	1.0
PFM-081012-10	8.0	+0.025 +0.083	10.0	12.0	10.0	1.0
PFM-1012-17	10.0	+0.025 +0.083	12.0	18.0	17.0	1.0
PFM-1214-09	12.0	+0.032 +0.102	17.0	20.0	9.0	1.0
PFM-1214-10	12.0	+0.032 +0.102	14.0	20.0	10.0	1.0
PFM-1214-15	12.0	+0.032 +0.102	14.0	20.0	15.0	1.0
PFM-121418-08	12.0	+0.032 +0.102	14.0	18.0	8.0	1.0
PFM-121420-10	12.0	+0.032 +0.102	14.0	20.0	10.0	1.0
PFM-1416-04	14.0	+0.032 +0.102	16.0	22.0	4.0	1.0
PFM-1416-08	14.0	+0.032 +0.102	16.0	22.0	8.0	1.0
PFM-1416-12	14.0	+0.032 +0.102	16.0	22.0	12.0	1.0
PFM-141624-25	14.0	+0.032 +0.102	16.0	24.0	25.0	1.0
PFM-1517-22	15.0	+0.032 +0.102	17.0	23.0	22.0	1.0
PFM-151824-32	15.0	+0.032 +0.102	18.0	24.0	32.0	1.5
PFM-1618-12	16.0	+0.032 +0.102	18.0	24.0	12.0	1.0
PFM-1618-17	16.0	+0.032 +0.102	18.0	24.0	17.0	1.0
PFM-161824-40	16.0	+0.032 +0.102	18.0	24.0	40.0	1.0
PFM-1719-25	17.0	+0.032 +0.102	19.0	25.0	25.0	1.0
PFM-1820-17	18.0	+0.032 +0.102	20.0	26.0	17.0	1.0
PFM-2023-16	20.0	+0.040 +0.124	23.0	30.0	16.5	1.5

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/p



order part number
example PFM-0405-04



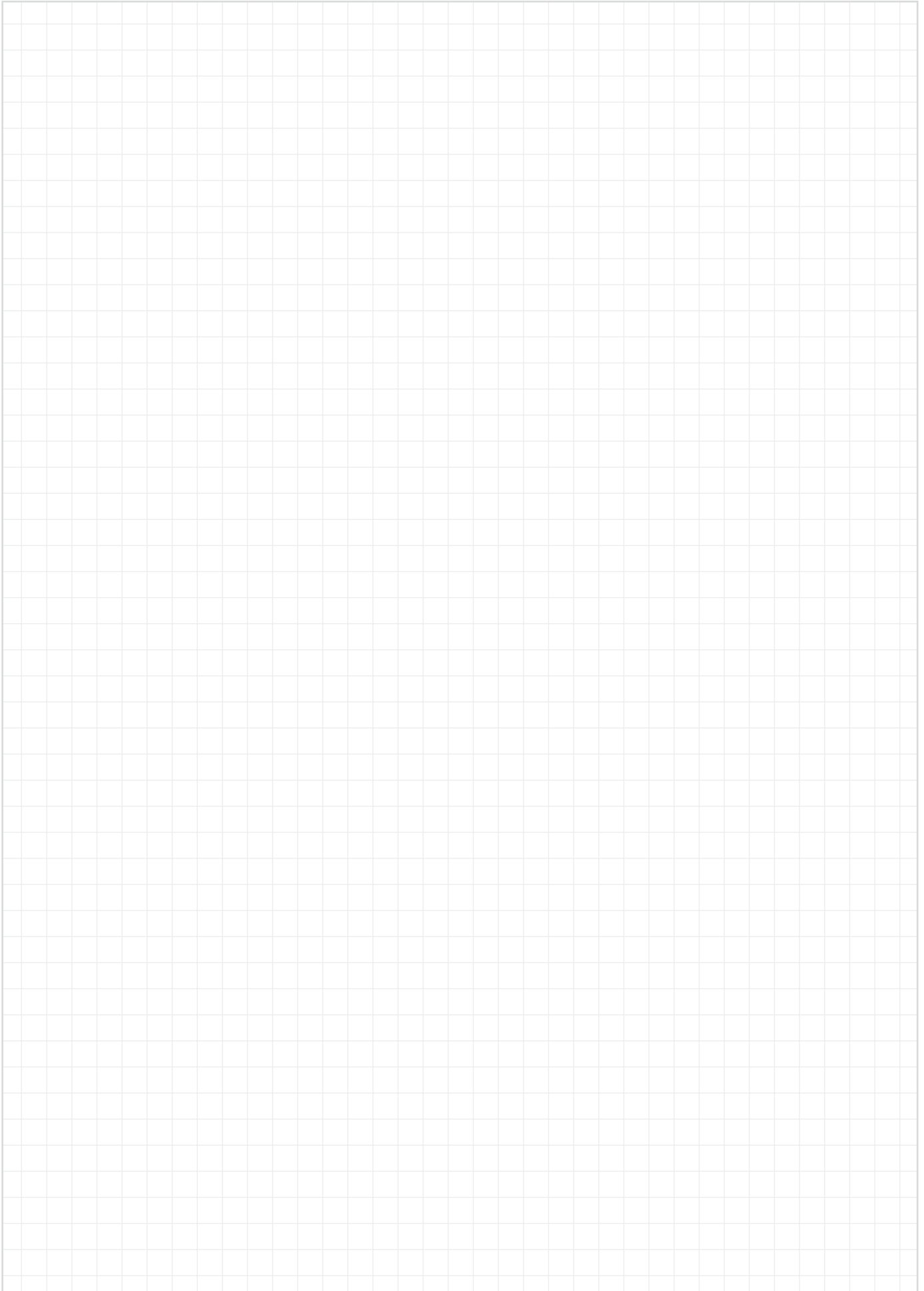
Flange bearing

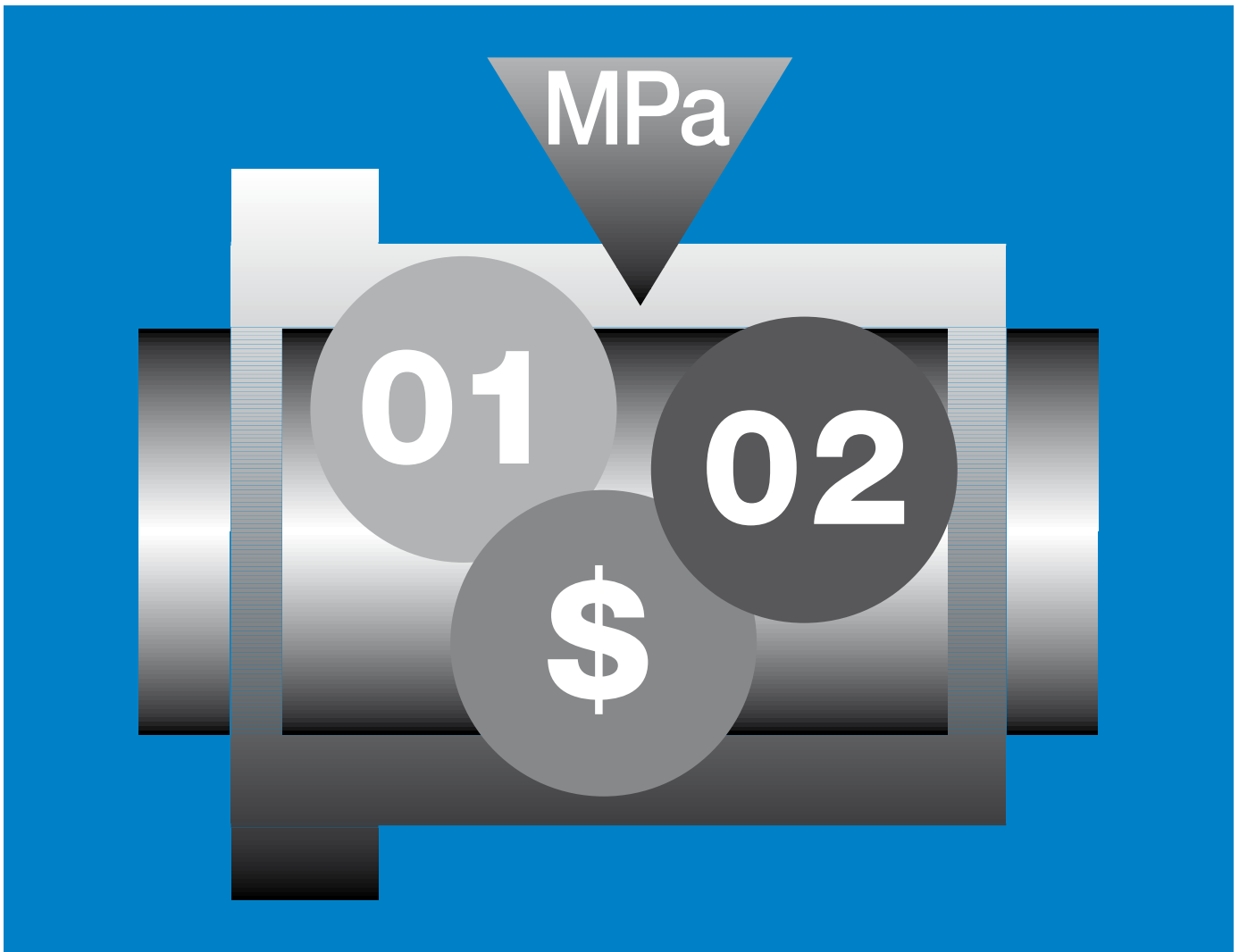
Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
PFM-202328-15	20.0	+0.040 +0.124	23.0	28.0	15.0	1.5
PFM-2023-30	20.0	+0.040 +0.124	23.0	30.0	30.0	1.5
PFM-2427-22	24.0	+0.040 +0.124	27.0	32.0	22.0	1.5
PFM-2528-21	25.0	+0.040 +0.124	28.0	35.0	21.5	1.5
PFM-3034-16	30.0	+0.040 +0.124	34.0	42.0	16.0	2.0
PFM-3034-37	30.0	+0.040 +0.124	34.0	42.0	37.0	2.0
PFM-3539-26	35.0	+0.050 +0.150	39.0	47.0	26.0	2.0
PFM-4044-30	40.0	+0.050 +0.150	44.0	52.0	30.0	2.0
PFM-4044-40	40.0	+0.050 +0.150	44.0	52.0	40.0	2.0
PFM-5055-50	50.0	+0.050 +0.150	55.0	63.0	50.0	2.0
PFM-6065-40	60.0	+0.060 +0.180	65.00	73.0	40.0	2.0
PFM-6065-50	60.0	+0.060 +0.180	65.0	73.0	50.0	2.0
PFM-7075-50	70.0	+0.060 +0.180	75.0	83.0	50.0	2.0
PFM-8085-100	80.0	+0.060 +0.180	85.0	93.0	100.0	2.5

* after pressfit. Testing methods ► page 55

My Sketches





iglidur® GLW – strong and low-cost material for high quantities



Applications with static loads

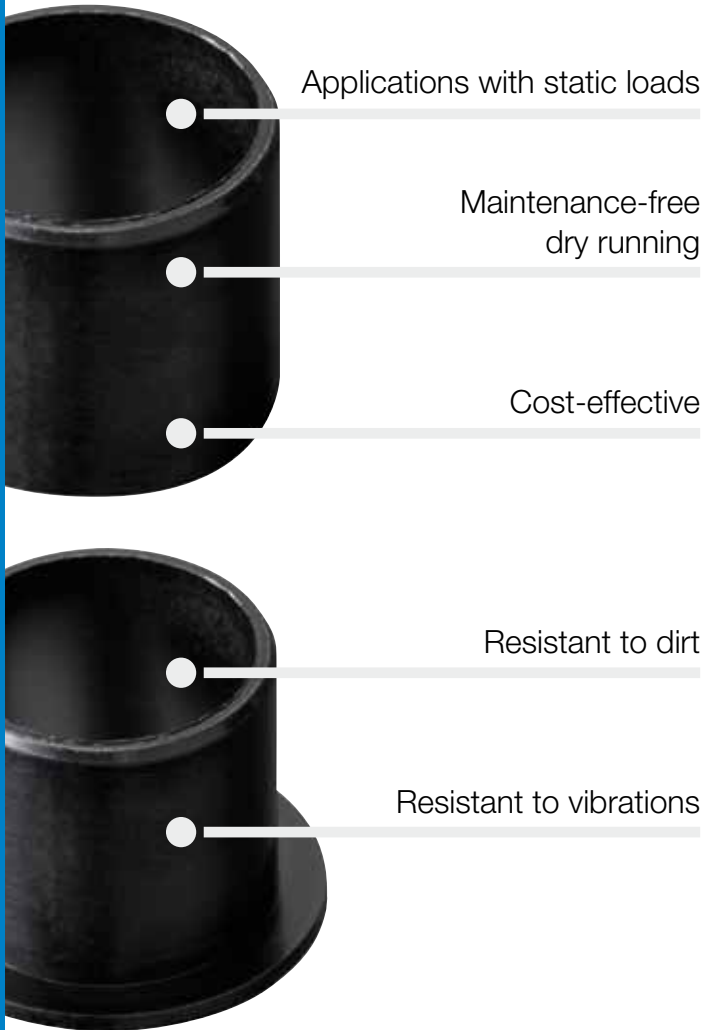
Maintenance-free dry running

Cost-effective

Resistant to dirt

Resistant to vibrations

Strong and low-cost material for high quantities. Low cost material for medium loads. iglidur® GLW plain bearings are preferred in applications with static load, where only occasional movement takes place.



When to use it?

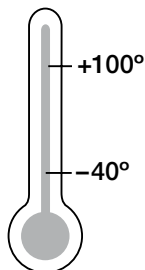
- When you need an economical universal bearing for mass production
- For high, primarily static loads
- For low to medium speeds



When not to use it?

- When mechanical reaming of the wall surface is necessary
▶ **iglidur® M250, page 107**
- For primarily dynamic loads
▶ **iglidur® G, page 61**
- When the highest wear resistance is necessary
▶ **iglidur® W300, page 131**
- When temperatures continuously exceed +130 °C
▶ **iglidur K, page 175**
- For underwater applications
▶ **iglidur H2, page 359**

Temperature



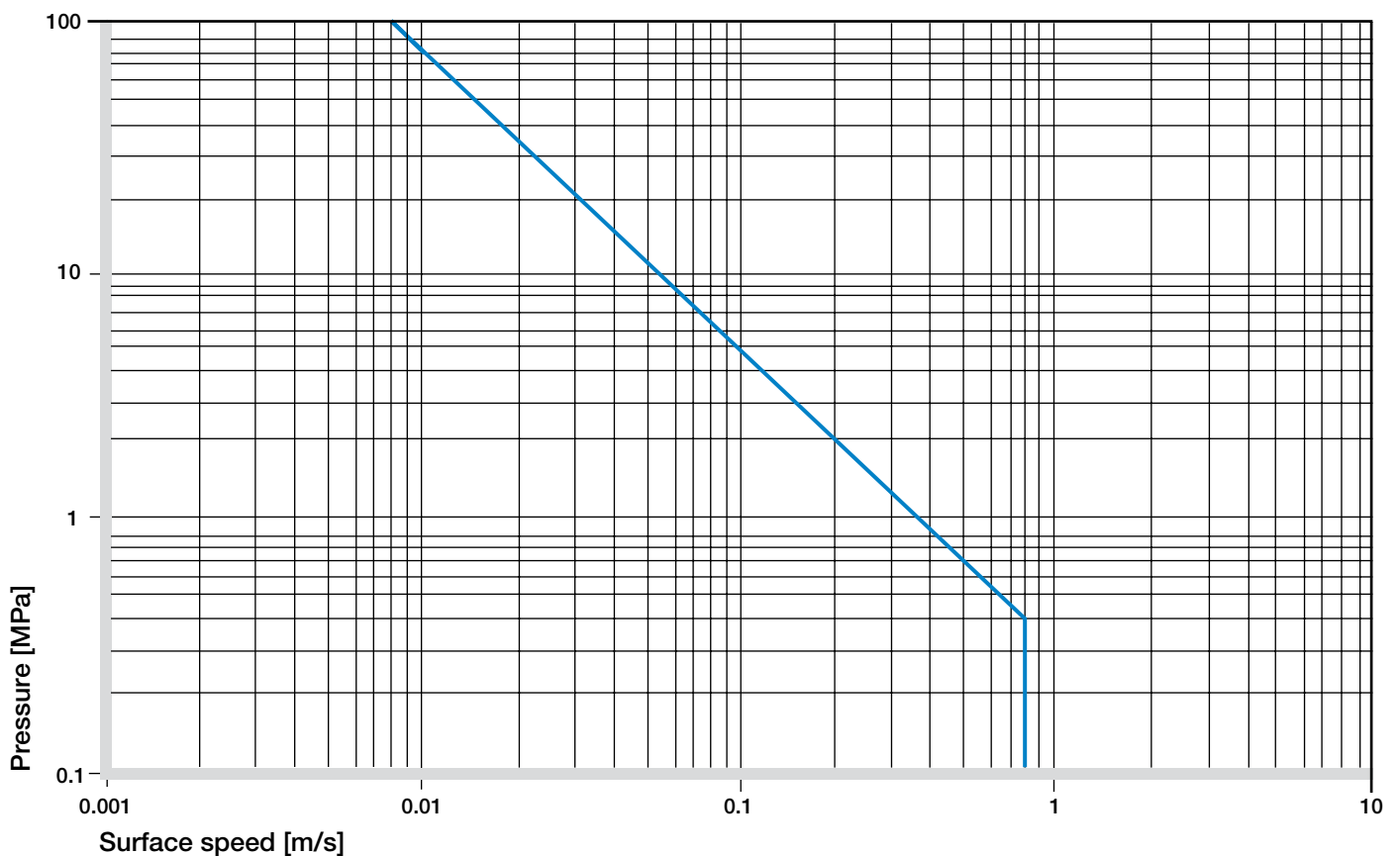
Product range

on request



Material data			
General properties	Unit	iglidur® GLW	Testing method
Density	g/cm ³	1.36	
Colour		black	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	1.3	DIN 53495
Max. moisture absorption	% weight	5.5	
Coefficient of sliding friction, dynamic against steel	μ	0.1–0.24	
pv value, max. (dry)	MPa · m/s	0.3	
Mechanical properties			
Modulus of elasticity	MPa	7,700	DIN 53457
Tensile strength at +20 °C	MPa	235	DIN 53452
Compressive strength	MPa	74	
Max. recommended surface pressure (+20 °C)	MPa	80	
Shore D hardness		78	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+100	
Max. short term application temperature	°C	+160	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	17	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹¹	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

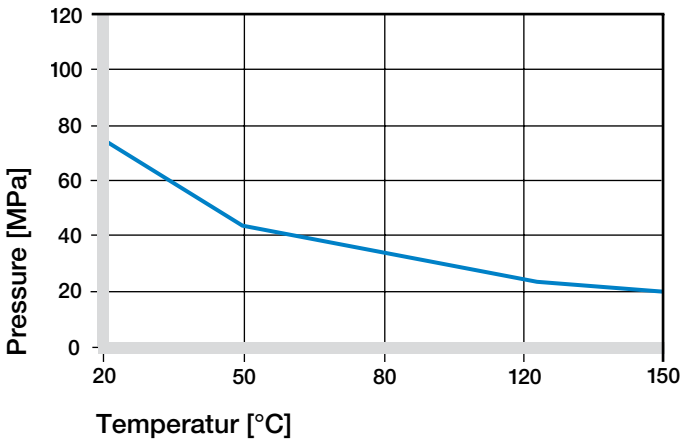
Table 01: Material data



Graph 01: Permissible pv values for iglidur® GLW with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Mechanical Properties

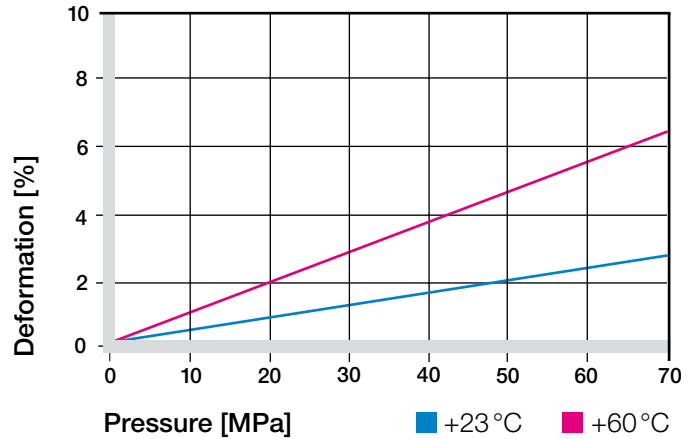
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® GLW plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +100° C the permissible surface pressure is almost 30 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (80 MPa at +20°C)

With plain bearings made of iglidur® GLW we can offer our customers an alternative to iglidur® G for mass production applications. Featuring similar mechanical designed as iglidur® G, iglidur® GLW plain bearings are primarily recommended for static loads. With regard to these applications, in which the dynamic properties of iglidur® G to a large extent are unimportant, iglidur® GLW presents a very cost-effective alternative. Graph 03 shows the elastic deformation of iglidur® GLW for radial loads. At the recommended maximum surface pressure of 70 MPa at room temperature, the deformation is less than 3%. At this load the plastic deformation is minimal. However, it is also dependent on the duty cycle of the application.

► Surface Pressure, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® GLW was developed for low to average surface speeds. In constant operation, a maximum speed of 0.8 m/s (rotating) or 2.5 m/s (linear) is permitted. Please note that the maximum values shown in table 02 are only possible at the lowest pressures. In practice, these values are rarely reached, due to the increasing temperatures approaching or exceeding the maximum permitted value.

► Surface Speed, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	0.8	0.6	2.5
Short term	1	0.7	3

Table 02: Maximum running speed

Temperatures

To a large extent, the surrounding temperatures affect the properties of plain bearings. Graph 02 shows the inverse relationship. With increasing temperatures in the bearing system, the wear also increases.

► Application Temperatures, [page 46](#)

iglidur® GLW	Application temperature
Minimum	-40 °C
Max. long term	+100 °C
Max. short term	+160 °C
Add. securing is required from	+80 °C

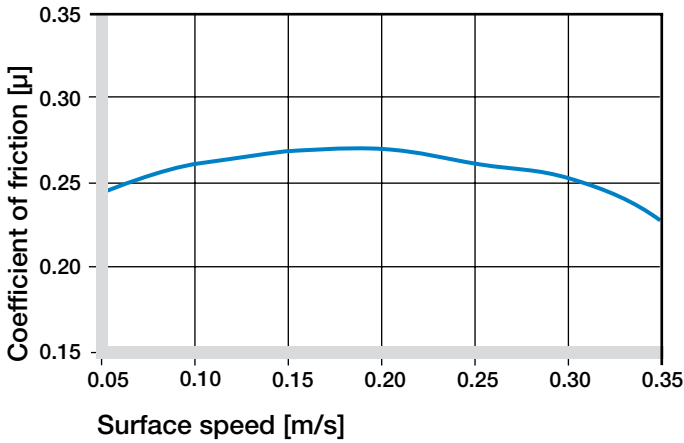
Table 03: Temperature limits

iglidur® GLW | Technical Data

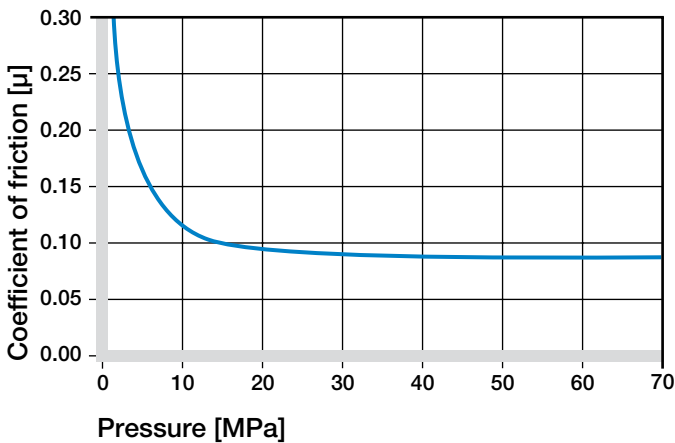
Friction and Wear

Similar to wear resistance, the coefficient of friction μ also changes with increasing load. It is striking that the coefficient of friction μ decreases with increasing pressure. This relationship explains the excellent suitability of iglidur® GLW plain bearings with regard to high loads.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75$ MPa

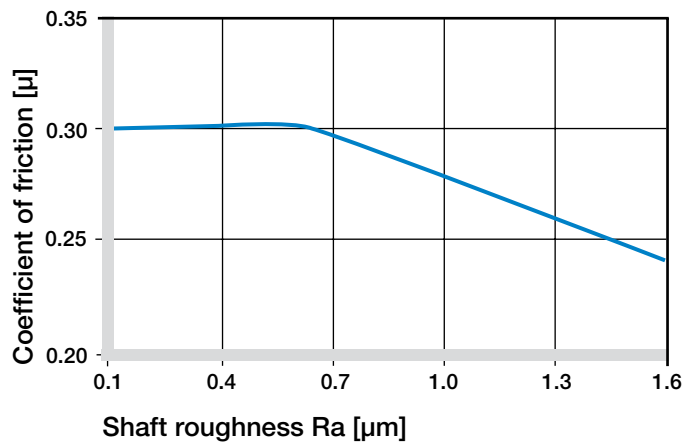


Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01$ m/s

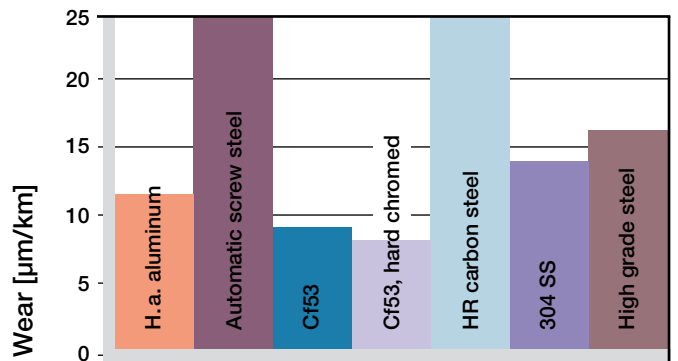
Shaft Materials

To a large extent, friction and wear depend on the shaft material. Shafts that are too smooth increase both the coefficient of friction and the wear of the bearing. A ground surface with an average roughness R_a between 0.1 and 0.2 μm is the most suitable (Graph 06). The following graphs show an extract of the results of tests with different shaft materials carried out with iglidur® GLW plain bearings. If the shaft material you plan on using is not shown in these test results, please contact us.

- ▶ Shaft Materials, **page 51**



Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure, $p = 1$ MPa, $v = 0.3$ m/s

Additional Properties

Chemical Resistance

iglidur® GLW plain bearings have a good resistance to chemicals. They are resistant to most lubricants.

iglidur® GLW is not attacked by most organic and inorganic acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to -
Strong acids	-
Diluted alkalines	+
Strong alkalines	0

+ resistant **0** conditionally resistant **-** not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® GLW are resistant to radiation up to an intensity of $3 \cdot 10^2$ Gy.

UV Resistance

iglidur® GLW plain bearings are permanently resistant to UV radiation.

Vacuum

In a vacuum environment iglidur® GLW plain bearings release gases. Use in a vacuum should be tested beforehand.

Electrical Properties

iglidur® GLW plain bearings are electrically insulating.

Volume resistance	$> 10^{11} \Omega\text{cm}$
Surface resistance	$> 10^{11} \Omega$

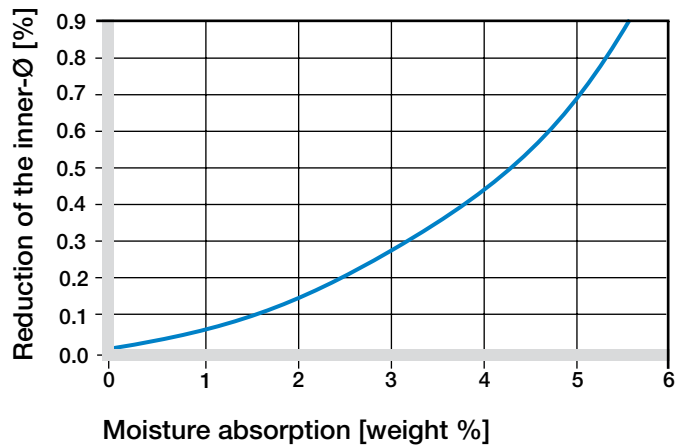
Moisture Absorption

The moisture absorption of iglidur® GLW plain bearings is approximately 1 % in standard atmosphere. The saturation limit in water is 5 %. This must be taken into account with regard to the respective operating conditions.

Maximum moisture absorption

At +23 °C/50 % r.h.	1.3 % weight
Max. moisture absorption	5.5 % weight

Table 06: Moisture absorption



Graph 08: Effect of moisture absorption on plain bearings

iglidur® GLW | Technical Data

Installation Tolerances

iglidur® GLW plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9).

The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, **page 55**

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® GLW E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® GLW plain bearings are made to special order. For high volume applications, please request iglidur® GLW plain bearings as an alternative to iglidur® G.



iglidur® J260 **NEW!***

suitable for plastic shafts

Standard range from stock ► from page 209



iglidur® J3 **NEW!***

runs up to three times longer than iglidur® J

Standard range from stock ► from page 219



iglidur® J350 **NEW!***

extremely wear-resistant in rotation

Standard range from stock ► from page 229



iglidur® L250

for high speed

Standard range from stock ► from page 239



iglidur® R

low-cost material, low wear

Standard range from stock ► from page 249



iglidur® D

low-cost material with silicone

On request ► from page 259



iglidur® J200

suitable for anodized aluminum shafts


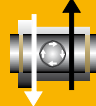

















* in this catalog

On request ► from page 267

iglidur® Specialists | Selection According to Main Criteria

iglidur®
polymer
bearings

iglidur®
Specialists –
For Long
Service Life

							
	iglidur® J260	iglidur® J3	iglidur® J350	iglidur® L250	iglidur® R	iglidur® D	iglidur® J200
 Long life dry running	●	●	●	●	●		●
 For high loads			●				
 For high temperatures			●				
 Low friction/high speed	●	●	●	●	●	●	●
 Dirt resistant							●
 Chemicals resistant							
 Low water absorption	●	●	●		●	●	
 Food-suitable							
 Vibration-dampening							
 Edge pressure		●	●	●	●	●	●
 For under water use							
 Cost-effective		●			●	●	
from page	209	219	229	239	249	259	267

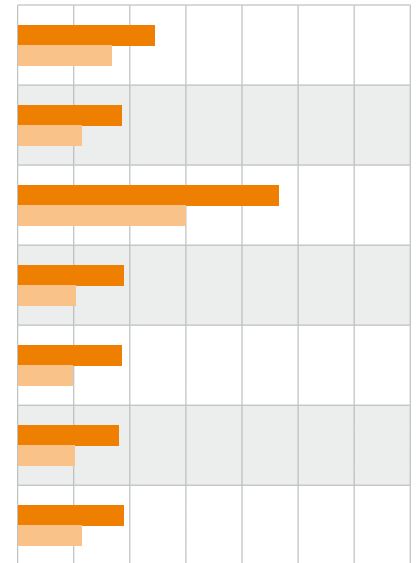
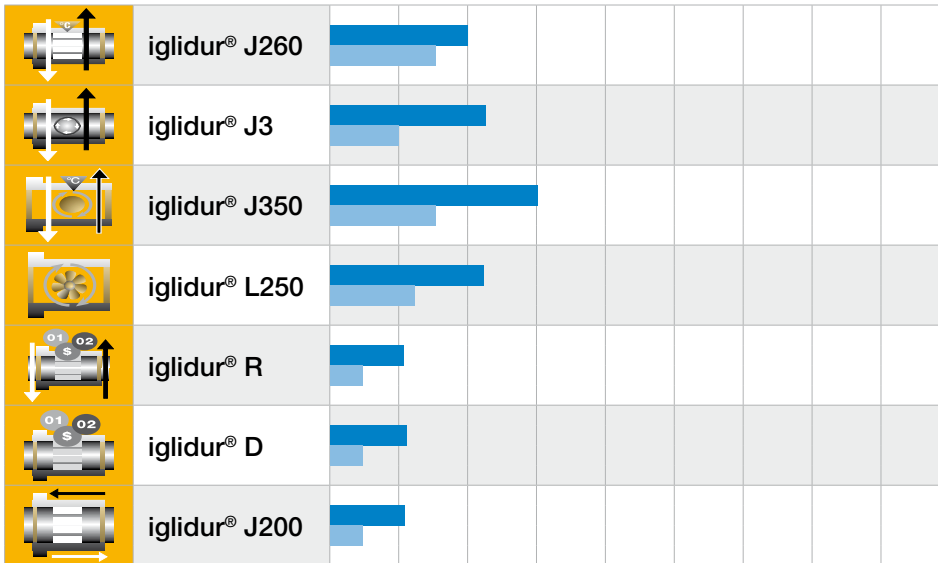
iglidur® Specialists | Selection According to Main Criteria

Load [MPa]

0 20 40 60 80 100 120 140 160

Temperature [°C]

0 50 100 150 200 250 300



Maximum permissible radial load of iglidur® bearings at

- +20°C
- +120°C

Important temperatur limits of iglidur® bearings

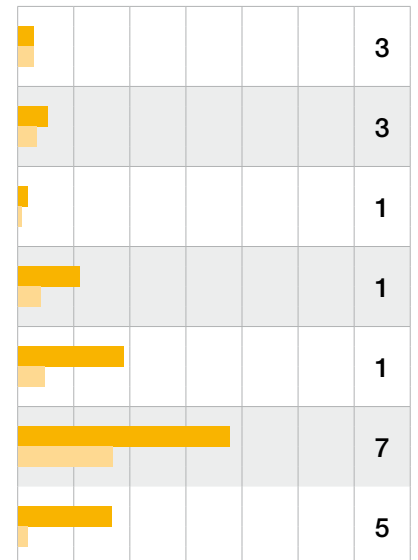
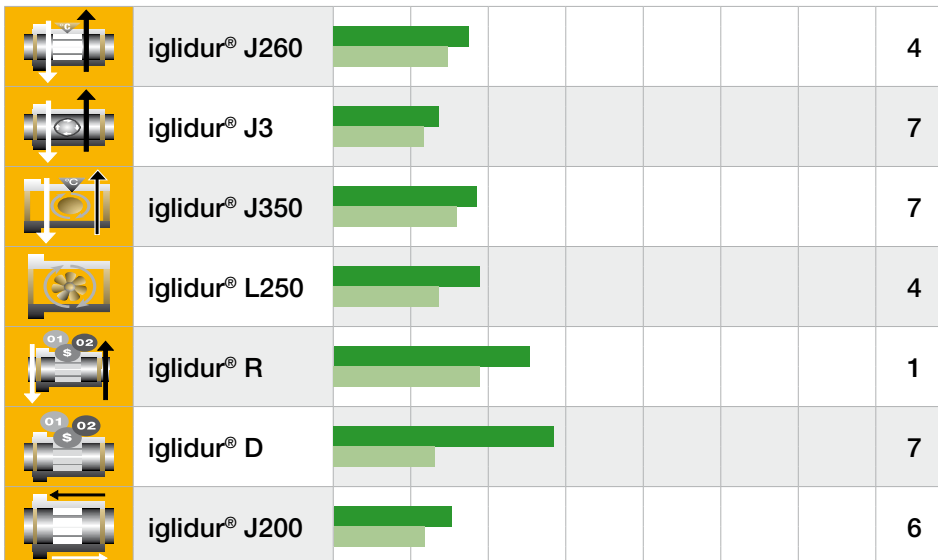
- Maximum permissible application temperature, continous
- Temperature where bearings need to be secured against radial or axial movement in the housing

Coefficient of Friction [μ]

0 0.1 0.2 0.3 0.4 0.5 0.6 Shaft

Wear [μm/km]

0 5 10 15 20 25 Shaft



Coefficients of friction of iglidur® bearings sliding against steel, p = 1,2 MPa, v = 0,3 m/s

- Average coefficient of all the seven sliding combinations tested
- Coefficient of friction of best combination

Wear of iglidur® bearings sliding against steel, p = 1 MPa

- Average wear of all the seven sliding combination tested
- Wear of best combination

Shaft material:

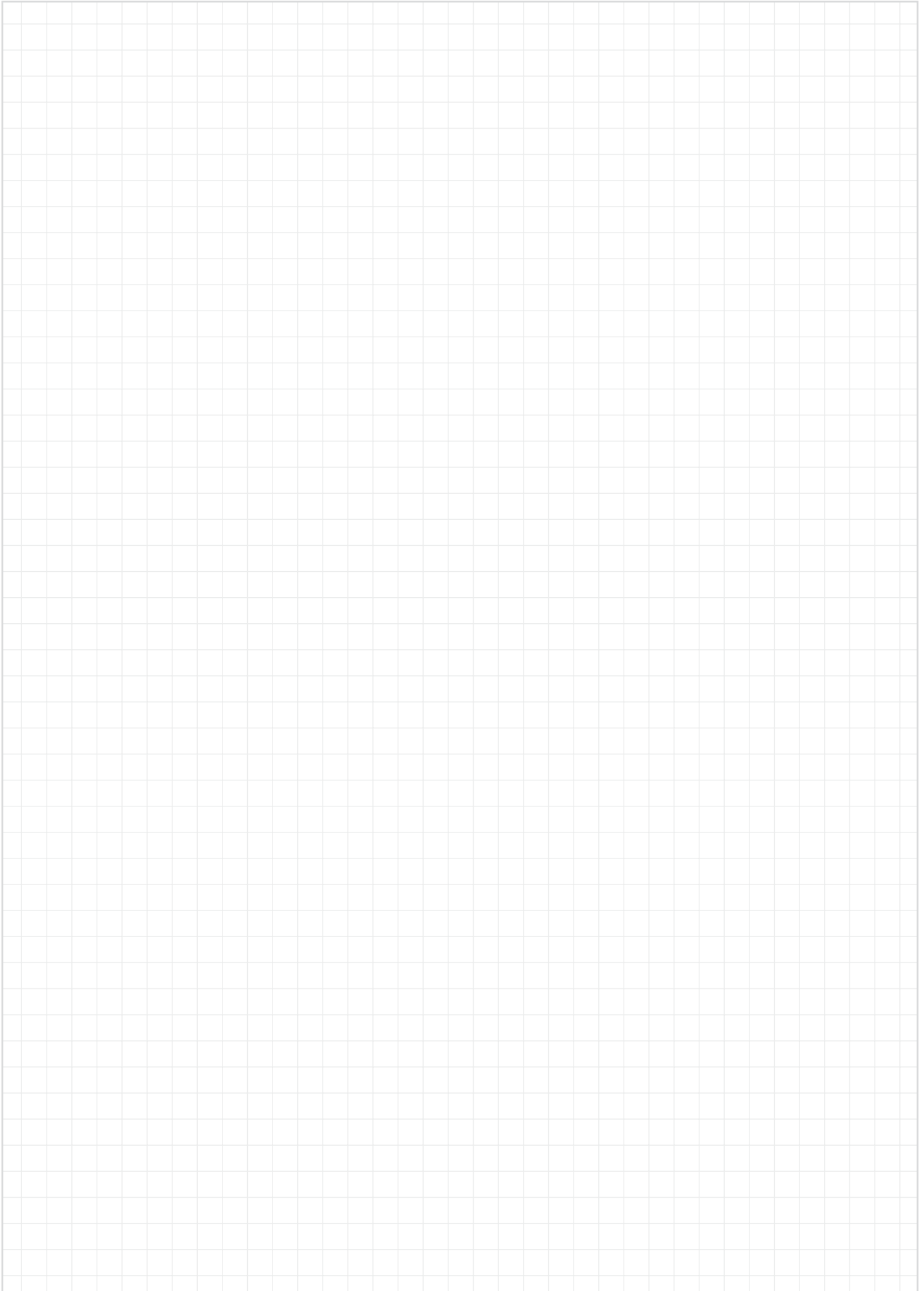
- 1 = Cf53
- 2 = hard chromed
- 3 = Aluminum, hc
- 4 = Automatic screw steel
- 5 = HR carbon steel
- 6 = 304 SS
- 7 = High grade steel

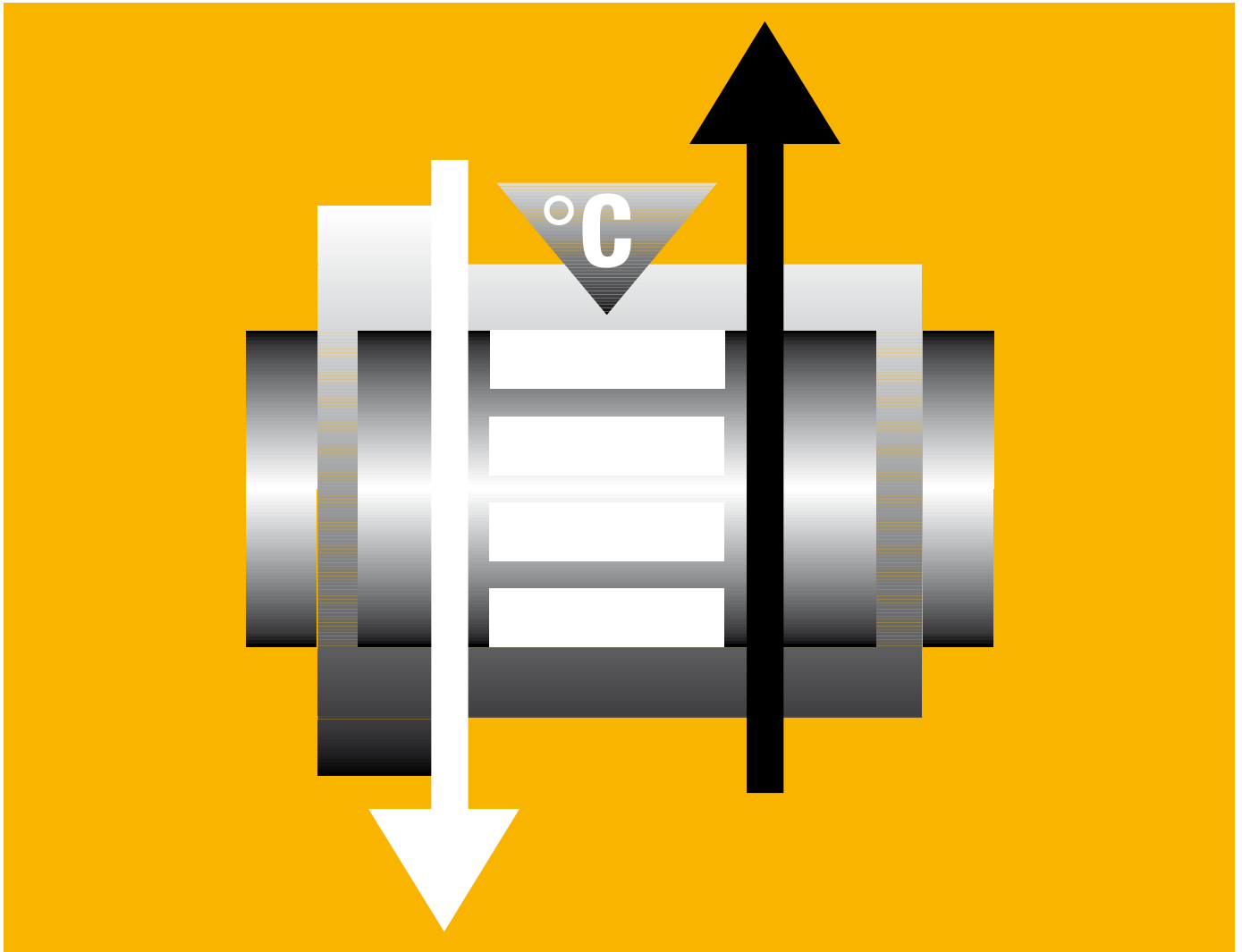
Material data								
General properties	Unit	iglidur® J260	iglidur® J3	iglidur® J350	iglidur® L250	iglidur® R	iglidur® J200	iglidur® D
Density	g/cm ³	1.35	1.42	1.44	1.50	1.39	1.40	1.72
Colour		yellow	yellow	yellow	beige	dark red	green	dark grey
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.2	1.3	0.3	0.7	0.2	0.3	0.2
Max. moisture absorption	% weight	0.4	0.4	1.6	3.9	1.1	1.1	0.7
Coefficient of sliding friction, dynamic against steel	μ	0.06–0.20	0.06–0.20	0.10–0.20	0.08–0.19	0.09–0.25	0.08–0.26	0.11–0.17
pv value, max. (dry)	MPa · m/s	0.35	0.50	0.45	0.40	0.27	0.27	0.30
Mechanical properties								
Modulus of elasticity	MPa	2,200	2,700	2,000	1,950	1,950	2,000	2,800
Tensile strength at +20 °C	MPa	60	70	55	67	70	72	58
Compressive strength	MPa	50	60	60	47	68	70	43
Max. recommended surface pressure (+20 °C)	MPa	40	45	60	45	23	23	23
Shore D hardness		77	73	80	68	77	78	70
Physical and thermal properties								
Max. long term application temperature	°C	+120	+90	+180	+90	+90	+90	+90
Max. short term application temperature	°C	+140	+120	+220	+180	+110	+110	+120
Min. application temperature	°C	-100	-50	-100	-40	-50	-50	-50
Thermal conductivity	W/m · K	n.b.	0.25	0.24	0.24	0.25	0.25	0.24
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	13	n. wb.	7	10	11	11	8
Electrical properties								
Specific volume resistance	Ωcm	> 10 ¹²	> 10 ¹²	> 10 ¹³	> 10 ¹⁰	> 10 ¹²	> 10 ¹⁴	> 10 ⁸
Surface resistance	Ω	> 10 ¹⁰	> 10 ¹²	> 10 ¹⁰	> 10 ¹¹	> 10 ¹²	> 10 ¹⁴	> 10 ⁸

Material resistance (at +20 °C)							
Chemical resistance	iglidur® J260	iglidur® J3	iglidur® J350	iglidur® L250	iglidur® R	iglidur® D	iglidur® J200
Alcohol	+ to 0	+	+	+ to 0	+	+	+
Hydrocarbons	+	+	+ to 0	+	+	+	+
Greases, oils without additives	0 to -	+	+	+	+	+	+
Fuels	-	+	+	+	+	+	+
Diluted acids	-	0 to -	+	0 to -	0 to -	0 to -	0 to -
Strong acids	-	-	+ to 0	-	-	-	-
Diluted alkalines	+ to 0	+	+	+	+	+	+
Strong alkalines	+ to 0	+ to 0	+	0	+ to 0	+ to 0	+ to 0
Radiation resistance [Gy] to	3 · 10 ²	1 · 10 ⁴	2 · 10 ²	3 · 10 ⁴	3 · 10 ²	3 · 10 ²	3 · 10 ²

+ resistant 0 conditionally resistant - not resistant

My Sketches





iglidur® J260 – suitable for plastic shafts



Standard range from stock

Lubrication- and maintenance-free

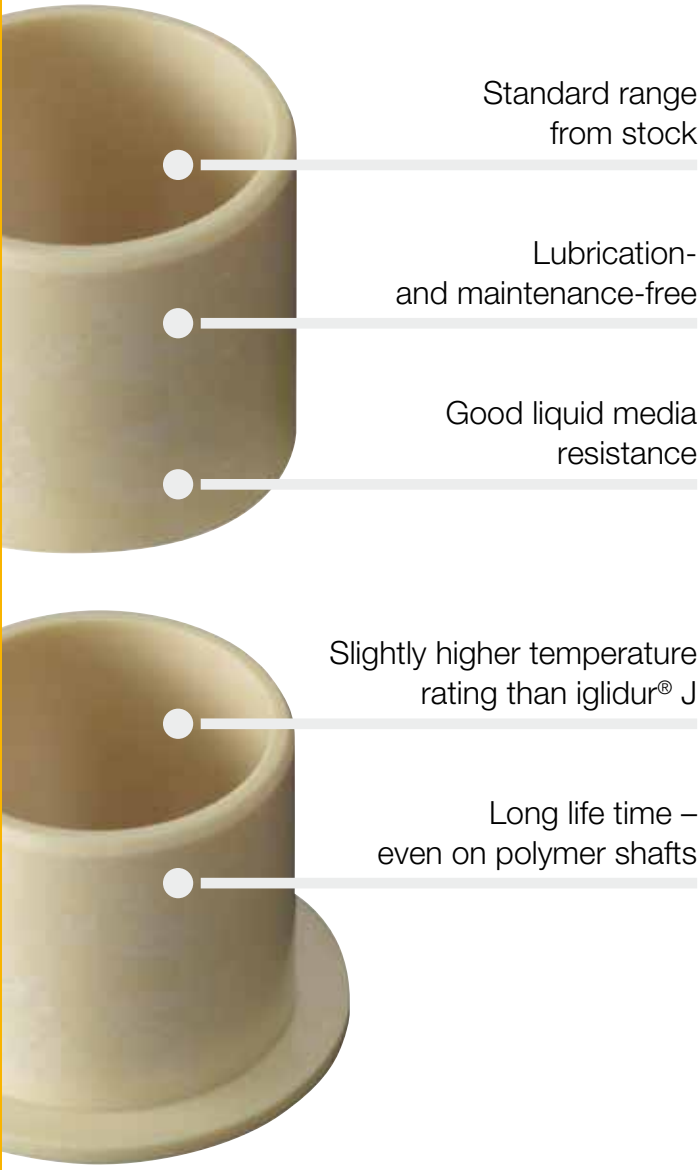
Very good c. o. f. for low or medium loads

Good liquid media resistance

Slightly higher temperature rating than iglidur® J

Long life time – even on polymer shafts and other special cases

Suitable for plastic shafts. iglidur® J260 is a perfect material for long service life and best coefficient of friction with special operating conditions – first of all in contact with plastic shafts!



Standard range
from stock

Lubrication-
and maintenance-free

Good liquid media
resistance

Slightly higher temperature
rating than iglidur® J

Long life time –
even on polymer shafts



When to use it?

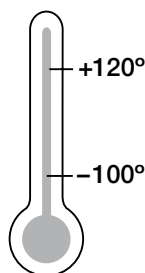
- When polymer shafts are used
- When the temperature rating of iglidur® J is not sufficient
- If bearings with low friction is required
- If good wear resistance is required at medium loads
- If good liquid media resistance is required



When not to use?

- When high pressures occur
▶ **iglidur® Z, page 299**
- When short term temperatures occur that are greater +120°C
▶ **iglidur® J350, page 229**
- When a low-cost bearing for occasional movements is necessary
▶ **iglidur® J, page 89**

Temperature



Product range

2 types
Ø 6–20 mm
more dimensions
on request



iglidur® J260 | Application Examples



Typical sectors of industry and application areas

- Automation ● Machine design
- Test engineering and quality assurance
- Robotics ● Eletronics industry etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/packaging-machines



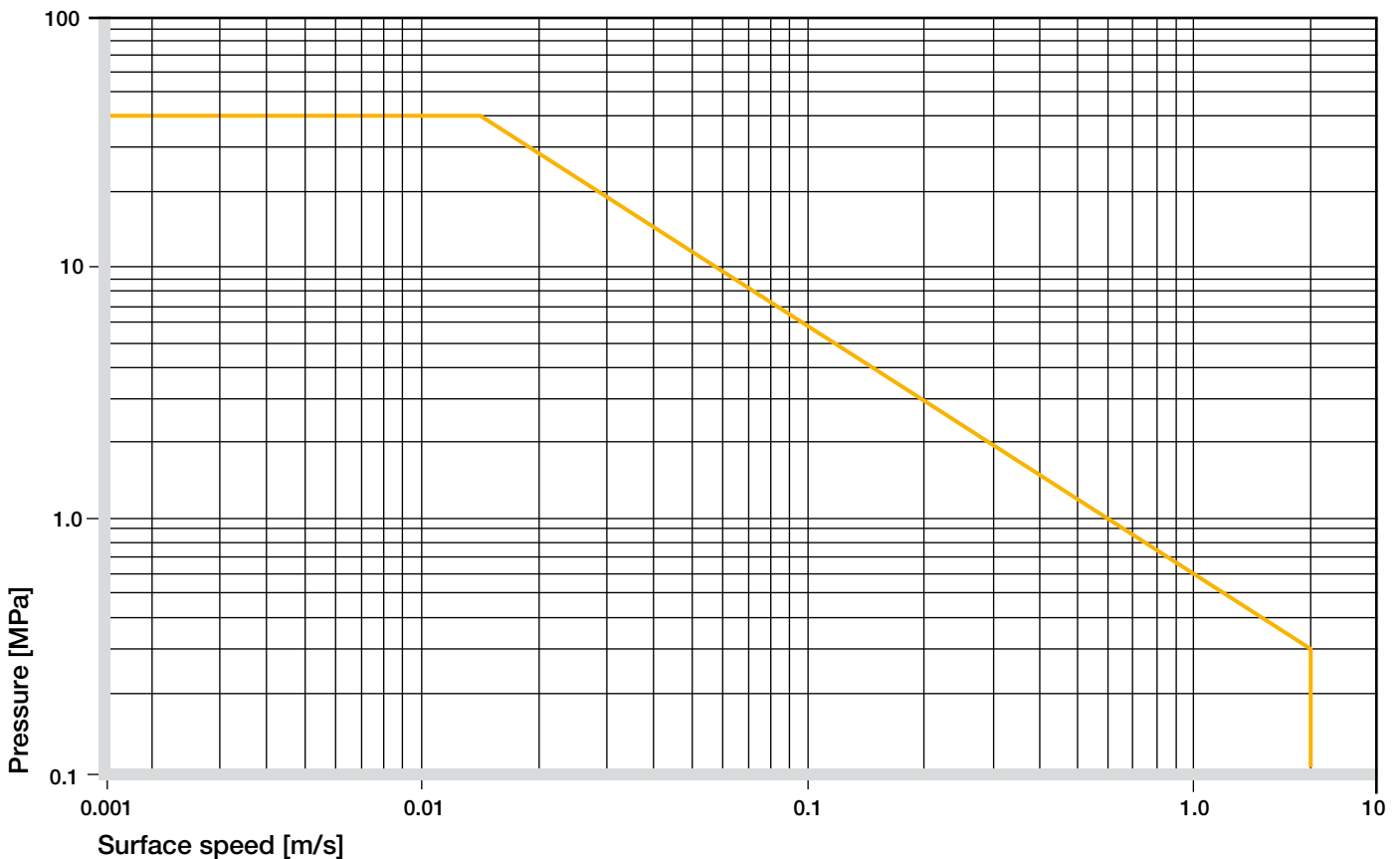
► www.igus.co.uk/printing-machines



► www.igus.co.uk/steering-systems

Material data			
General properties	Unit	iglidur® J260	Testing method
Density	g/cm ³	1.35	
Colour		yellow	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.2	DIN 53495
Max. moisture absorption	% weight	0.4	
Coefficient of sliding friction, dynamic against steel	μ	0.06–0.20	
pv value, max. (dry)	MPa · m/s	0.35	
Mechanical properties			
Modulus of elasticity	MPa	2,200	DIN 53457
Tensile strength at +20°C	MPa	60	DIN 53452
Compressive strength	MPa	50	
Max. recommended surface pressure (+20°C)	MPa	40	
Shore D hardness		77	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+120	
Max. short term application temperature	°C	+140	
Min. application temperature	°C	-100	
Thermal conductivity	W/m · K	n.a.	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	13	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹²	DIN IEC 93
Surface resistance	Ω	> 10 ¹⁰	DIN 53482

Table 01: Material data

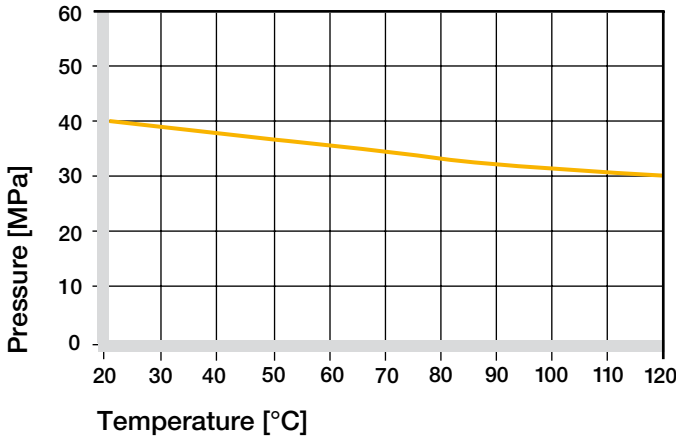


Graph 01: Permissible pv values for iglidur® J260 with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

iglidur® J260 | Technical Data

Mechanical Properties

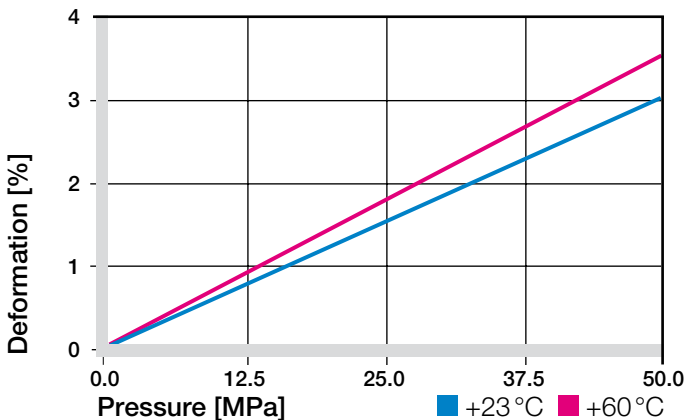
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® J260 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +120°C the permissible surface pressure is almost 30 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

Graph 03 shows the elastic deformation of iglidur® J260 during radial loading. At the recommended maximum surface pressure of 40 MPa the deformation is less than 2,5%. The plastic deformation is minimal up to a pressure of approximately 100 MPa. However, it is also dependant on the cycle time.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® J260 has been developed for low to medium surface speeds.

The maximum values shown in table 02 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	3
Short term	2	1.4	4

Table 02: Maximum running speed

Temperatures

iglidur® J260 plain bearings can be used at temperatures from -100 °C up to +120 °C. The short term maximum temperature is +140 °C. The temperature in an application also has an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +80 °C.

► Application Temperatures, page 46

iglidur® J260	Application temperature
Minimum	-100 °C
Max. long term	+120 °C
Max. short term	+140 °C
Add. securing is required from	+80 °C

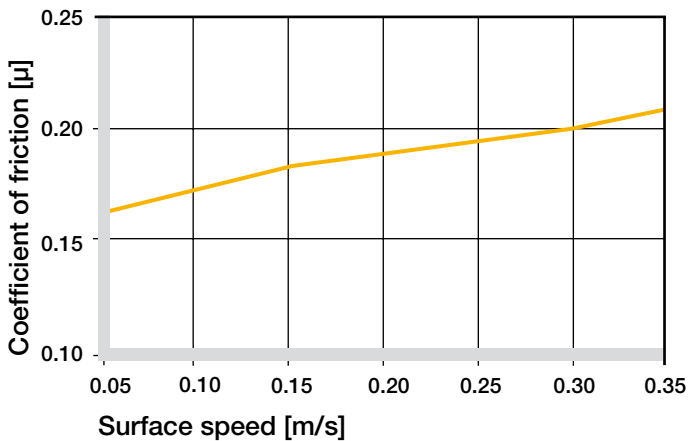
Table 03: Temperature limits

Friction and Wear

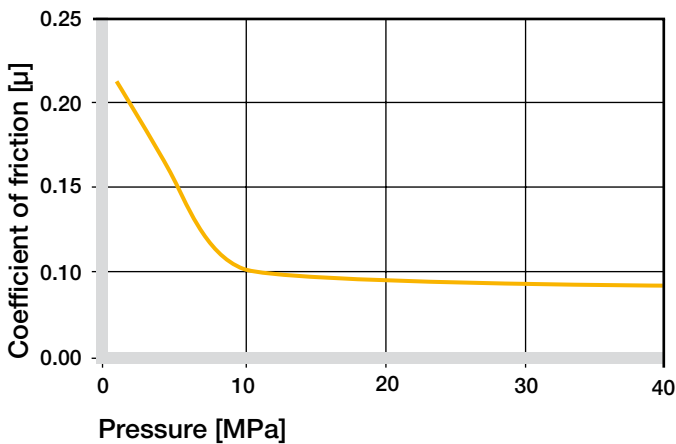
Similar to wear resistance, the coefficient of friction μ also changes with the load. The coefficient of friction decreases with increasing loads, whereas an increase in surface speed causes an increase of the coefficient of friction.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$

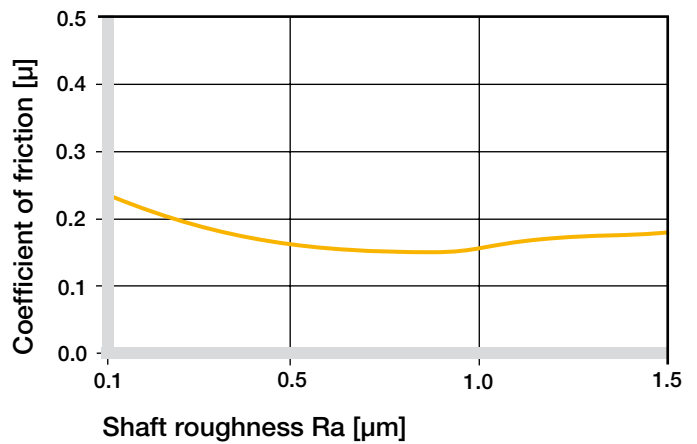


Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

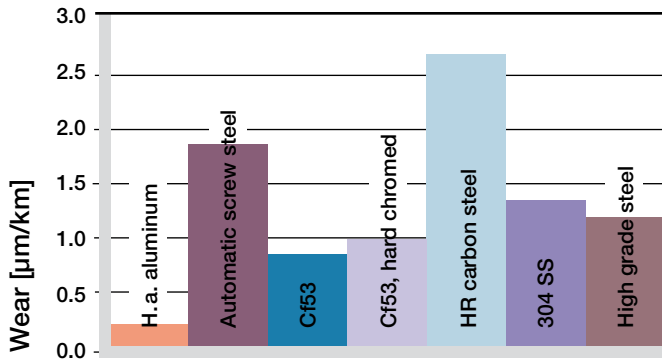
The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglidur® J260 a ground surface with an average roughness $R_a = 0.8 \mu\text{m}$ is recommended (Graph 06). Graphs 07 to 09 shows results of testing different shaft materials with plain bearings made of iglidur® J260. In Graph 07 it shows that iglidur® J260 can be combined with various shaft materials. The hard anodized aluminum shafts came out best at low loads, but iglidur® J260 bearings show good service life even on simple Cf53, stainless steel and hard-chromed shafts. In this connection it is important to note that with increasing loads, the recommended hardness of the shaft increases. The “soft” shafts tend to wear more easily and thus increase the wear of the overall system, if the loads exceed 2 MPa. Graph 08 shows that with increasing load the wear on hard-chromed shafts and V2A shafts rises less strongly than on Cf53 and St37 shafts. The comparison of rotation and oscillating in Graph 09 makes it very clear where iglidur® J260 bearings are best used, especially in rotary operations.

► Shaft Materials, **page 51**

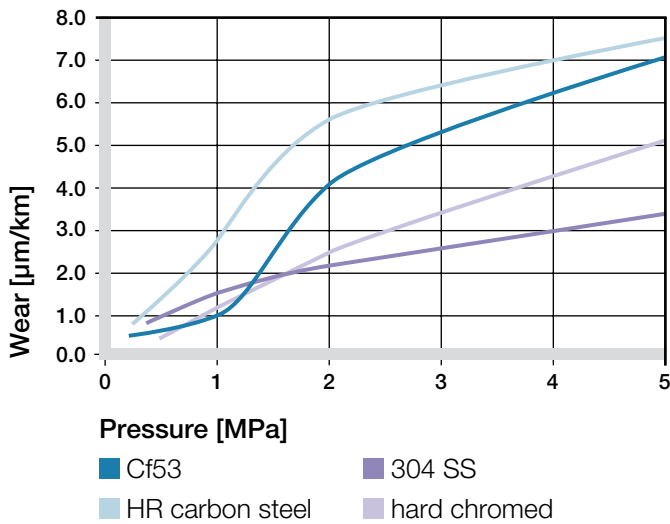


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

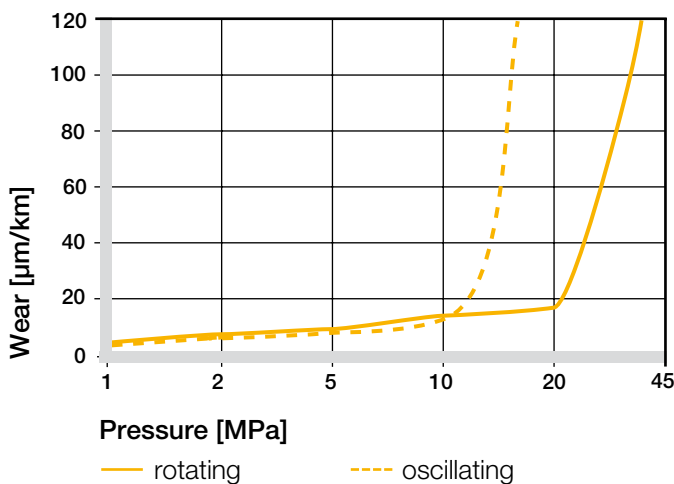
iglidur® J260 | Technical Data



Graph 07: Wear, rotating with different shaft materials, pressure $p = 1 \text{ MPa}$, $v = 0.3 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® J260	Dry	Greases	Oil	Water
C. o. f. μ	0.08–0.15	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ($R_a = 1 \text{ }\mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® J260 plain bearings are resistant to diluted alkalis, hydrocarbons and alcohols. The very low moisture absorption also permits use in wet or damp environments.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases, oils without additives	0 to –
Fuels	–
Diluted acids	–
Strong acids	–
Diluted alkalines	+ to 0
Strong alkalines	+ to 0

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Resistant to radiation up to an intensity of $3 \cdot 10^2 \text{ Gy}$.

UV Resistance

Partially resistant against UV rays.

Vacuum

In a vacuum, any moisture absorbed in the material would be outgassed. For this reason only dehumidified iglidur® J260 bearings are suitable for vacuum.

Electrical Properties

iglidur® J260 plain bearings are electrically insulating.

Volume resistance $> 10^{12} \Omega\text{cm}$

Surface resistance $> 10^{10} \Omega$

Moisture Absorption

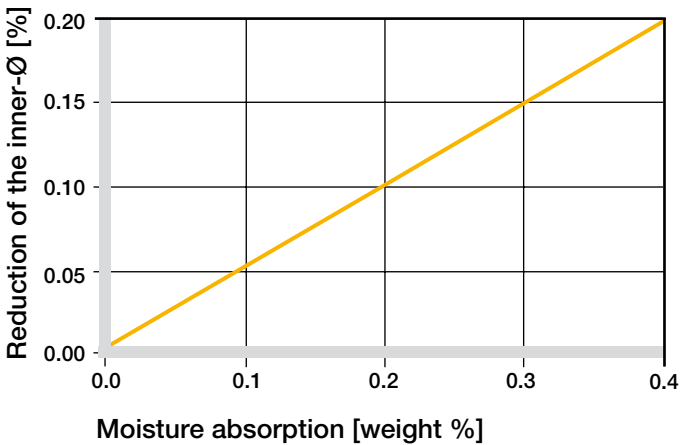
The moisture absorption of iglidur® J260 plain bearings is approximately 0.2 % in standard atmosphere. The saturation limit submerged in water is 0.4 %. These values are so low that design changes due to absorption can be ignored in most cases.

Maximum moisture absorption

At +23 °C/50 % r.h. 0.2 % weight

Max. moisture absorption 0.4 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® J260 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, **page 55**

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® J260 E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

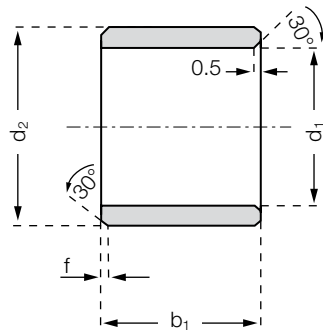
Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

NEW in this catalog!

iglidur® J260 | Product Range

iglidur®
J260

Sleeve bearing



Order key

J260SM-0608-06



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form S)
Material iglidur® J260

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	Tolerance pressfitted in H7	d2	b1
J260SM-0608-06	6	+0.020 +0.068	8	6
J260SM-0810-10	8	+0.025 +0.083	10	10
J260SM-1012-10	10	+0.025 +0.083	12	10
J260SM-1214-12	12	+0.032 +0.102	14	12
J260SM-1214-15	12	+0.032 +0.102	14	15
J260SM-1618-15	16	+0.032 +0.102	18	15
J260SM-1820-12	18	+0.032 +0.102	20	12
J260SM-2023-20	20	+0.040 +0.124	23	20



delivery available
time from stock

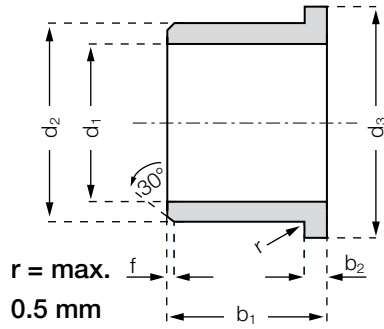


prices price list online
www.igus.co.uk/en/j260



order part number
example J260SM-0608-06

Flange bearing



Order key

J260FM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® J260

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	Tolerance pressfitted in H7	d2	d3	b1	b2
J260FM-0608-06	6	+0.020 +0.068	8	12	6	1
J260FM-0810-10	8	+0.025 +0.083	10	15	10	1
J260FM-1012-10	10	+0.025 +0.083	12	18	10	1
J260FM-1214-12	12	+0.032 +0.102	14	20	12	1
J260FM-1618-17	16	+0.032 +0.102	18	24	17	1
J260FM-2023-21	20	+0.040 +0.124	23	30	21.5	1.5



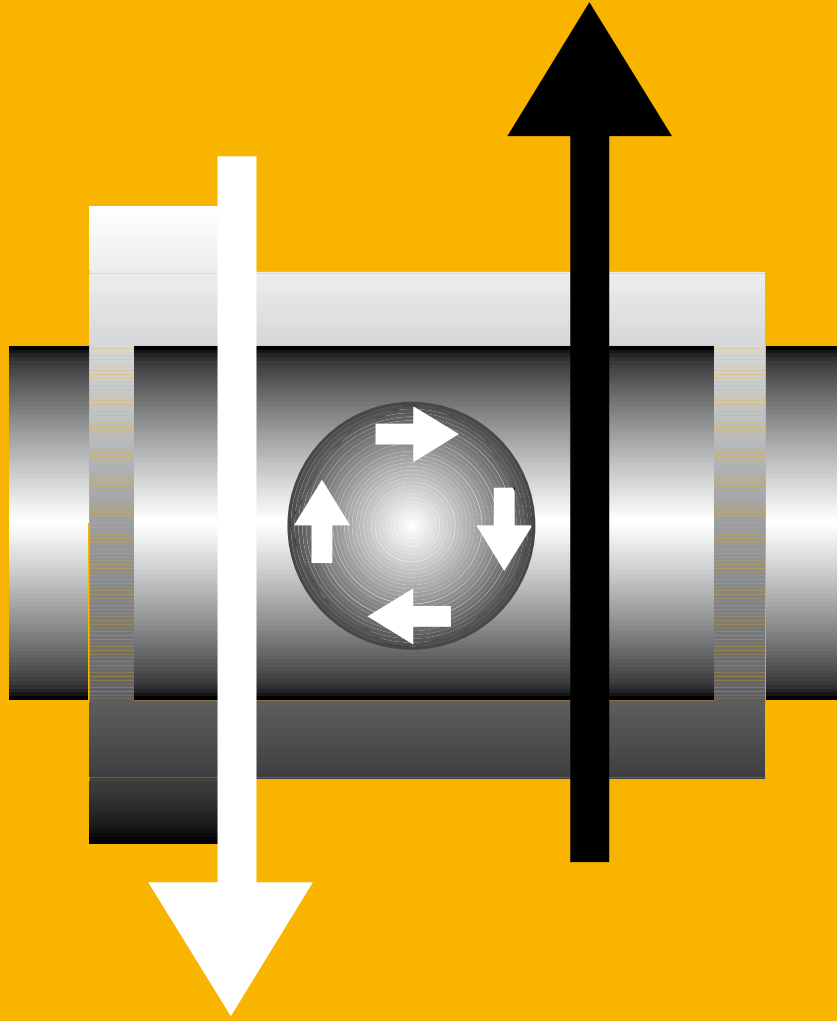
delivery available
time from stock



prices price list online
www.igus.co.uk/en/j260



order part number
example J260FM-0608-06



iglidur® J3 – runs up to three times longer than iglidur® J



Standard range from stock

Lubrication- and maintenance-free

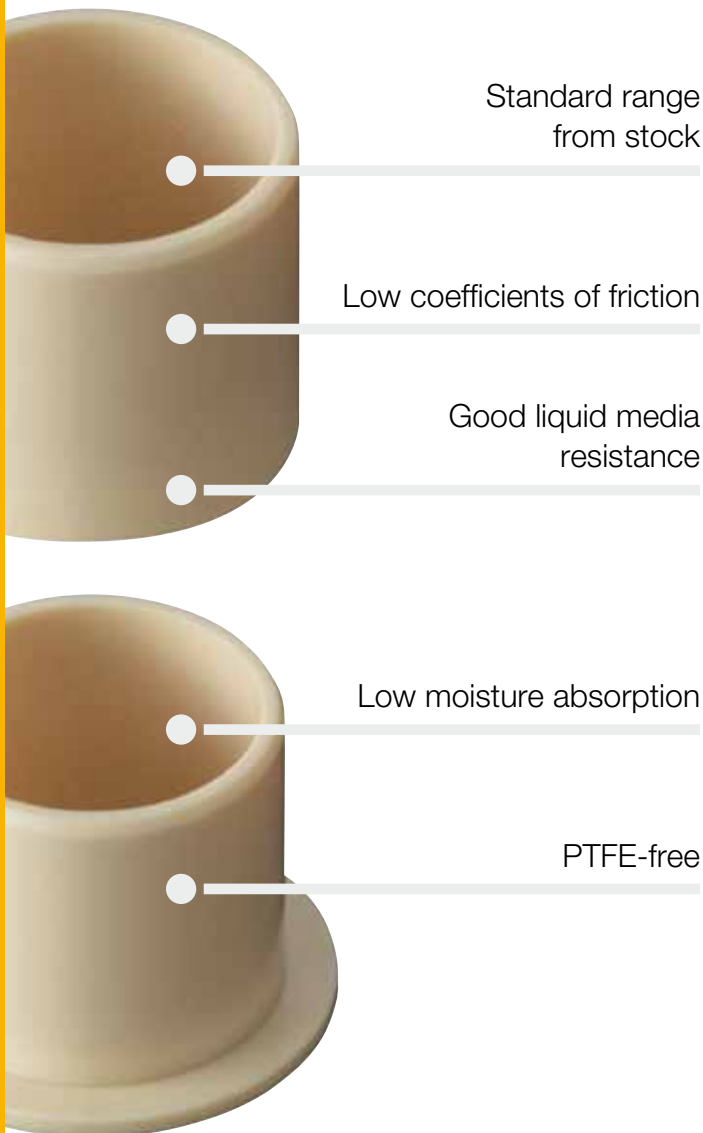
Low coefficients of friction

Good liquid media resistance

Low moisture absorption

PTFE-free

Runs up to three times longer than iglidur® J. iglidur® J3 is the new material with improved wear resistance at low to medium loads and high speed. The lifetime is up to three times longer than iglidur® J – the previous iglidur® champion.



When to use it?

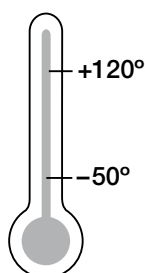
- If wear resistance (rotating or oscillating) of iglidur® J should be optimized
- If a really low coefficient of friction in dry run is necessary
- If high wear resistance at low temperatures is required
- If low moisture absorption is requested
- If good liquid media resistance is required



When not to use it?

- If you need a wear-resistant bearing for linear motion
 - ▶ **iglidur® J, page 89**
- If permanent temperatures exceed +90 °C
 - ▶ **iglidur® J260, page 209**
- If radial surface pressure is higher than 35 MPa
 - ▶ **iglidur® W300, page 131**

Temperature

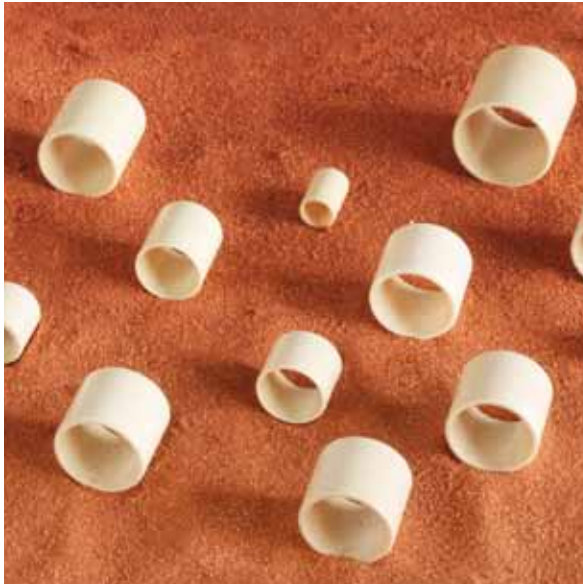


Product range

2 types
 Ø 3–40 mm
 more dimensions
 on request



iglidur® J3 | Application Examples



Typical sectors of industry and application areas

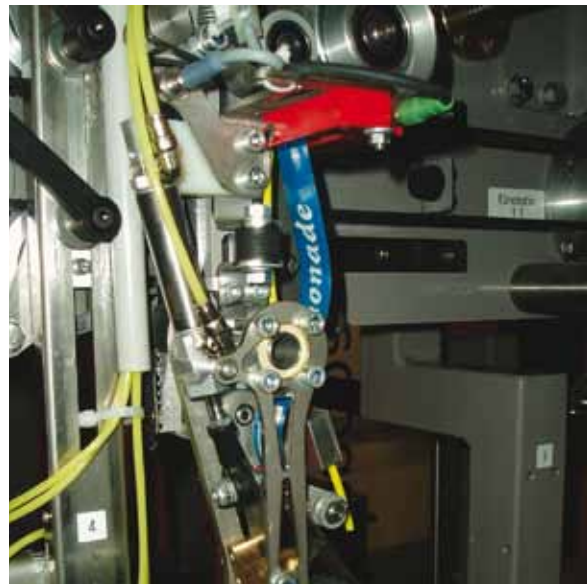
- Automation ● Printing industry
- Beverage technology ● Glass industry
- Aerospace engineering etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



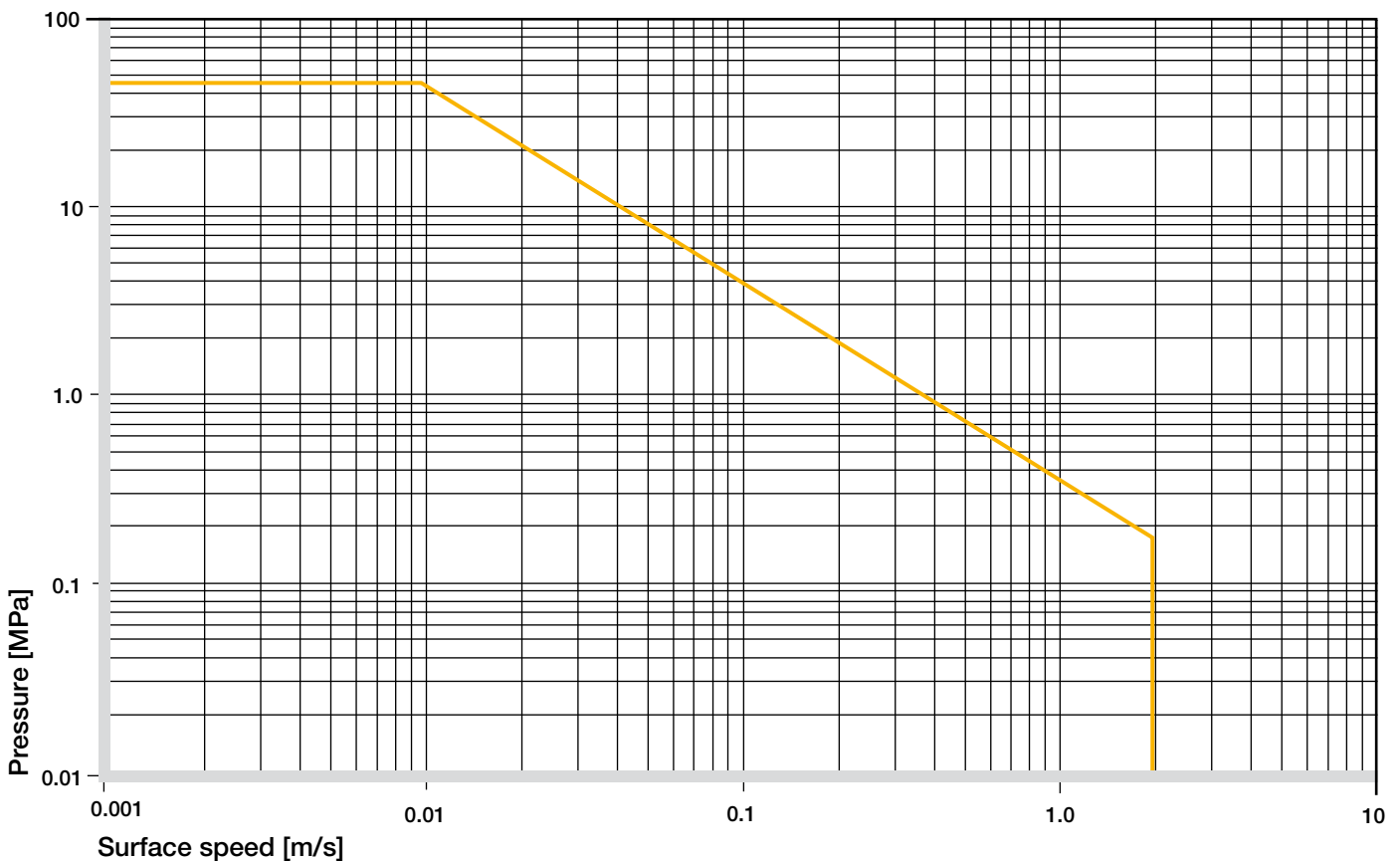
► www.igus.co.uk/flap-bearings



► www.igus.co.uk/carrier-handle

Material data			
General properties	Unit	iglidur® J3	Testing method
Density	g/cm ³	1.42	
Colour		yellow	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.3	DIN 53495
Max. moisture absorption	% weight	1.3	
Coefficient of sliding friction, dynamic against steel	μ	0.06–0.20	
pv value, max. (dry)	MPa · m/s	0.5	
Mechanical properties			
Modulus of elasticity	MPa	2,700	DIN 53457
Tensile strength at +20°C	MPa	70	DIN 53452
Compressive strength	MPa	60	
Max. recommended surface pressure (+20°C)	MPa	45	
Shore D hardness		73	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+90	
Max. short term application temperature	°C	+120	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	13	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹²	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

Table 01: Material data

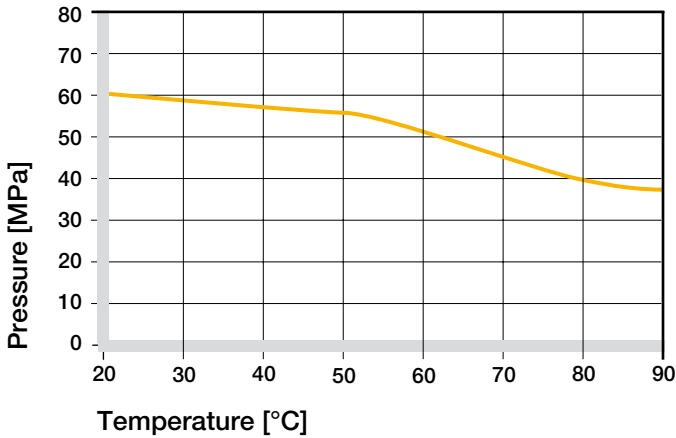


Graph 01: Permissible pv values for iglidur® J3 with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

iglidur® J3 | Technical Data

Mechanical Properties

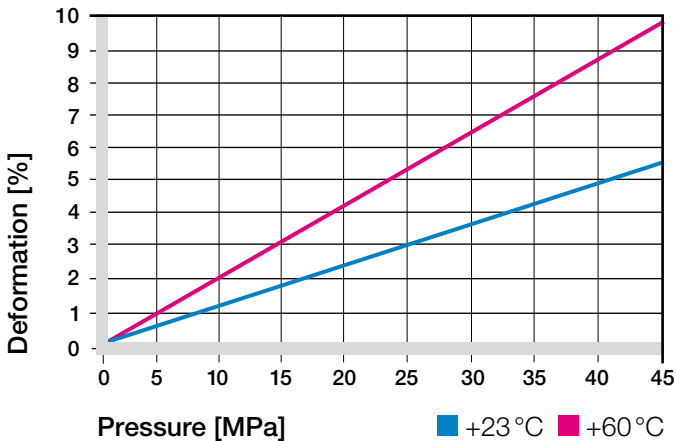
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® J3 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 25 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

Graph 03 shows the elastic deformation of iglidur® J3 during radial loading. At the recommended maximum surface pressure of 40 MPa the deformation is less than 3%. The plastic deformation is minimal up to a pressure of approximately 100 MPa. The possible plastic deformation depends on the applied pressure, as well as other external factors.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® J3 has been developed for medium to high surface speeds. The maximum values shown in table 02 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1.5	1.1	8
Short term	3	2.1	10

Table 02: Maximum running speed

Temperatures

iglidur® J3 plain bearings can be used at temperatures from -50 °C up to +90 °C. The short term maximum temperature is +120 °C. The temperature in an application also has an effect on the bearing wear. With increasing temperatures, the wear increases and this effect is significant when temperatures rise over +90 °C.

► Application Temperatures, page 46

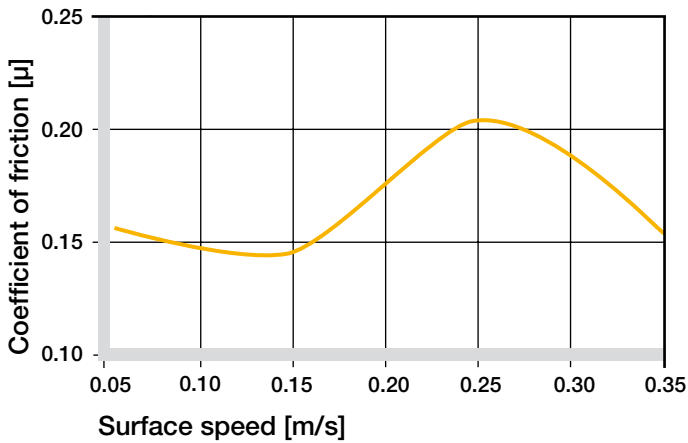
iglidur® J3	Application temperature
Minimum	-50 °C
Max. long term	+90 °C
Max. short term	+120 °C
Add. securing is required from	+60 °C

Table 03: Temperature limits

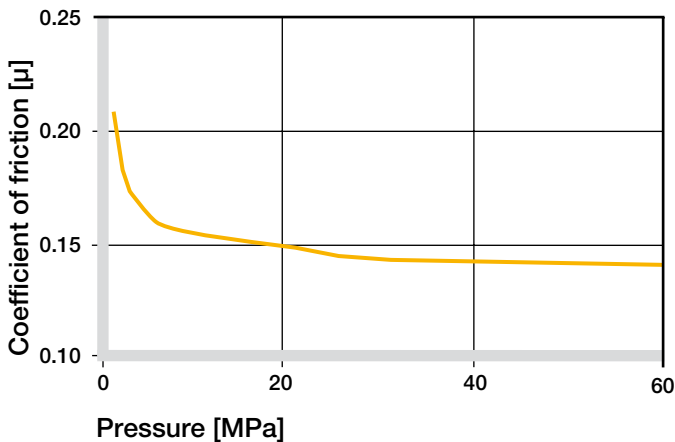
Friction and Wear

Similar to wear resistance, the coefficient of friction μ also changes with the load. The coefficient of friction decreases with increasing loads, as it shows a clear minimum at surface speeds up to 0.15 m/s (s. Graph. 04 and 05).

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75$ MPa

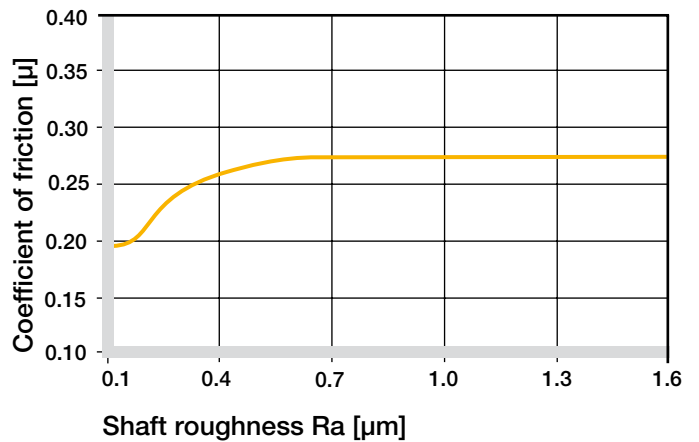


Graph 05: Coefficient of friction as a function of the pressure, $v = 0,01$ m/s

Shaft Materials

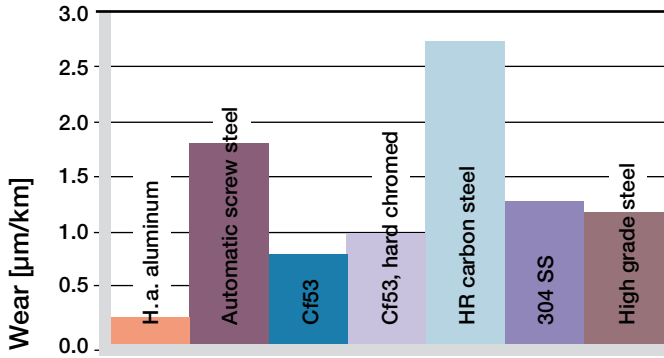
The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. For iglidur® J3 a ground surface with an average roughness $R_a = 0,1-0,3 \mu\text{m}$ is recommended. (s. Graph 06). Graphs 07 to 09 shows results of testing different shaft materials with plain bearings made of iglidur® J3. In Graph 07 it shows that iglidur® J3 can be combined with various shaft materials. At low pressures, hard anodized aluminum shafts, X90 stainless steel and Cf53 steel shafts proved to be the best. But even in combination with other shaft materials, except for free cutting steel, iglidur® J3 bearings achieve excellent wear values. Graph 08 shows that the difference between shaft materials increase with increasing loads. Hard chromed or 304 SS-shafts are best at pressures from 2 MPa in rotation movement. Graph 09 shows rotating and oscillating tests in comparison. With higher load, the wear increases more for rotating than for oscillating movements.

- ▶ Shaft Materials, **page 51**

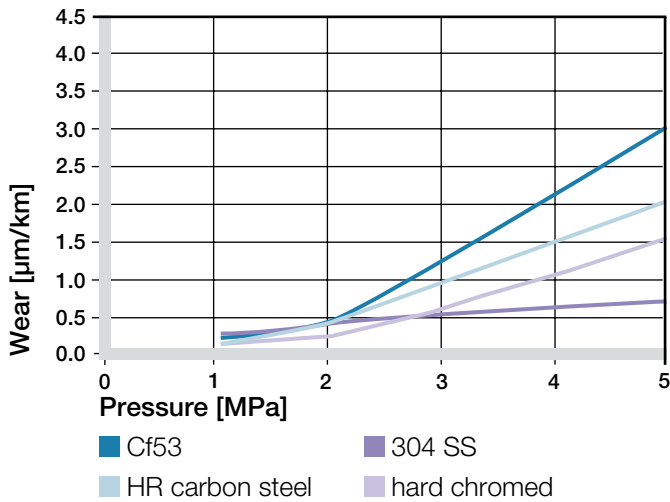


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

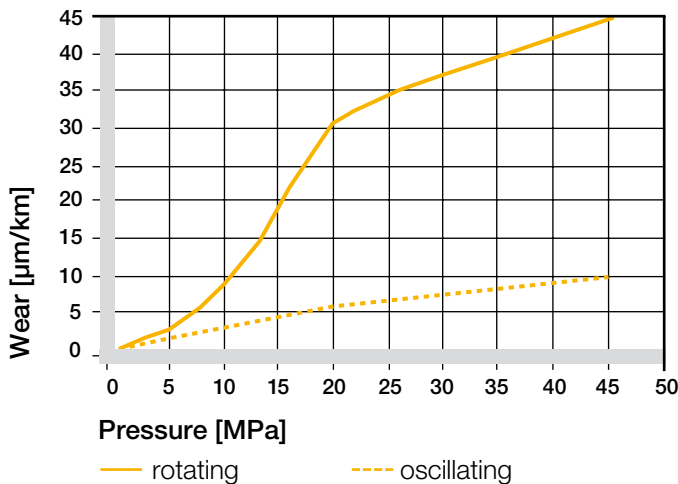
iglidur® J3 | Technical Data



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® J3	Dry	Greases	Oil	Water
C.o.f. μ	0.08–0.15	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ($R_a = 1 \text{ }\mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® J3 bearings are resistant to diluted alkalis and very weak acids as well as to fuels and all kinds of lubricants. The low humidity absorption allows them to be used in wet or humid environments. iglidur® J3 bearings are also resistant to conventional detergents used in the food industry.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	+ to 0

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [$+20 \text{ }^\circ\text{C}$]

Table 05: Chemical resistance

Radiation Resistance

Resistant to radiation up to an intensity of $1 \cdot 10^4 \text{ Gy}$.

UV Resistance

iglidur® J3 plain bearings become discoloured under UV radiation. However, hardness, compressive strength and the wear resistance of the material do not change.

Vacuum

In vacuum applications, any absorbed moisture content is degassed. For this reason only dehumidified iglidur® J3 bearings are suitable for use in a vacuum.

Electrical Properties

iglidur® J3 plain bearings are electrically insulating.

Volume resistance $> 10^{12} \Omega\text{cm}$

Surface resistance $> 10^{12} \Omega$

Moisture Absorption

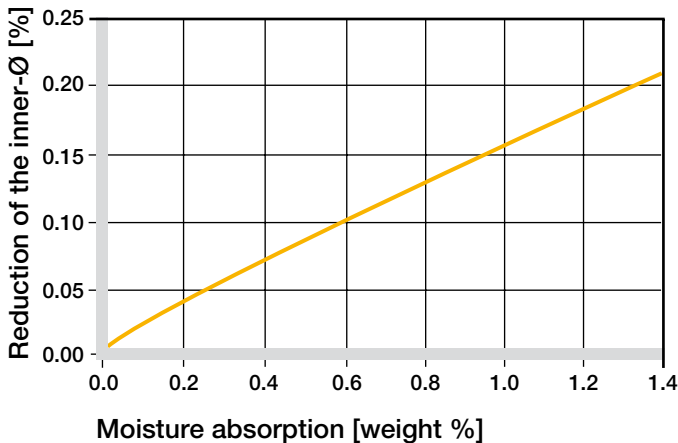
The moisture absorption of iglidur® J3 plain bearings is approximately 0.3% in the standard atmosphere. The saturation limit submerged in water is 1.3%. These values are so low that design changes due to absorption are only necessary in extreme cases.

Maximum moisture absorption

At +23 °C/50% r.h. 0.3% weight

Max. moisture absorption 1.3% weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® J3 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® J3 E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

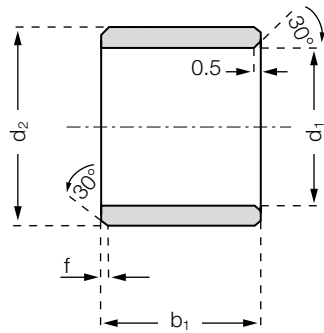
Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

NEW in this catalog!

iglidur® J3 | Product Range

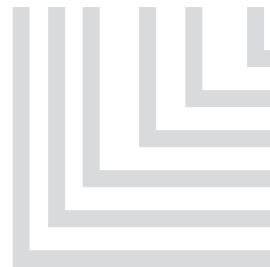
iglidur®
J3

Sleeve bearing



Order key

J3SM-0304-05



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® J3

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	Tolerance pressfitted in H7	d2	b1
J3SM-0304-05	3	+0.020 +0.068	4.5	5
J3SM-0507-05	5	+0.020 +0.068	7	5
J3SM-0608-06	6	+0.020 +0.068	8	6
J3SM-0810-10	8	+0.025 +0.083	10	10
J3SM-1012-10	10	+0.025 +0.083	12	10
J3SM-1214-15	12	+0.032 +0.102	14	15
J3SM-1618-15	16	+0.032 +0.102	18	15
J3SM-2023-20	20	+0.040 +0.124	23	20
J3SM-2528-30	25	+0.040 +0.124	28	30
J3SM-3034-30	30	+0.040 +0.124	34	30
J3SM-3539-40	35	+0.050 +0.150	39	40
J3SM-4044-40	40	+0.050 +0.150	44	40



delivery available
time from stock

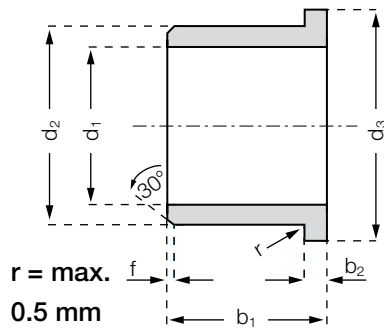


prices price list online
www.igus.co.uk/en/j3



order part number
example J3SM-0304-05

Flange bearing



Order key

J3FM-0304-05



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® J3

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	Tolerance pressfitted in H7	d2	d3	b1	b2
J3FM-0304-05	3	+0.020 +0.068	4.5	7.5	5	0.75
J3FM-0507-05	5	+0.020 +0.068	7	11	5	1
J3FM-0608-06	6	+0.020 +0.068	8	12	6	1
J3FM-0810-10	8	+0.025 +0.083	10	15	10	1
J3FM-1012-10	10	+0.025 +0.083	12	18	10	1
J3FM-1214-12	12	+0.032 +0.102	14	20	12	1
J3FM-1618-17	16	+0.032 +0.102	18	24	17	1
J3FM-2023-21	20	+0.040 +0.124	23	30	21.5	1.5
J3FM-2528-21	25	+0.040 +0.124	28	35	21.5	1.5
J3FM-3034-26	30	+0.040 +0.124	34	42	26	2
J3FM-3539-26	35	+0.050 +0.150	39	47	26	2
J3FM-4044-40	40	+0.050 +0.150	44	52	40	2



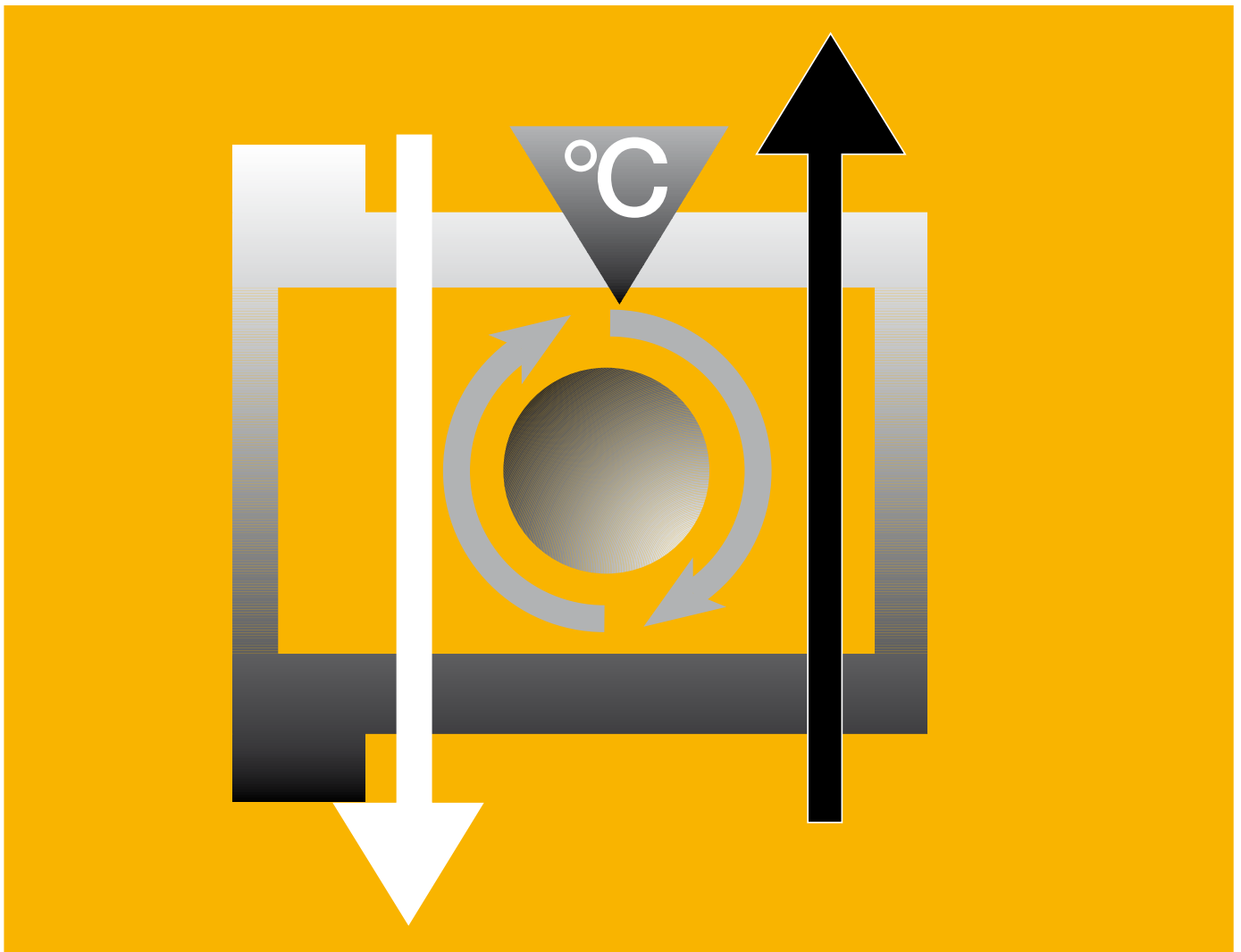
delivery available
time from stock



prices price list online
www.igus.co.uk/en/j3



order part number
example J3FM-0304-05



iglidur® J350 – extremely wear-resistant in rotation



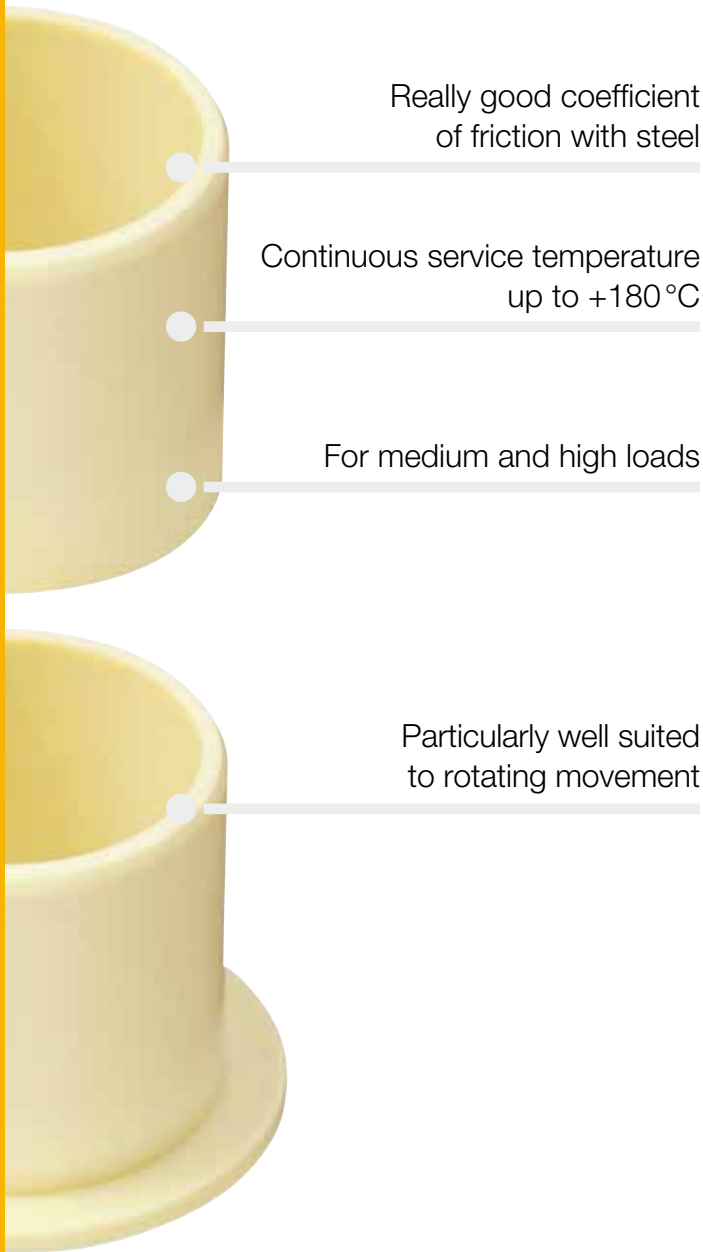
Excellent coefficient of friction against steel

Continuous service temperature up to +180°C

For medium and high loads

Particularly well suited to rotating movement

Extremely wear-resistant in rotation. An outstanding bearing for rotating applications – and for a wide range of different shaft materials: With iglidur® J350 bearings, the lifetime can often be increased for applications between 1 and 50 MPa. In addition, the high temperature resistance makes it a very versatile material.



Really good coefficient of friction with steel

Continuous service temperature up to +180 °C

For medium and high loads

Particularly well suited to rotating movement



When to use it?

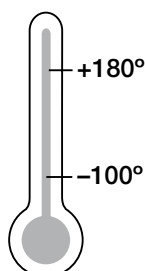
- If a high wear-resistant bearing for rotating movement at medium and high loads is required
- If an economic bearing is required for use at high temperatures.
- If pressfit up to +150 °C is necessary
- If high wear resistance is required at high loads
- If the bearing is exposed to shock loading



When not to use it?

- If permanent temperatures exceed +180 °C
 - ▶ iglidur® X, page 153
- If low friction is required
 - ▶ iglidur® J, page 89
- When a cost-effective bearing with a low friction is needed
 - ▶ iglidur® D, page 259
 - ▶ iglidur® R, page 249
- With high rotational speeds
 - ▶ iglidur® J, page 89

Temperature



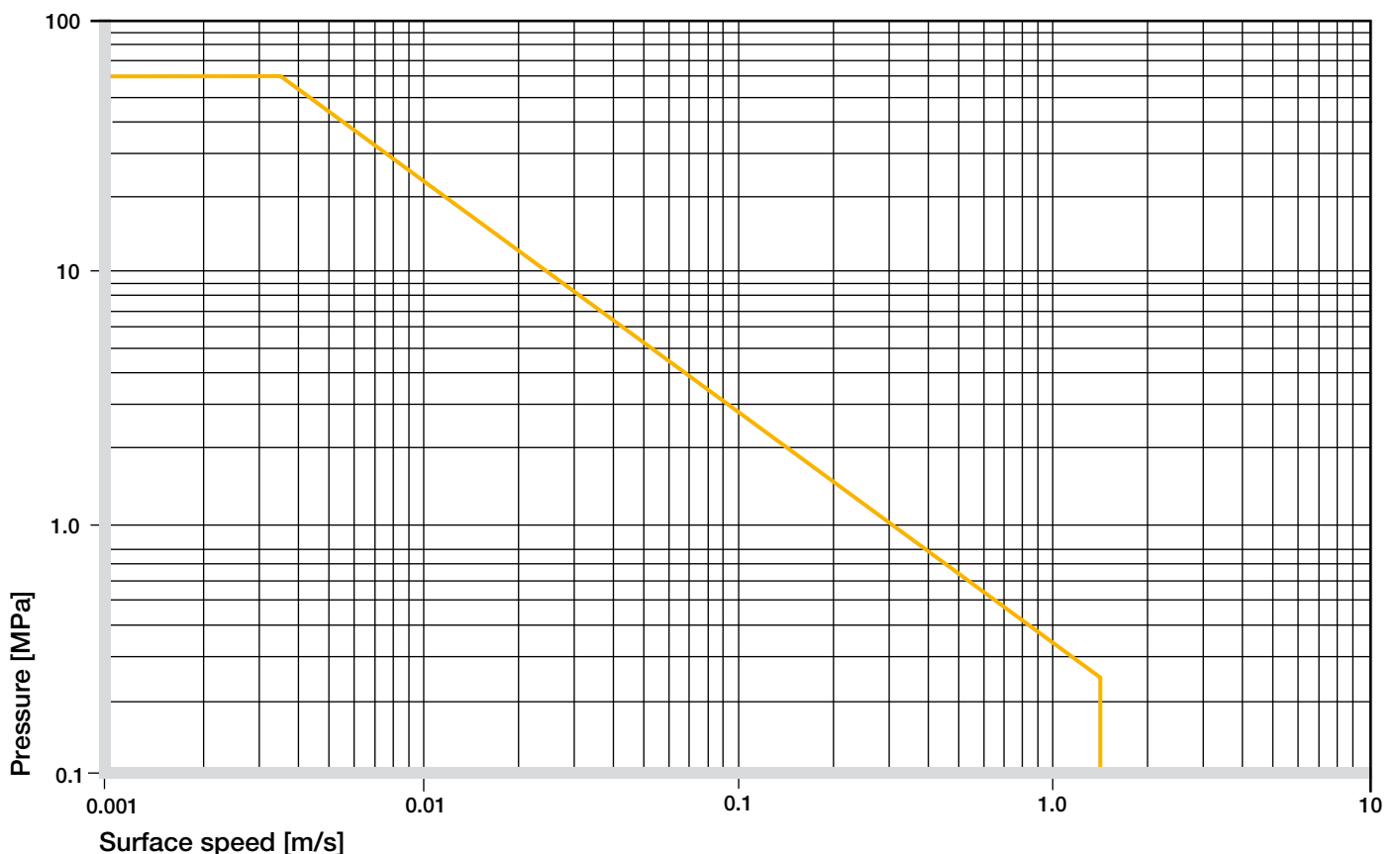
Product range

2 styles
 Ø 6–20 mm
 more dimensions
 on request



Material data			
General properties	Unit	iglidur® J350	Testing method
Density	g/cm ³	1.44	
Colour		yellow	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.3	DIN 53495
Max. moisture absorption	% weight	1.6	
Coefficient of sliding friction, dynamic against steel	μ	0.1–0.2	
pv value, max. (dry)	MPa · m/s	0.45	
Mechanical properties			
Modulus of elasticity	MPa	2,000	DIN 53457
Tensile strength at +20 °C	MPa	55	DIN 53452
Compressive strength	MPa	60	
Max. recommended surface pressure (+20 °C)	MPa	60	
Shore D hardness		80	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+180	
Max. short term application temperature	°C	+220	
Min. application temperature	°C	-100	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	7	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹³	DIN IEC 93
Surface resistance	Ω	> 10 ¹⁰	DIN 53482

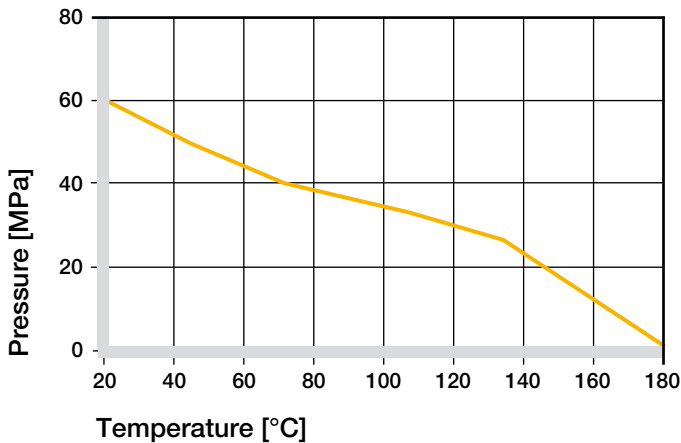
Table 01: Material data



Graph 01: Permissible pv values for iglidur® J350 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Mechanical Properties

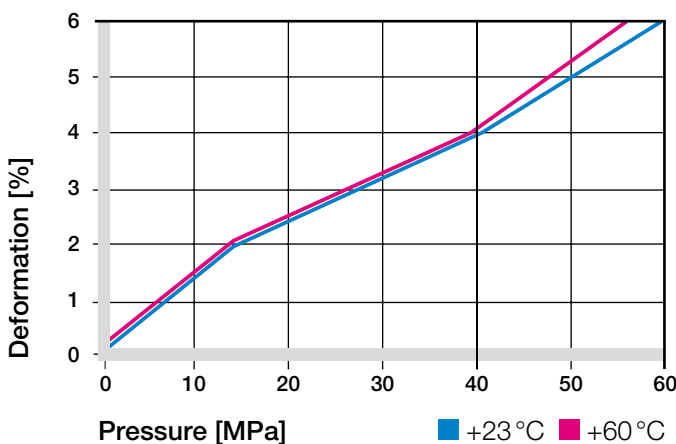
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® J350 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +150°C the permissible surface pressure is almost 25 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (60 MPa at +20 °C)

iglidur® J350 bearings are adequate for medium and high loads. Graph 03 shows the elastic deformation under different temperature. At the recommended maximum surface pressure of 60 MPa the deformation is less than 6%.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® J350 has been developed for low and medium speeds in rotating and oscillating use. The wear rate is much better with rotating movement.

iglidur® J350 plain bearings can also be used for linear motion.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1.3	1	4
Short term	3	2,3	8

Table 02: Maximum running speed

Temperatures

The temperature resistance of iglidur® J250 allows universal applications in many different industries. The short term maximum temperature is +220 °C. At temperatures above +150 °C the bearing should be mechanically fixed in the bore. Higher temperatures may result in a loss of the pressfit of the plain bearings, potentially allowing the bearing to drift within the housing bore.

The wear-rate of iglidur® J350 bearings changes very little at high temperatures. In some cases, the wear even decreases at +100 °C. Generally, the wear figures between +20 °C and +150 °C are very similar.

The iglidur® J350 is a highly wear-resistant bearing material, which can also be used at higher temperatures. The combination of excellent tribological and thermal properties fills a gap in the group of long life materials.

► Application Temperatures, page 46

iglidur® J350	Application temperature
Minimum	-100 °C
Max. long term	+180 °C
Max. short term	+220 °C
Add. securing is required from	+150 °C

Table 03: Temperature limits

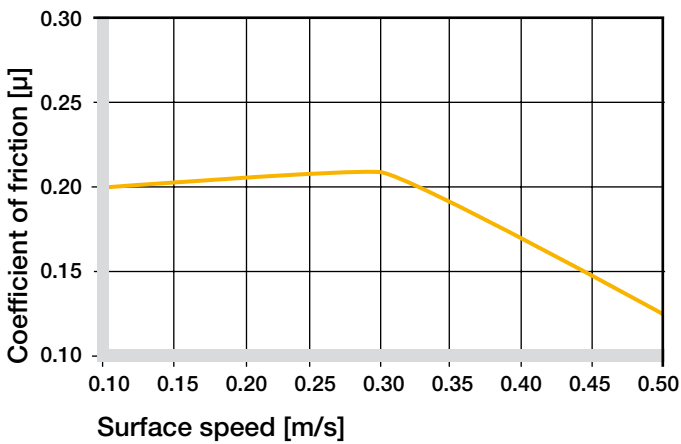
iglidur® J350 | Technical Data

Friction and Wear

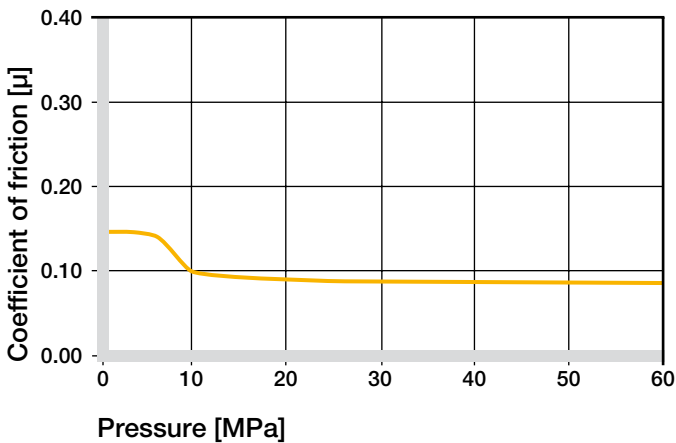
The coefficient of friction of iglidur® J350 in dry operation on a steel shaft are very good. It is even lower at high speed, which makes the material very suitable for permanently dry-running application at high rotation speed, as can be seen in graph 04.

iglidur® J350 bearings are clearly superior to other bearing materials in rotating applications over 2 Mpa. The lifetime of iglidur® J350 can be several times higher.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, p = 1 MPa



Graph 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

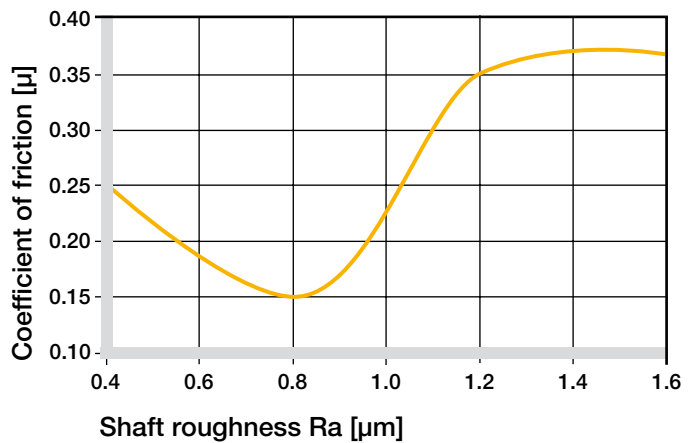
Shaft Materials

Graph 06 and 07 shows results of testing different shaft materials with plain bearings made of iglidur® J350. iglidur® J350 plain bearings can be combined with various shaft materials.

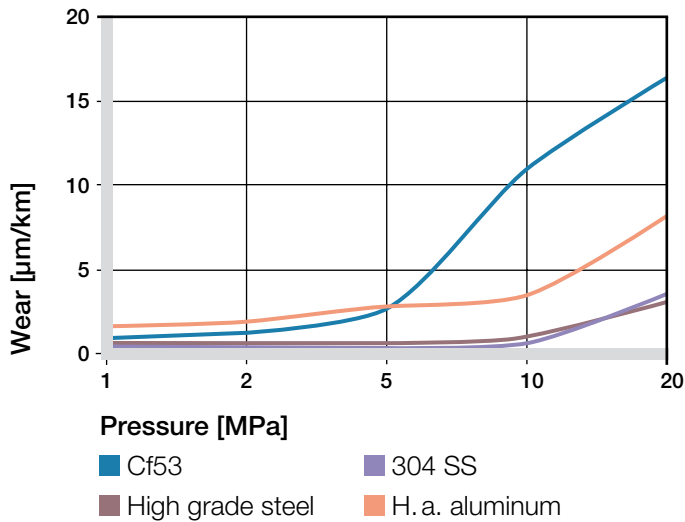
One shaft – bearing combination stands out when looking at the wear results of the test: iglidur® J350 with soft stainless steel (V2A). Not many bearing materials are suitable for use with this rather difficult soft stainless steel material (V2A) and achieve good wear results. Also, iglidur® J350 shows good properties with hard-anodized aluminum shafts.

If the shaft material you plan on using is not shown in these test results, please contact us.

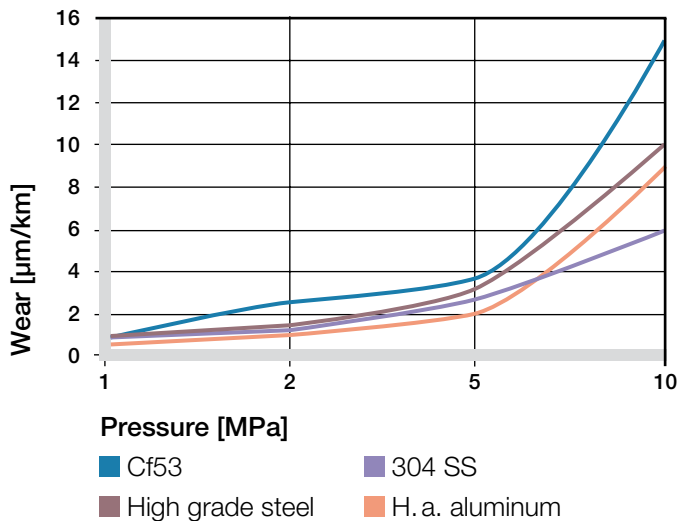
- ▶ Shaft Materials, **page 51**



Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 08: Wear with oscillating movement of different shaft materials according to applied load

iglidur® J350	Dry	Greases	Oil	Water
C. o. f. μ	0.1–0.2	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® J350 plain bearings are resistant to diluted alkalines and acids, alcohols, cleaning agents and lubricants.

iglidur® J350 will be attacked by esters, ketones, chlorinated hydrocarbons, and other solvents, please refer to the chemical resistance chart at the back of this catalogue.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+ to 0
Greases, oils without additives	+
Fuels	+
Diluted acids	+
Strong acids	+ to 0
Diluted alkalines	+
Strong alkalines	+

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® J350 are resistant to radiation up to an intensity of $2 \cdot 10^2$ Gy.

UV Resistance

iglidur® J350 plain bearings are conditionally resistant to UV radiation.

Vacuum

iglidur® J260 plain bearings outgas in a vacuum. Use in a vacuum environment is only possible with dehumidified bearings.

Electrical Properties

iglidur® J350 plain bearings are electrically insulating.

Volume resistance	$> 10^{13} \Omega\text{cm}$
Surface resistance	$> 10^{10} \Omega$

iglidur® J350 | Technical Data

Moisture Absorption

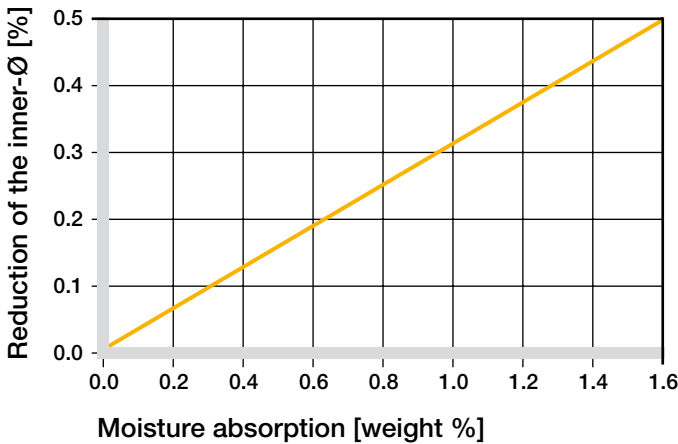
The humidity absorption of iglidur® J350 is low and can be ignored when using standard-bearings. Even when saturated with water, iglidur® J350 does not absorb more than 1.6 % of water (by weight).

Maximum moisture absorption

At +23 °C/50 % r.h. 0.3 % weight

Max. moisture absorption 1.6 % weight

Table 06: Moisture absorption



Graph 09: Effect of moisture absorption on plain bearings

Installation Tolerances

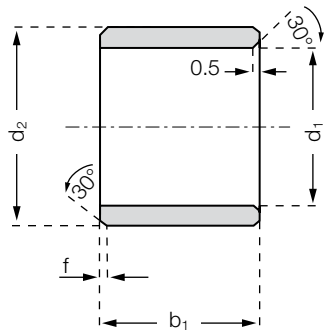
iglidur® J350 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® J350 F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

J350SM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® J350

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1
J350SM-0608-06	6	+0.010 +0.058	8	6
J350SM-0810-10	8	+0.013 +0.071	10	10
J350SM-1012-10	10	+0.013 +0.071	12	10
J350SM-1214-12	12	+0.016 +0.068	14	12
J350SM-1618-15	16	+0.016 +0.068	18	15
J350SM-2023-20	20	+0.020 +0.104	23	20

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/j350



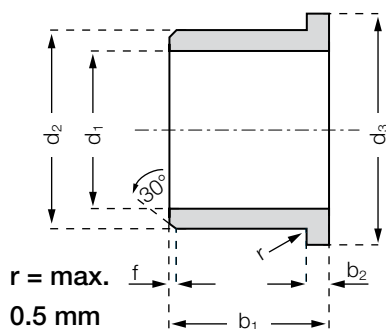
order part number
example J350SM-0608-06

NEW in this catalog!

iglidur® J350 | Product Range

iglidur®
J350

Flange bearing



Order key

J350FM-0608-06



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form F)
Material iglidur® J350

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3	b1	b2
J350FM-0608-06	6	+0.010 +0.058	8	12	6	1
J350FM-0810-10	8	+0.013 +0.071	10	15	10	1
J350FM-1012-10	10	+0.013 +0.071	12	18	10	1
J350FM-1214-12	12	+0.016 +0.068	14	20	12	1
J350FM-1618-17	16	+0.016 +0.068	18	24	17	1
J350FM-2023-21	20	+0.020 +0.104	23	30	21.5	1.5

* after pressfit. Testing methods ► page 55



delivery available
time from stock

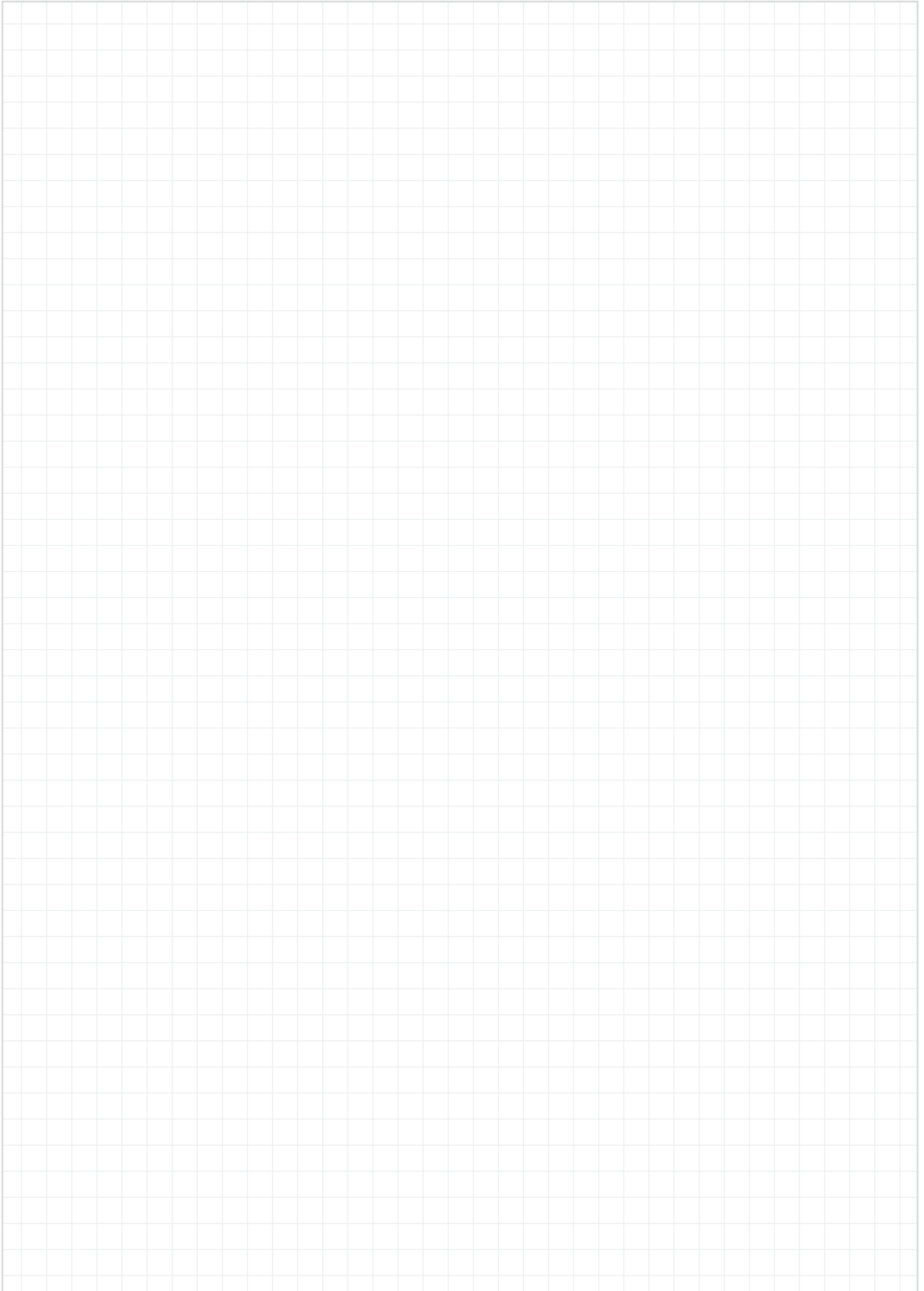


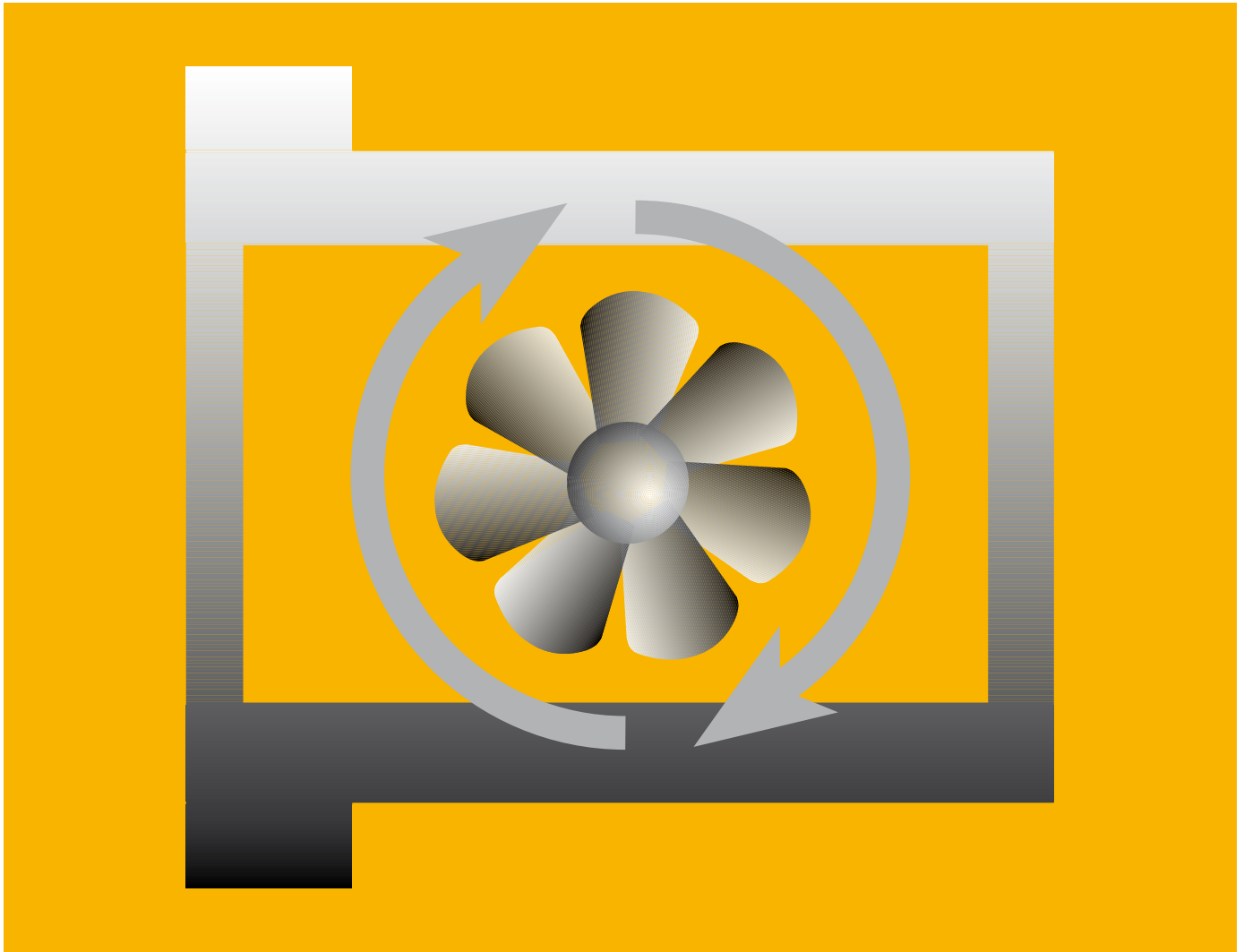
prices price list online
www.igus.co.uk/en/j350



order part number
example J350FM-0608-06

My Sketches





iglidur® L250 – for high speed



Standard range from stock

Recommended for rotating applications

Very low coefficients of friction

Excellent wear resistance

iglidur® L250

For high speed. Plain bearings for high speed rotation applications, especially for fan- and motors.



Recommended for rotating applications

Very low coefficients of friction

Excellent wear resistance



When to use it?

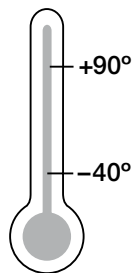
- For rotating applications at high speed
- If highest service life is required
- Low load applications
- If low noise level is required
- For very low coefficients of friction



When not to use it?

- When high pressure loads occur
 - ▶ iglidur® Q, page 461
 - ▶ iglidur® W300, page 131
- When sustained temperatures above +90 °C is a condition
 - ▶ iglidur® V400, page 279
- When low moisture absorption is required
 - ▶ iglidur® H1, page 337
 - ▶ iglidur® J, page 89

Temperature



Product range

2 styles
Ø 6–20 mm
more dimensions
on request



iglidur® L250 | Application Examples



Typical sectors of industry and application areas

- Automotive ● Electronics industry
- Mechatronics ● Optical industry
- Test engineering and quality assurance etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications

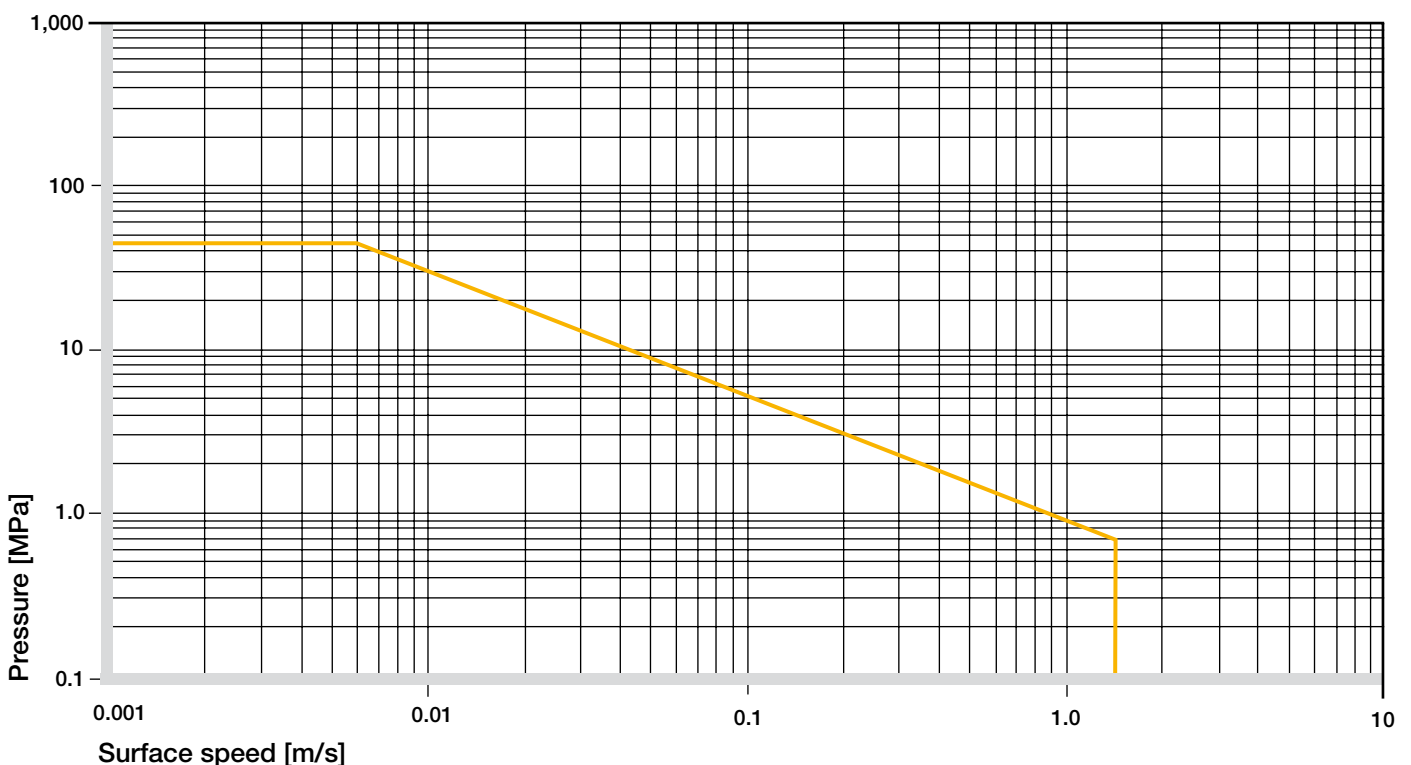


► www.igus.co.uk/light-aircraft

Material data			
General properties	Unit	iglidur® L250	Testing method
Density	g/cm ³	1.50	
Colour		beige	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.7	DIN 53495
Max. moisture absorption	% weight	3.9	
Coefficient of sliding friction, dynamic against steel	μ	0.08–0.19	
pv value, max. (dry)	MPa · m/s	0.4	
Mechanical properties			
Modulus of elasticity	MPa	1,950	DIN 53457
Tensile strength at +20 °C	MPa	67	DIN 53452
Compressive strength	MPa	47	
Max. recommended surface pressure (+20 °C)	MPa	45	
Shore D hardness		68	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+90	
Max. short term application temperature	°C	+180	
Max. ambient temperature, short term ¹⁾	°C	+200	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	10	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹⁰	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

¹⁾ Without additional load; no sliding movement; relaxation possible

Table 01: Material data

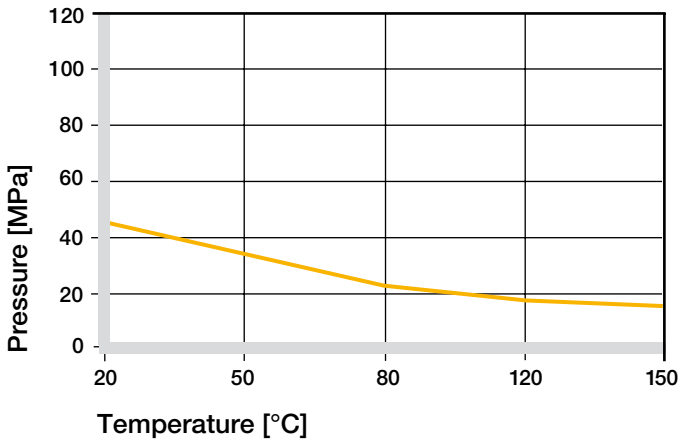


Graph 01: Permissible pv values for iglidur® L250 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® L250 | Technical Data

Mechanical Properties

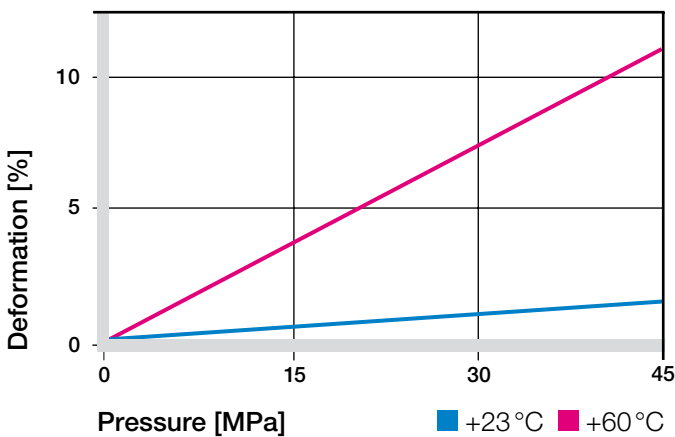
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® L250 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +90°C the permissible surface pressure is almost 20 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (45 MPa at +20°C)

iglidur® L250 is a bearing material for high rotary speeds and low coefficients of friction. The iglidur® L250 material can feature these advantages particularly with low loads. Applications which feature these advantages are fans, small motors, fast-running sensors or the magnet technology.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® L250 has been developed especially for high surface speeds with low loads. Besides the physical limit, which is preset by the heating of the bearing, the coefficients of wear also act limitingly if rapidly high glide paths emerge at high peripheral speeds and the permitted wear limit is thus reached earlier. The great advantages of the iglidur® L250 bearings are seen right here. The wear rate is very low, thus making the material an ideal solution for extreme glide paths. The maximum speeds can be gathered from Table 02.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	2
Short term	1.5	1.1	3

Table 02: Maximum running speed

Temperatures

The iglidur® L250 bearings can be used in temperatures up to 180°C for the short-term. Note that a mechanical securing of the bearing is recommended from temperatures of 55°C. Higher temperatures can also cause the bearing to lose its press-fit seating and move in the bore.

► Application Temperatures, page 46

iglidur® L250	Application temperature
Minimum	-40°C
Max. long term	+90°C
Max. short term	+180°C
Add. securing is required from	+55°C

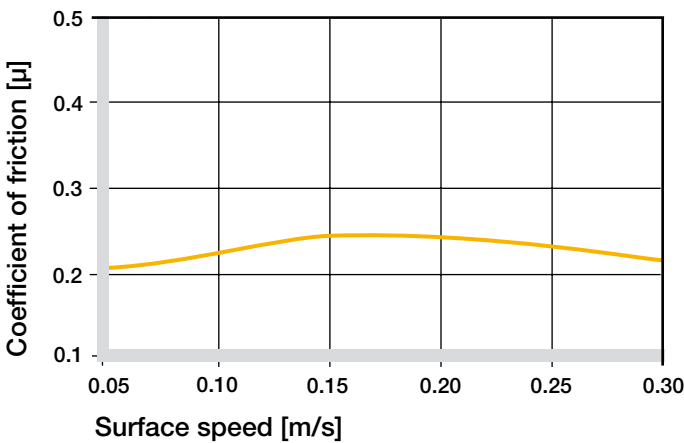
Table 03: Temperature limits

Friction and Wear

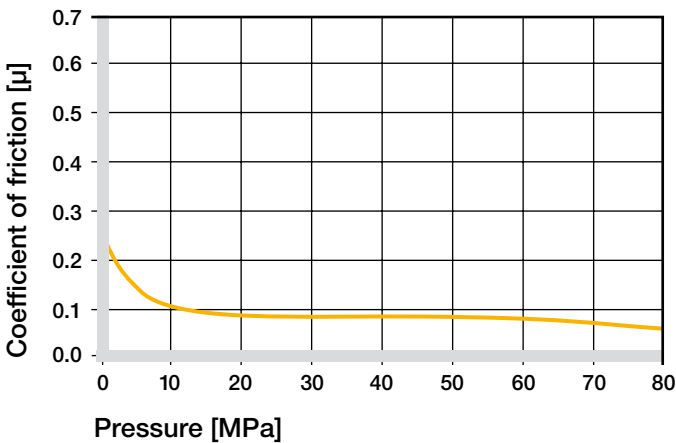
Low coefficients of friction form an essential reason for the excellent features of the iglidur® L250 bearings. In the best pairing (with V2A shafts), friction coefficients of 0.14 are already reached with low loads. Coefficients of friction under 0.1 was measured already below 10 MPa. To utilize the excellent coefficients of wear in the application, loads over 5 MPa should be avoided according to shaft material.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$

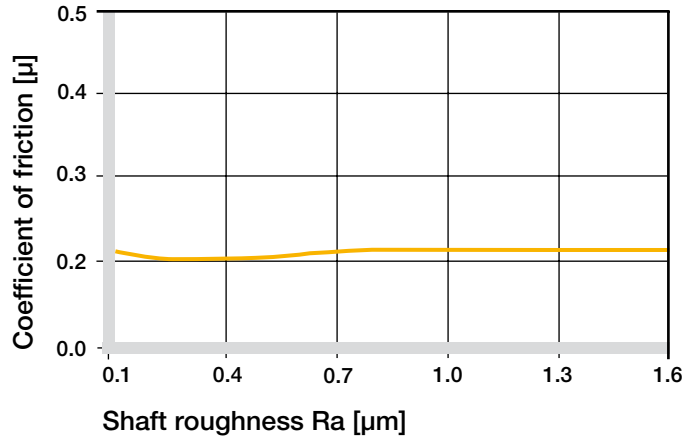


Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

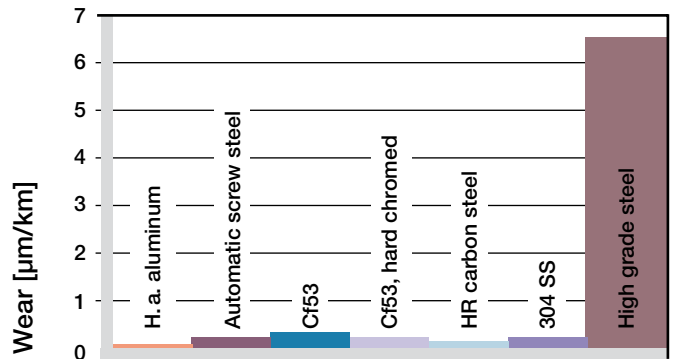
Shaft Materials

As seen in Graph 07, many shafts are recommendable for low loads and low rotations. The good coefficients of friction are additionally retained over a wide range of recommendable surface finishes for shafts (see Graph 06 for it). For loads greater than 1 MPa, particular attention should be paid to the shaft material used.

► Shaft Materials, **page 51**

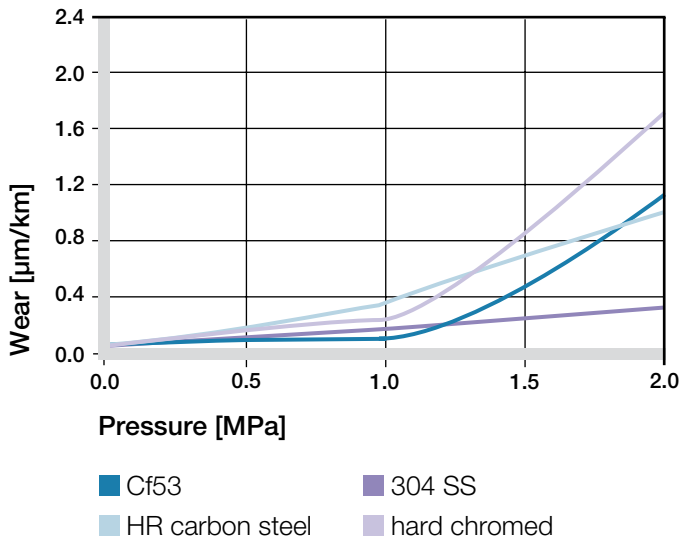


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

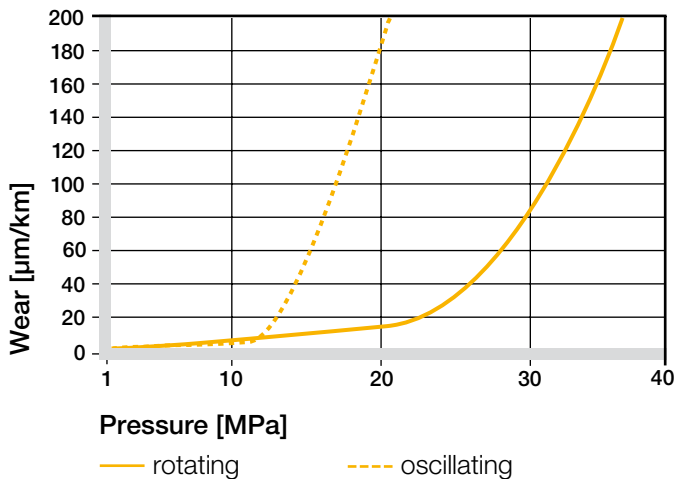


Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$

iglidur® L250 | Technical Data



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® L250	Dry	Greases	Oil	Water
C.o.f. μ	0.08–0.19	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ($R_a = 1 \mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® L250 plain bearings are resistant to diluted alkalines and very weak acids, as well as to solvents and all types of lubricants.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	0

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® L250 are resistant to radiation up to a radiation intensity of $3 \cdot 10^4$ Gy. Higher radiation affects the material and may result in a significant decrease in mechanical properties.

UV Resistance

When subjected to UV radiation, iglidur® L250 plain bearings change colour. The hardness, compression strength, and wear resistance of the material, however, are not affected.

Vacuum

When used in a vacuum, the existing humidity may out gas. Therefore, only dehumidified bearings of iglidur® L250 are suitable for a vacuum application.

Electrical Properties

iglidur® L250 plain bearings are electrically insulating.

Volume resistance	$> 10^{10} \Omega\text{cm}$
Surface resistance	$> 10^{11} \Omega$

Moisture Absorption

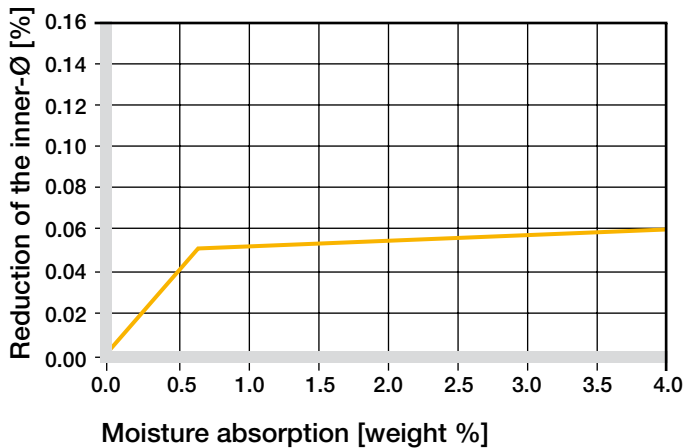
With regard to applications where the smallest bearing clearances are concerned, please take the moisture absorption into consideration.

Maximum moisture absorption

At +23 °C/50 % r.h. 0.7 % weight

Max. moisture absorption 3.9 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® L250 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

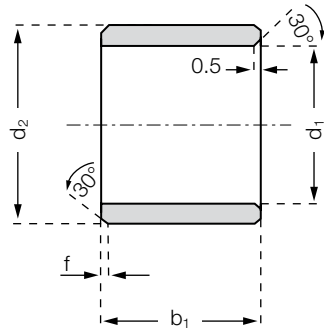
► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® L250 E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0,040

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

iglidur® L250 | Product Range

Sleeve bearing



Order key

L250SM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® L250

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
L250SM-0608-06	6.0	+0.020 +0.068	8.0	6.0
L250SM-0810-10	8.0	+0.025 +0.083	10.0	10.0
L250SM-1012-10	10.0	+0.025 +0.083	12.0	10.0
L250SM-1214-12	12.0	+0.032 +0.102	14.0	12.0
L250SM-1618-15	16.0	+0.032 +0.102	18.0	15.0
L250SM-2023-20	20.0	+0.040 +0.124	23.0	20.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock

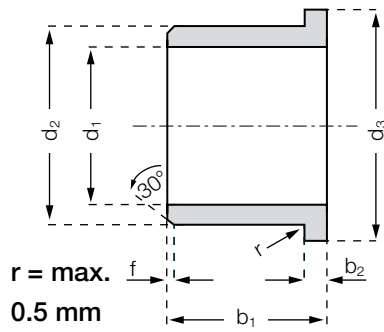


prices price list online
www.igus.co.uk/en/l250



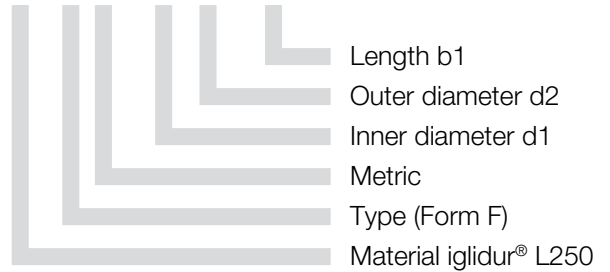
order part number
example L250SM-0608-06

Flange bearing



Order key

L250FM-0608-06



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
L250FM-0608-06	6.0	+0.020 +0.068	8.0	12.0	6.0	1.0
L250FM-0810-10	8.0	+0.025 +0.083	10.0	15.0	10.0	1.0
L250FM-1012-10	10.0	+0.025 +0.083	12.0	18.0	10.0	1.0
L250FM-1214-12	12.0	+0.032 +0.102	14.0	20.0	12.0	1.0
L250FM-1618-17	16.0	+0.032 +0.102	18.0	24.0	17.0	1.0
L250FM-2023-21	20.0	+0.040 +0.124	23.0	30.0	21.5	1.5

* after pressfit. Testing methods ► page 55



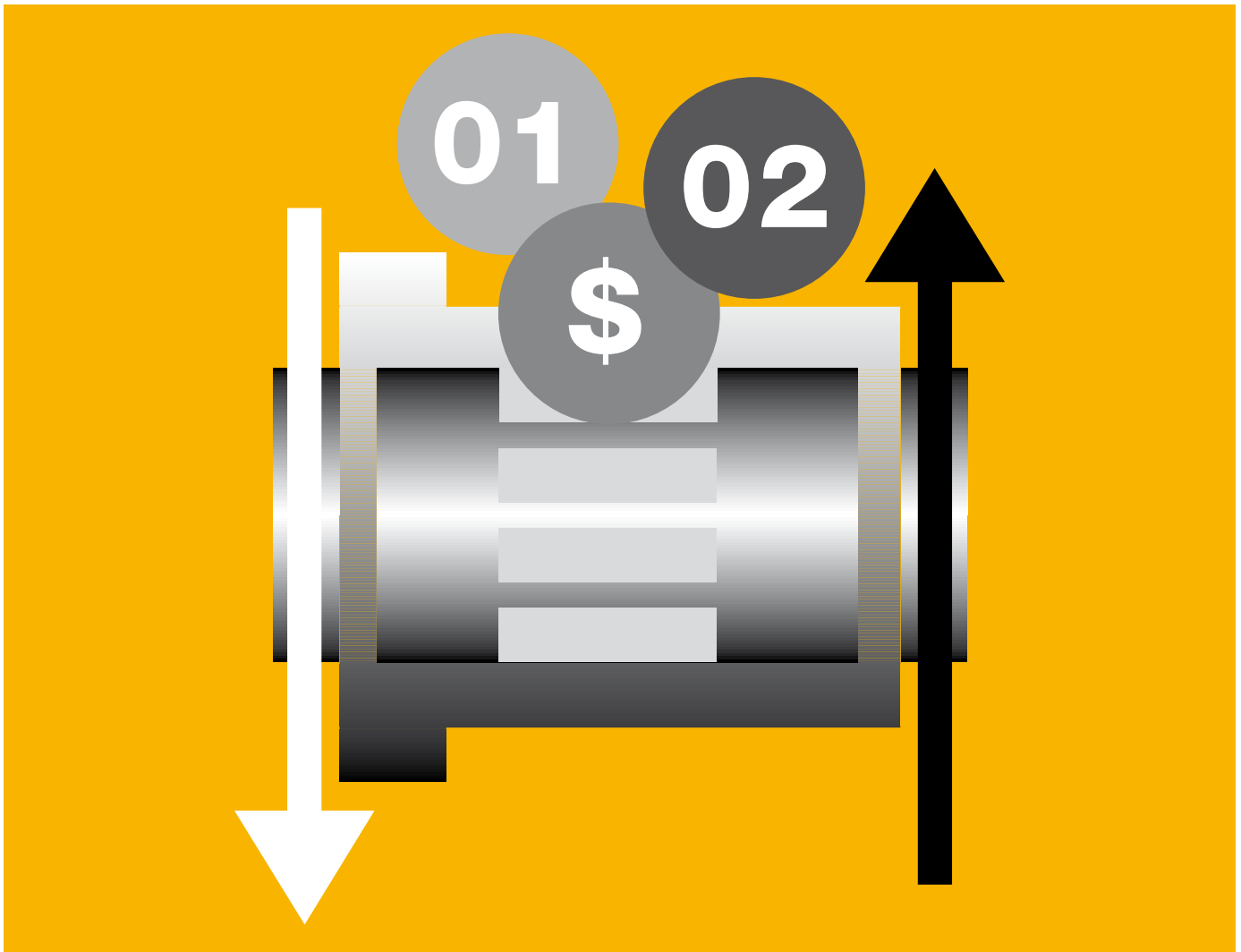
delivery available
time from stock



prices price list online
www.igus.co.uk/en/l250



order part number
example L250FM-0608-06



iglidur® R – low-cost material, low wear



Standard range from stock

Good wear resistance

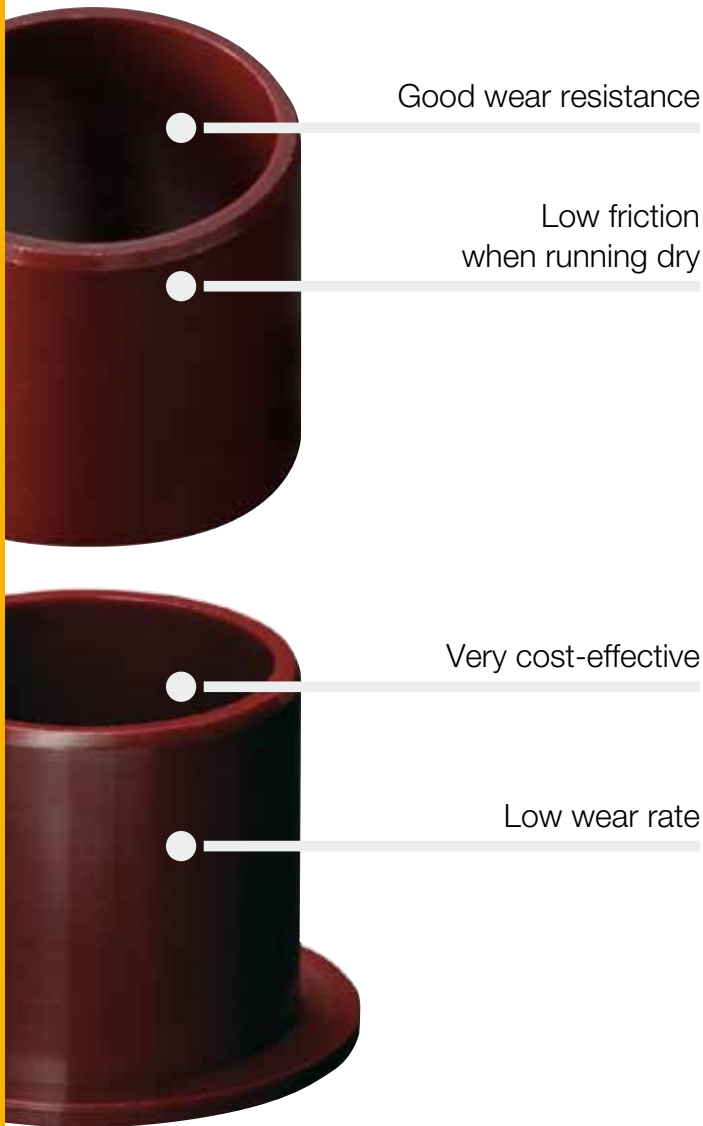
Low friction when running dry

Very cost-effective

Low wear rate

iglidur® R

Low-cost material, low wear. Low-cost-material with low coefficients of friction and good wear resistance at low to medium loads.



When to use it?

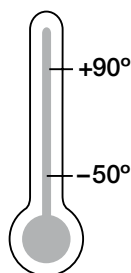
- If high wear resistance at low load is required
- If you are looking for a very cost-effective bearing
- If low friction at dry operation is required
- If edge loads occur
- If you are looking for low water absorption
- If PTFE and silicone are prohibited in the application



When not to use it?

- If high pressure occurs
 - ▶ iglidur® G, page 61
- If permanent temperatures exceed +90 °C
 - ▶ iglidur® G, page 61
 - ▶ iglidur® P, page 185
- If best wear resistance is required
 - ▶ iglidur® J, page 89

Temperature

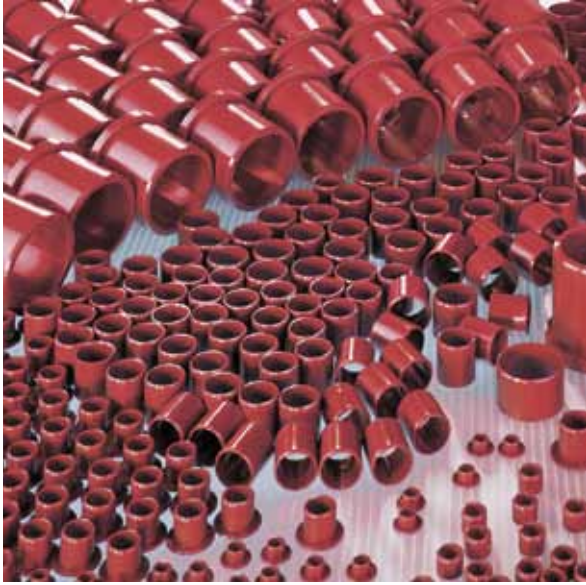


Product range

2 types
 Ø 6–20 mm
 more dimensions
 on request



iglidur® R | Application Examples



Typical sectors of industry and application areas

- Sports and leisure ● Model making
- Automotive ● Mechatronics
- Camera technology etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/rickshaw

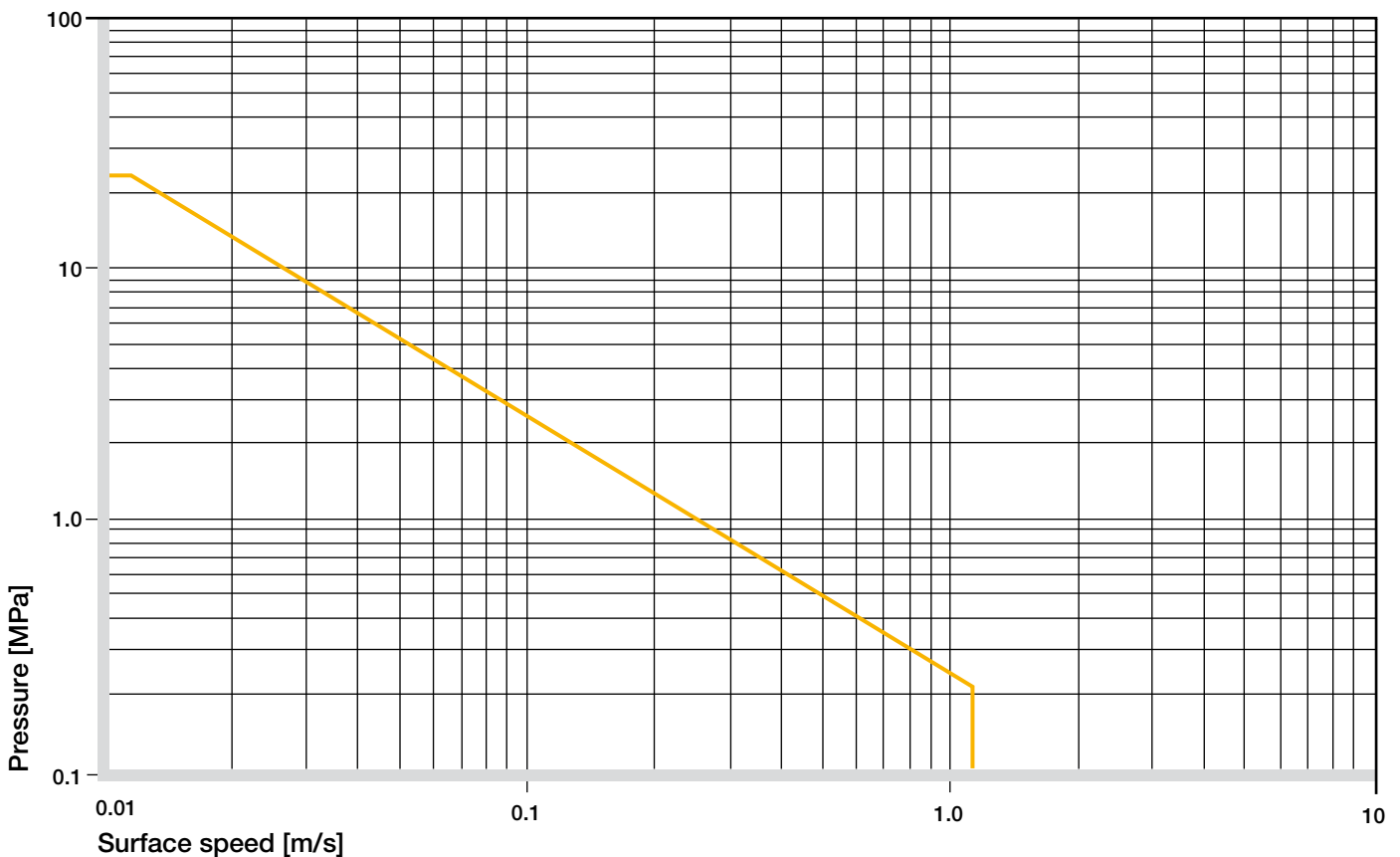


► www.igus.co.uk/office-chair

Material data

General properties	Unit	iglidur® R	Testing method
Density	g/cm ³	1.39	
Colour		dark red	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.2	DIN 53495
Max. moisture absorption	% weight	1.1	
Coefficient of sliding friction, dynamic against steel	μ	0.09–0.25	
pv value, max. (dry)	MPa · m/s	0.27	
Mechanical properties			
Modulus of elasticity	MPa	1,950	DIN 53457
Tensile strength at +20 °C	MPa	70	DIN 53452
Compressive strength	MPa	68	
Max. recommended surface pressure (+20 °C)	MPa	23	
Shore D hardness		77	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+90	
Max. short term application temperature	°C	+110	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	11	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹²	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

Table 01: Material data

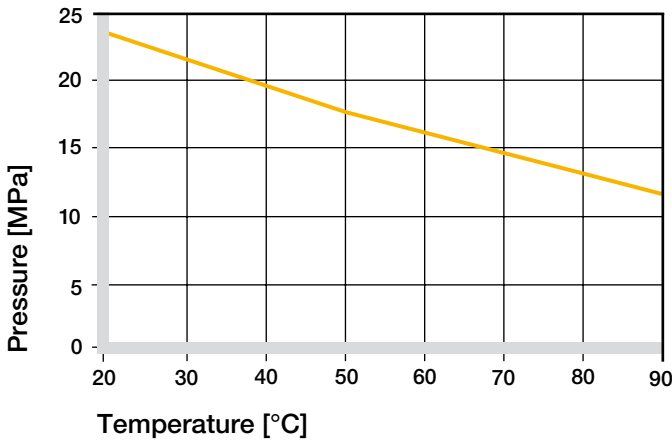


Graph 01: Permissible pv values for iglidur® R with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® R | Technical Data

Mechanical Properties

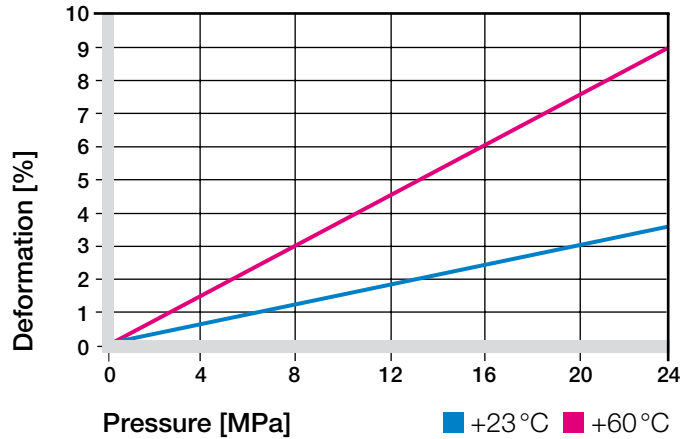
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® R plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +90° C the permissible surface pressure is around 11 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (23 MPa at +20 °C)

The development of the iglidur® R as a bearing material focused on high performance and very low cost. Especially in the dry operation low coefficients of friction and wear were to be achieved. Bearings made of iglidur® R are selectively supported by a combination of solid lubricants. The PTFE- and silicon-free material achieves extremely low coefficients of friction in dry operation and runs largely free of stick-slip effects. iglidur® R plain bearings in the first place were developed for low to average radial loads – Graph 03 shows the elastic deformation of iglidur® R during radial loading. At the maximum permissible load of 23 MPa, the deformation is approximately 3%. Plastic deformation is not detectable up to this value. However, it is also dependent on the service time.

► Surface Pressure, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® R bearings are suitable for high surface speeds. Speeds of up to 10 m/s are permitted in linear motions! Here too the specified maximum values can be achieved only with minimum pressure loads. The specified values show the speed at which due to friction an increase in temperature up to the long-term permitted value can occur.

► Surface Speed, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	0.8	0.6	3.5
Short term	1.2	1	5

Table 02: Maximum running speed

Temperatures

The short term maximum temperature is +110 °C, the long term maximum temperature is +90 °C. With increasing temperatures, the compressive strength of iglidur® R bearings decreases. Graph 02 clarifies this relationship. The ambient temperature in the application also has an impact on the wear of the bearing, an increase in temperature will result in an increase in wear.

► Application Temperatures, [page 46](#)

iglidur® R	Application temperature
minimum	-50 °C
Max. long term	+90 °C
Max. short term	+110 °C
Add. securing is required	+50 °C

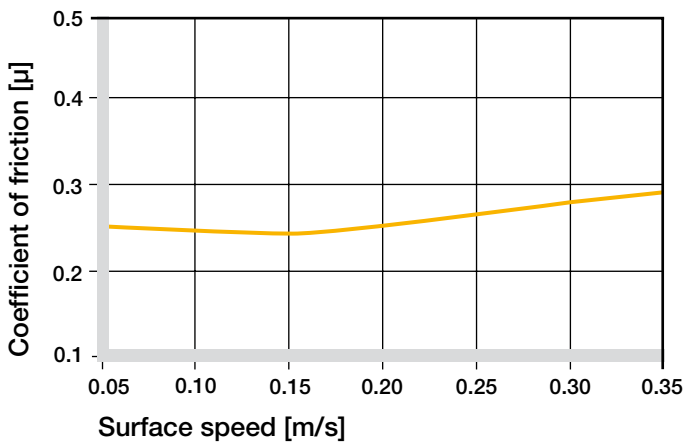
Table 03: Temperature limits

Friction and Wear

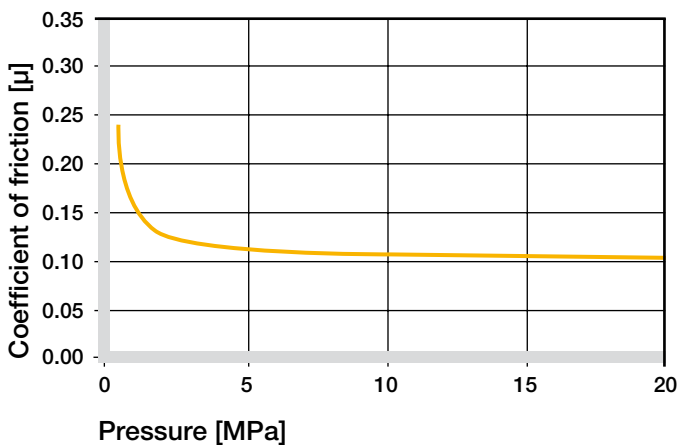
The coefficient of friction decreases like the wear resistance with increasing load. In contrast, a higher surface speed has less impact on the coefficient of friction of an iglidur® R bearing. iglidur® R is suitable for applications in which high pv values are given mainly through the high surface speed and not as much through the surface pressure. The coefficient of friction of iglidur® R plain bearings depends greatly on the shaft roughness.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

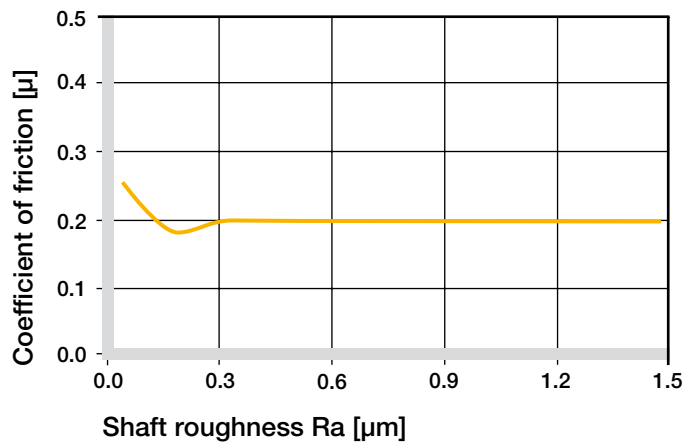
Shaft Materials

Graph 06 to 09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® R. At 0.3 m/s and 1,0 MPa, the X90 shaft is the best material.

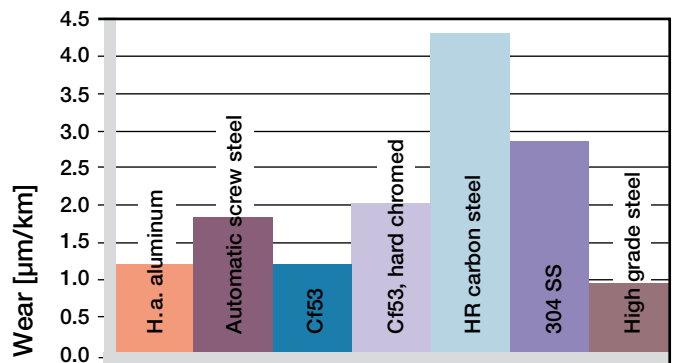
With increasing loads the iglidur® R bearings feature the best wear behavior with Cf53 and V2A shafts. In oscillating applications, the hard chromed shaft proves to be the ideal material.

If the shaft material you plan on using is not shown in these test results, please contact us.

► Shaft Materials, **page 51**

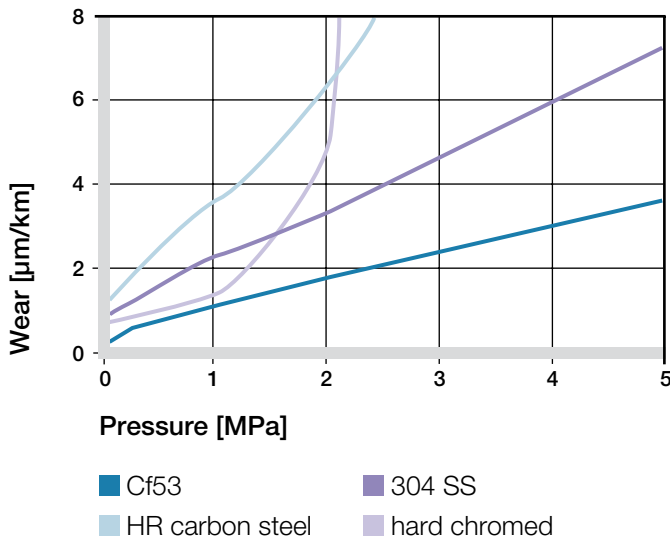


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

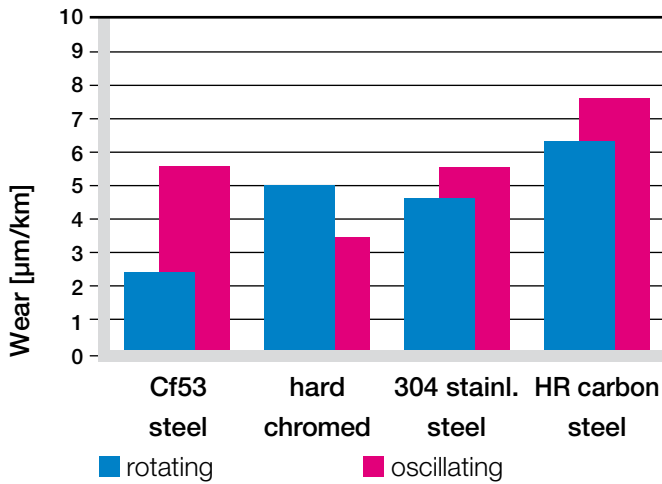


Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$

iglidur® R | Technical Data



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur® R	Dry	Greases	Oil	Water
C. o. f. μ	0.09–0.25	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® R bearings can be used in various environmental conditions and in contact with numerous chemicals. Table 05 gives an overview of the chemical resistance of iglidur® R bearings at room temperature.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	+ to 0

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® R are resistant to radiation up to an intensity of $3 \cdot 10^2$ Gy.

UV Resistance

iglidur® R plain bearings are resistant to UV radiation, but the tribological properties are reduced by permanent exposure.

Vacuum

In a vacuum environment, iglidur® R plain bearings release gases. It is only possible to use iglidur® R in a vacuum to a limited extent.

Electrical Properties

iglidur® R plain bearings are electrically insulating.

Volume resistance	> 10^{12} Ωcm
Surface resistance	> 10^{12} Ω 10

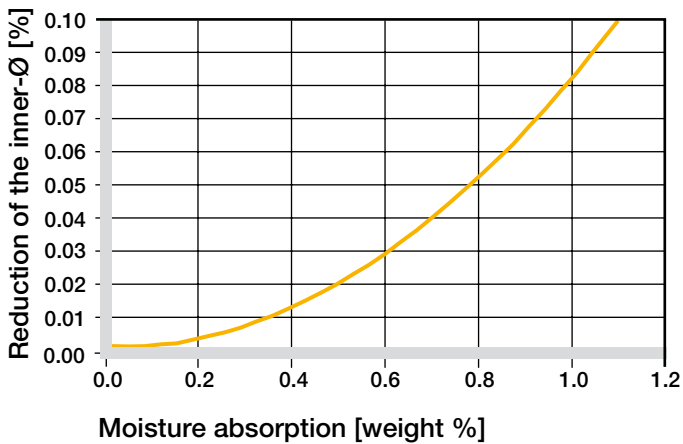
Moisture Absorption

The moisture absorption of iglidur® R plain bearings is approximately 0.2% in standard atmosphere. The saturation limit in water is 1%. This low moisture absorption allows for design in wet environments.

Maximum moisture absorption

At +23 °C/50% r.h.	0.2% weight
Max. moisture absorption	1.1% weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

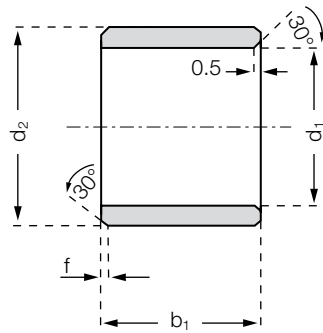
iglidur® R plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® R E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

RSM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® R

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
RSM-0608-06	6	+0.020 +0.068	8	6
RSM-0810-10	8	+0.025 +0.083	10	10
RSM-1012-05	10	+0.025 +0.083	12	5
RSM-1012-10	10	+0.025 +0.083	12	10
RSM-1012-15	10	+0.025 +0.083	12	15
RSM-1214-12	12	+0.032 +0.102	14	12
RSM-1416-15	14	+0.032 +0.102	16	15
RSM-1618-15	16	+0.032 +0.102	18	15
RSM-2023-15	20	+0.040 +0.124	23	15
RSM-2023-20	20	+0.040 +0.124	23	20
RSM-3034-25	30	+0.040 +0.124	34	25
RSM-3539-30	35	+0.050 +0.150	39	30

* after pressfit. Testing methods ► page 55



delivery available
time from stock

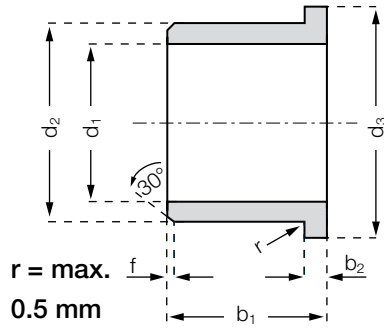


prices price list online
www.igus.co.uk/en/r



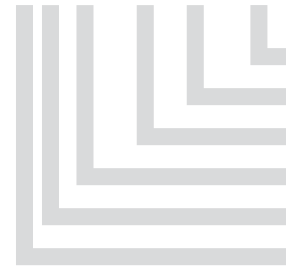
order part number
example RSM-0608-06

Flange bearing



Order key

RFM-0608-06



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form F)
Material iglidur® R

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3	b1 h13	b2
RFM-0608-06	6	+0.020 +0.068	8	12	6	1
RFM-0810-05	8	+0.025 +0.083	10	15	5	1
RFM-0810-10	8	+0.025 +0.083	10	15	10	1
RFM-1012-10	10	+0.025 +0.083	12	18	10	1
RFM-1012-18	10	+0.025 +0.083	12	18	18	1
RFM-1214-12	12	+0.032 +0.102	14	20	12	1
RFM-1416-17	14	+0.032 +0.102	16	22	17	1
RFM-1618-17	16	+0.032 +0.102	18	24	17	1
RFM-2023-21	20	+0.040 +0.124	23	30	21.5	1.5

* after pressfit. Testing methods ► page 55



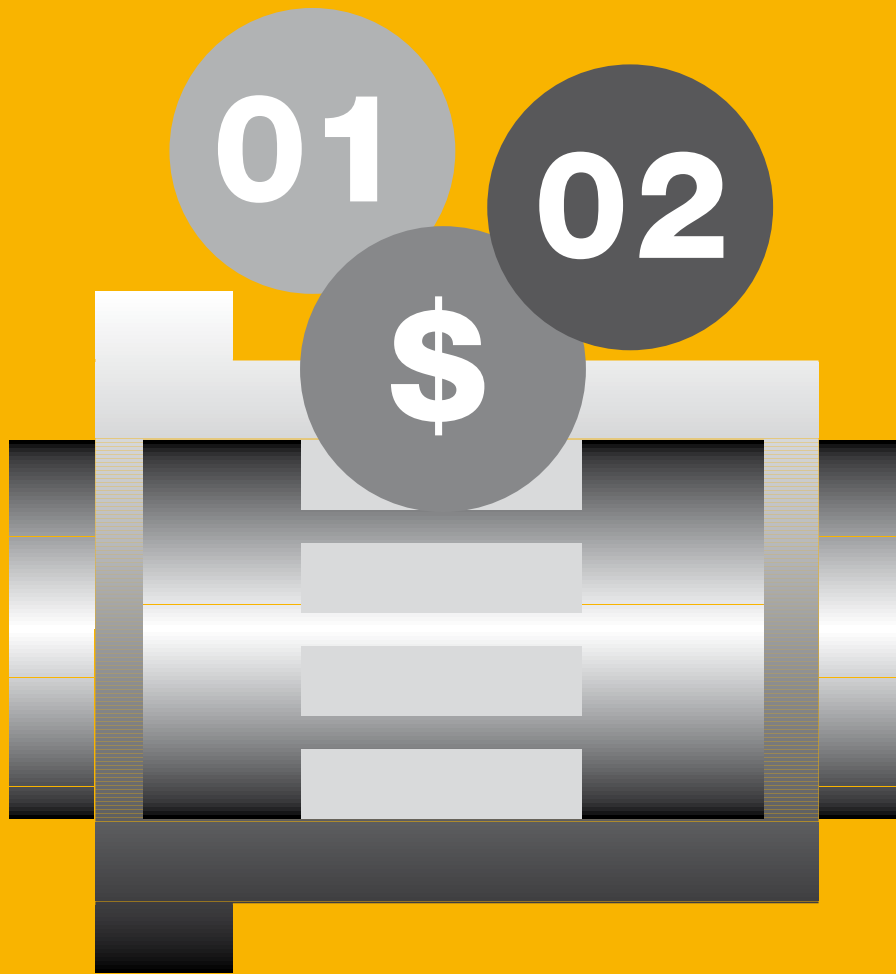
delivery available
time from stock



prices price list online
www.igus.co.uk/en/r



order part number
example RFM-0608-06



iglidur® D – low-cost material with silicone



Low coefficients of friction at high speeds

For low loads

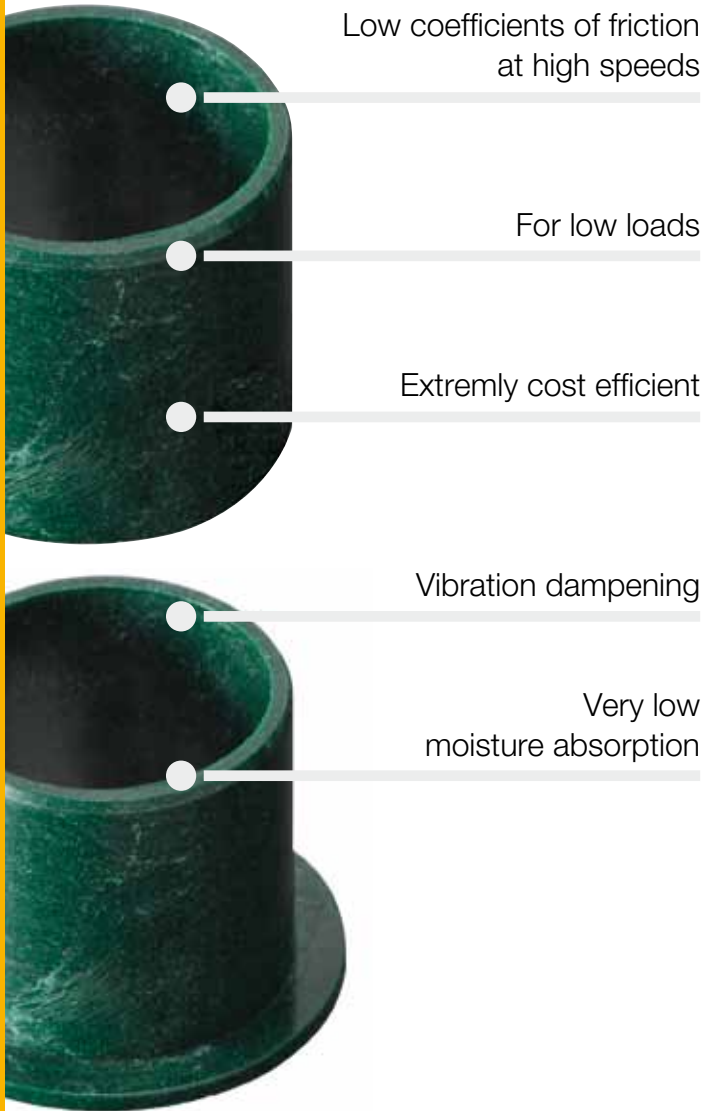
Extremely cost-effective

Vibration dampening

Very low moisture absorption

iglidur® D

Low-cost material with silicone. Low-cost-material with low coefficients of friction and good wear resistance at low loads.



When to use it?

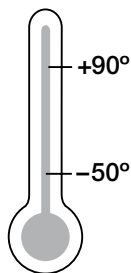
- When very low coefficients of friction are needed
- For high speeds
- For low load
- When a very low-priced bearing is required



When not to use it?

- When high pressure loads occur
 - ▶ iglidur® G, page 61
- When the part should be free of silicon
 - ▶ iglidur® J, page 89
 - ▶ iglidur® R, page 249
- When constant temperatures of more than +90°C occur
 - ▶ iglidur® G, page 61
 - ▶ iglidur® P, page 185

Temperature



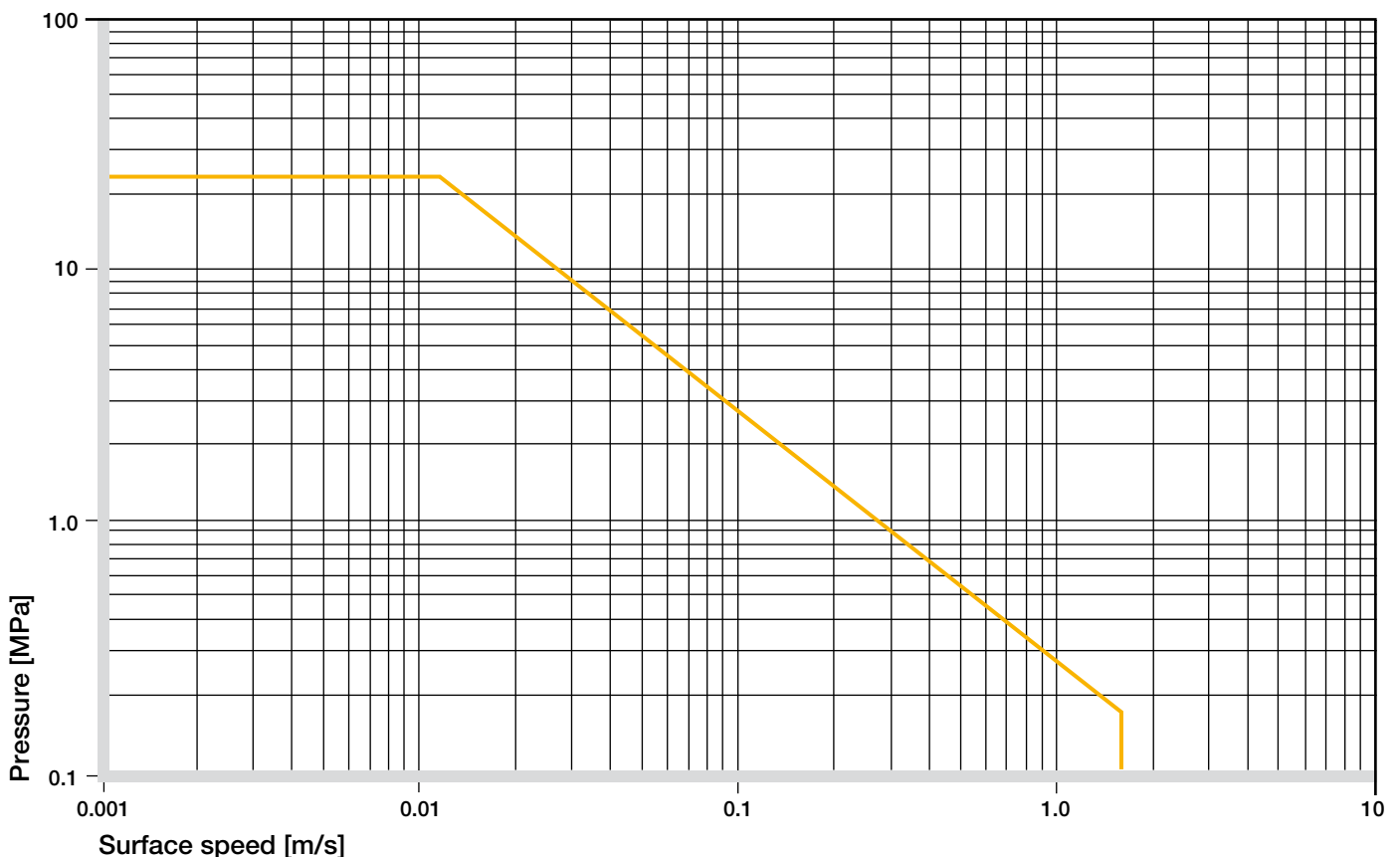
Product range

on request



Material data			
General properties	Unit	iglidur® D	Testing method
Density	g/cm ³	1.40	
Colour		green	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.3	DIN 53495
Max. moisture absorption	% weight	1.1	
Coefficient of sliding friction, dynamic against steel	μ	0.08–0.26	
pv value, max. (dry)	MPa · m/s	0.27	
Mechanical properties			
Modulus of elasticity	MPa	2,000	DIN 53457
Tensile strength at +20 °C	MPa	72	DIN 53452
Compressive strength	MPa	70	
Max. recommended surface pressure (+20 °C)	MPa	23	
Shore D hardness		78	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+90	
Max. short term application temperature	°C	+110	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	11	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹⁴	DIN IEC 93
Surface resistance	Ω	> 10 ¹⁴	DIN 53482

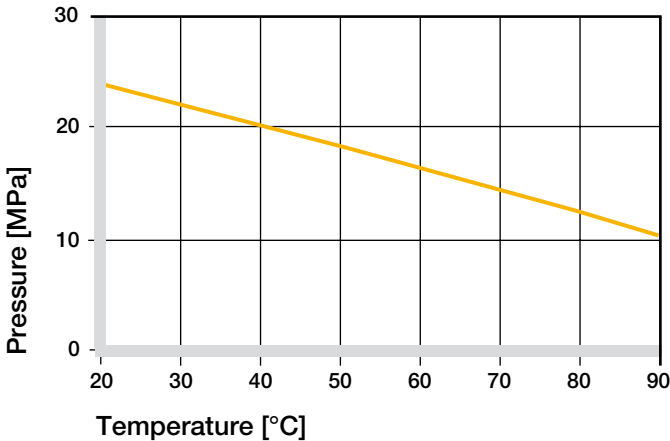
Table 01: Material data



Graph 01: Permissible pv values for iglidur® D with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Mechanical Properties

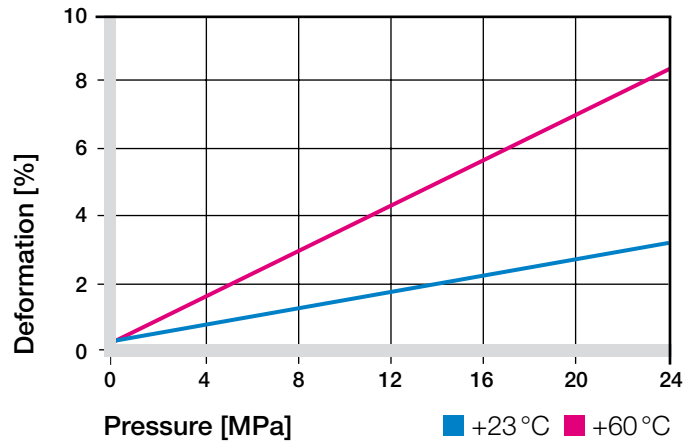
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® D plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost +100 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (23 MPa at +20 °C)

During the development process of iglidur® D as a bearing material, high performance and a very low price were the top requirements. In particular, low coefficients of friction were needed at high speeds in the dry run. Plain bearings made of iglidur® D are supported by a combination of solid lubricants. This material containing silicone achieves excellently low friction values in dry operation and runs with virtually no stick-slip. Graph 03 shows the elastic deformation of iglidur® D during radial loading. At the recommended maximum surface pressure of 23 MPa the deformation is less than 3%. Plastic deformation is not detectable up to this value. However, it is also dependent on the service time.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® D bearings are suitable for high surface speeds. Speeds of up to 10 m/s are permitted in linear motions! Here too the specified maximum values can be achieved only with minimum pressure loads. The specified values show the speed at which due to friction an increase in temperature up to the long-term permitted value can occur.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1.5	1.1	8
Short term	3	2.1	10

Table 02: Maximum running speed

Temperatures

The short-term permitted maximum temperature is +110 °C, and the long-term application temperature is +90 °C. With increasing temperatures, the compressive strength of iglidur® D bearings decreases. Graph 02 clarifies this relationship.

The ambient application temperature has a direct impact on bearing wear, an increase in temperature results in an increase in wear.

► Application Temperatures, page 46

iglidur® D	Application temperature
Minimum	-50 °C
Max. long term	+90 °C
Max. short term	+110 °C
Add. securing is required from	+50 °C

Table 03: Temperature limits

iglidur® D | Technical Data

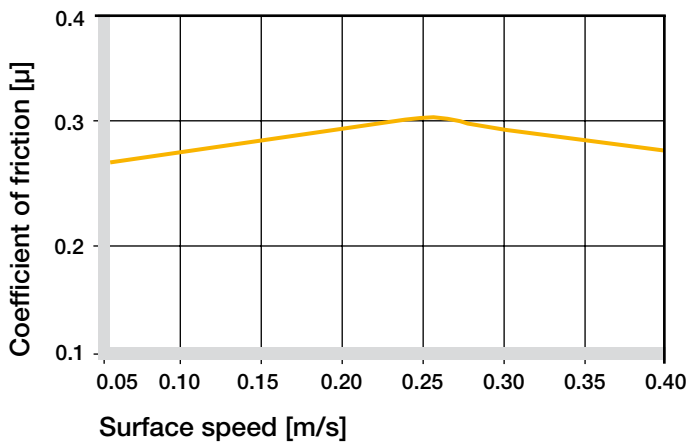
Friction and Wear

The coefficient of friction decreases like the wear resistance with increasing load. In contrast, a higher surface speed rarely affects the coefficient of friction of an iglidur® D bearing. iglidur® D is suitable for applications in which high pv values are achieved mainly through the high surface speed and not as much through the surface pressure.

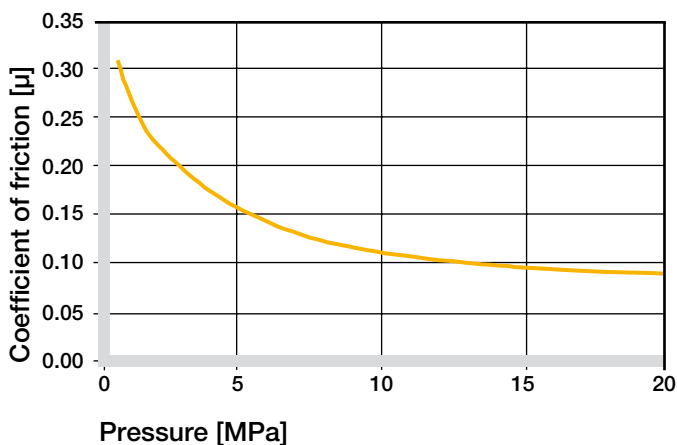
The coefficient of friction of the iglidur D bearings is highly dependant on the shaft surface finish. In the Ra range between 0.4 and 0.6 µm, the coefficient of friction attains the optimum value. With values below and above this range, the friction of the bearing system rapidly rises.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa



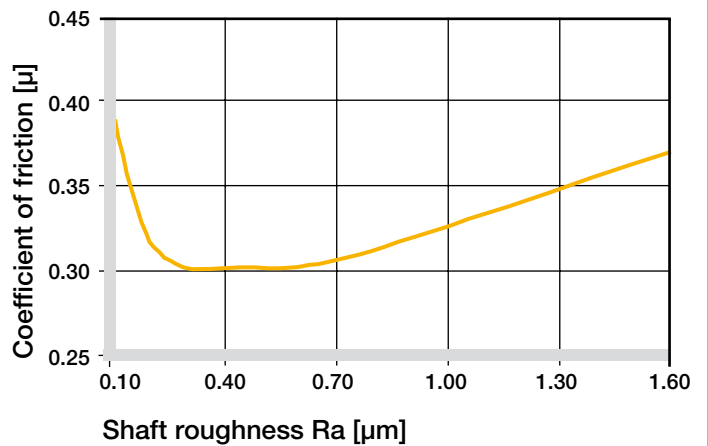
Graph 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

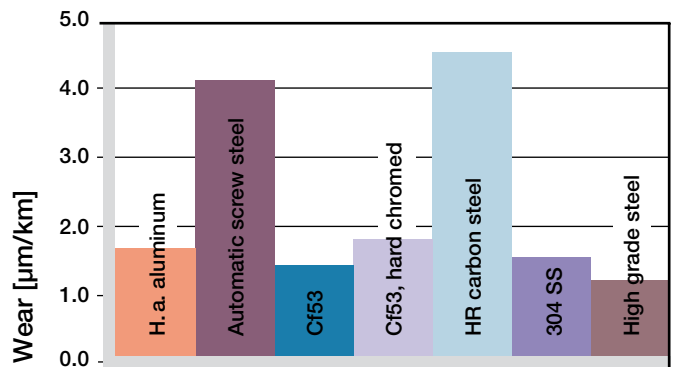
Graph 06 to 09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® D. Whereas in the lower load range the hard-chromed shaft is the most suitable for iglidur® D bearings, the wear is lower with Cf53 and V2A shafts from 2 MPa upward. The Cf53 and V2A shafts are recommended in the low load range in pivoting applications.

Please contact us if you would like to use a shaft material not included in this list.

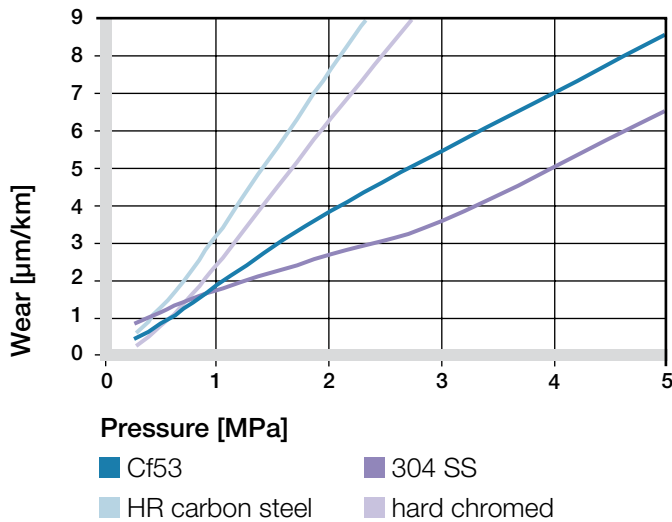
► Shaft Materials, **page 51**



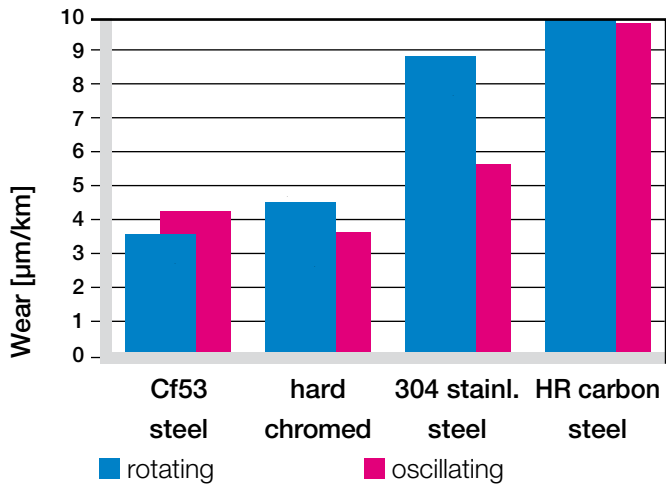
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure p = 0,75 MPa, v = 0,5 m/s



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur® D	Dry	Greases	Oil	Water
C.o.f. μ	0.08–0.26	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® D plain bearings are resistant to very weak acids, diluted alkaline, fuels and all types of lubricants.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	+ to 0

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® D are resistant to radiation up to an intensity of $3 \cdot 10^2$ Gy.

UV Resistance

iglidur® D plain bearings are resistant to UV radiation, but the tribological properties are reduced by permanent exposure.

Vacuum

In a vacuum environment, iglidur® D plain bearings release gases. It is only possible to use in a vacuum to a limited extent.

Electrical Properties

iglidur® D plain bearings are electrically insulating.

Volume resistance	$> 10^{14} \Omega\text{cm}$
Surface resistance	$> 10^{14} \Omega 10$

iglidur® D | Technical Data

Moisture Absorption

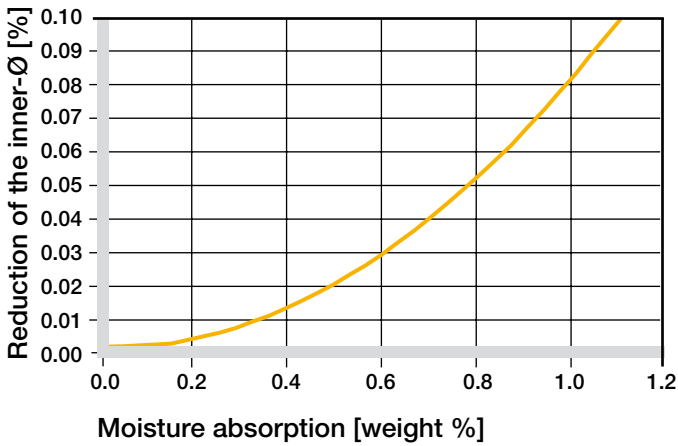
The moisture absorption of iglidur® D plain bearings is approximately 0.2% in standard atmosphere. The saturation limit in water is 1%. This low moisture absorption allows for design in wet environments.

Maximum moisture absorption

At +23 °C/50% r.h. 0.3% weight

Max. moisture absorption 1.1% weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® D plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, page 55

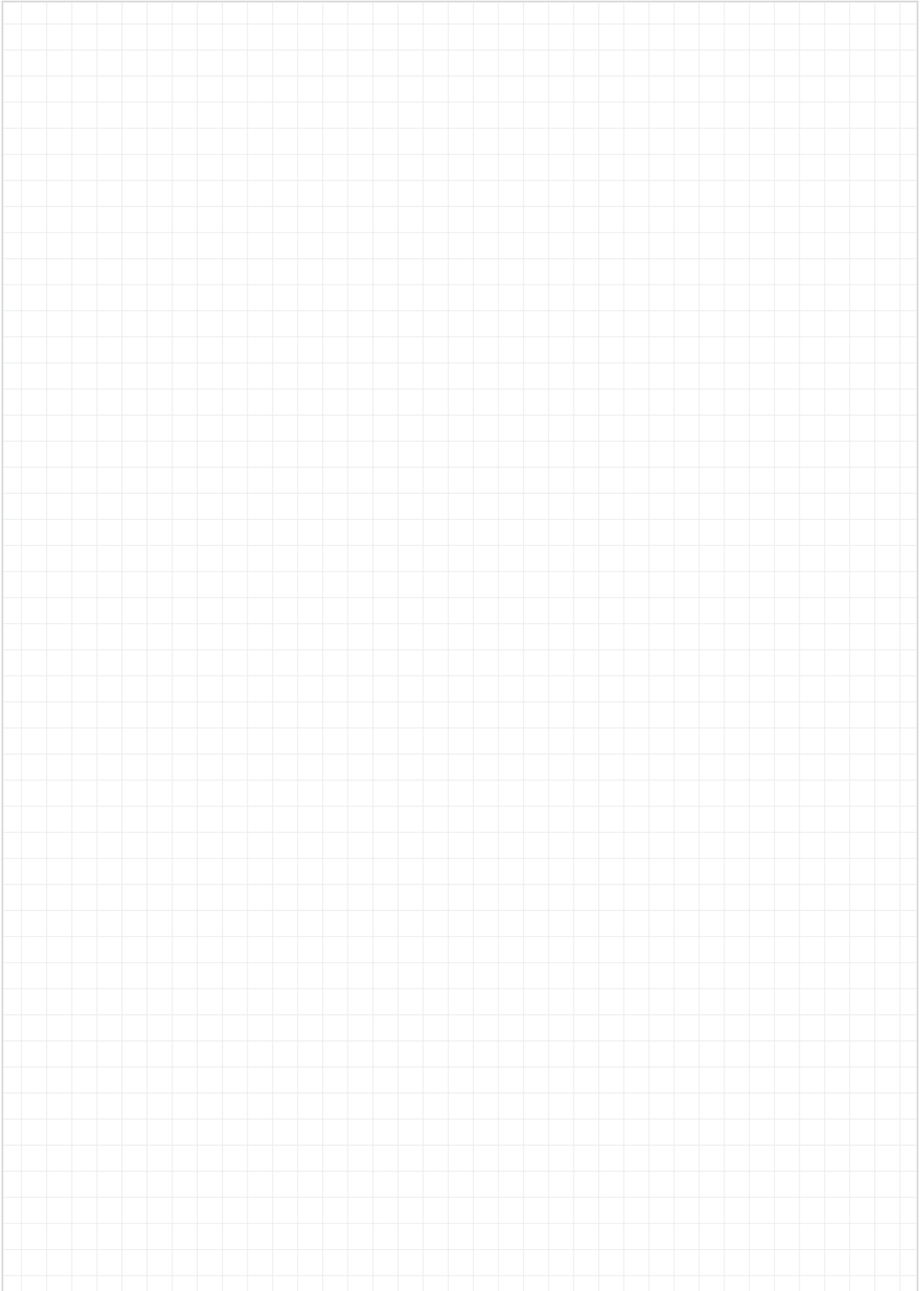
Diameter d1 [mm]	Shaft h9 [mm]	iglidur® D E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

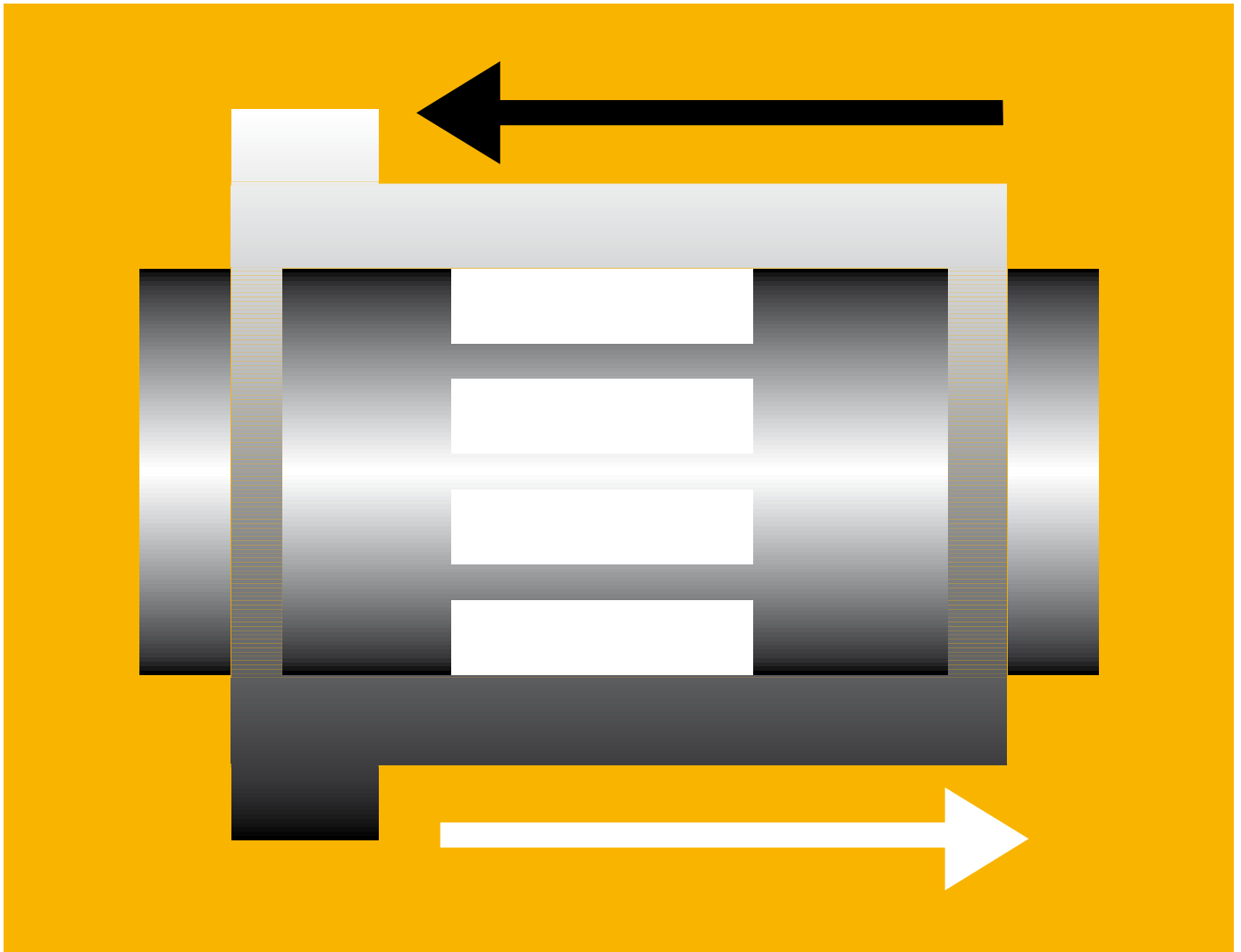
Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® D plain bearings are manufactured to special order.

My Sketches





iglidur® J200 – suitable for anodized aluminum shafts



Very long service life with hard anodized aluminium

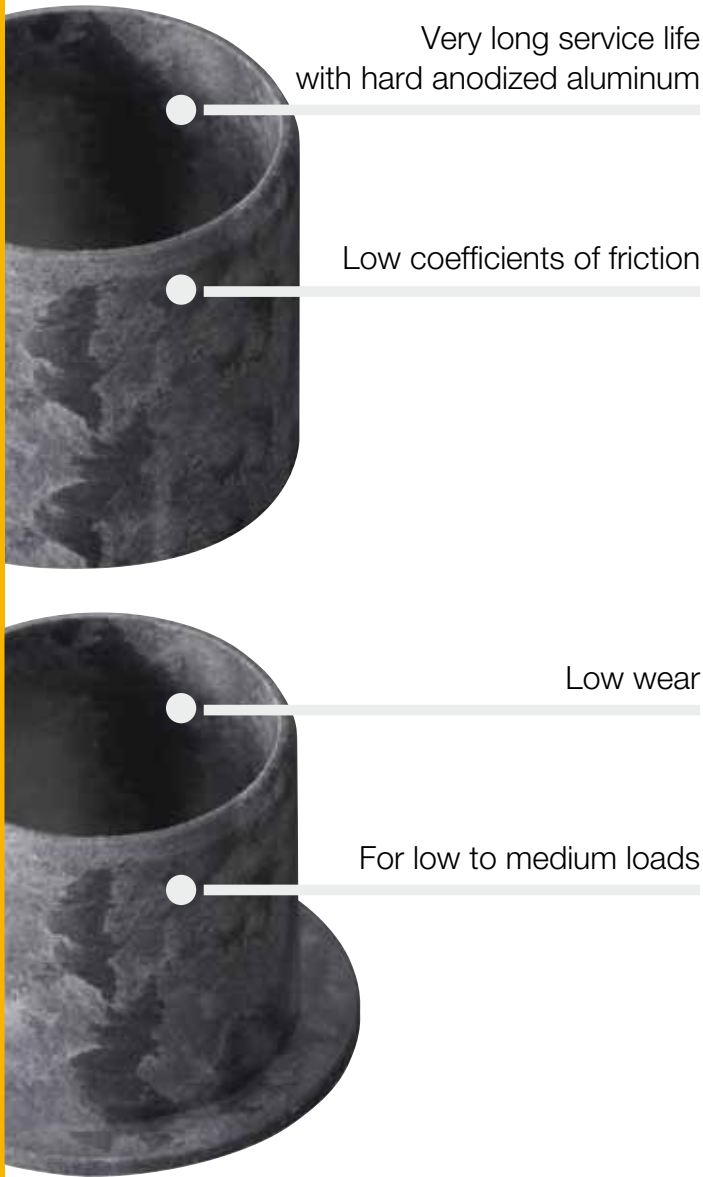
Low coefficients of friction

Low wear

For low to medium loads

iglidur® J200

Suitable for anodized aluminum shafts. The specialist for low friction-values and minimal wear with hard anodized aluminum shaft.



When to use it?

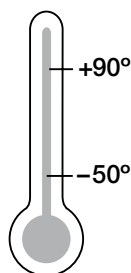
- For applications with anodized aluminum shafts
- When lowest coefficients of friction are required
- If long service life with low wear is required



When not to use it?

- For steel shafts
 - ▶ iglidur® J, page 89
 - ▶ iglidur® W300, page 131
- When temperatures are continuously higher than +80 °C
 - ▶ iglidur® V400, page 279
- When a cost-effective universal bearing is required
 - ▶ iglidur® G, page 61
 - ▶ iglidur® P, page 185

Temperature



Product range

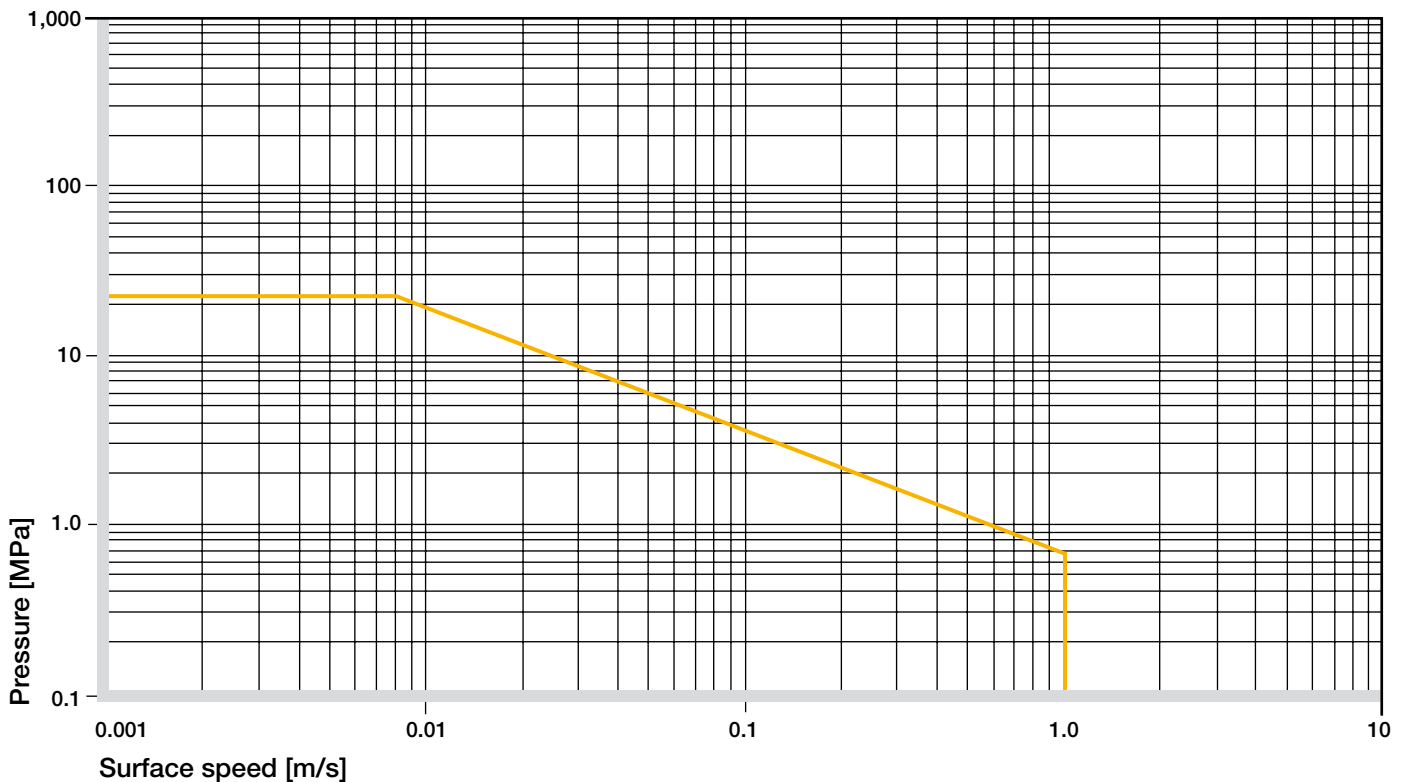
on request



Material data			
General properties	Unit	iglidur® J200	Testing method
Density	g/cm ³	1.72	
Colour		dark grey	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.2	DIN 53495
Max. moisture absorption	% weight	0.7	
Coefficient of sliding friction, dynamic against steel	μ	0.11–0.17	
pv value, max. (dry)	MPa · m/s	0.30	
Mechanical properties			
Modulus of elasticity	MPa	2,800	DIN 53457
Tensile strength at +20 °C	MPa	58	DIN 53452
Compressive strength	MPa	43	
Max. recommended surface pressure (+20 °C)	MPa	23	
Shore D hardness		70	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+90	
Max. short term application temperature	°C	+120	
Maximum ambient temperature, short term	°C	+140	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	8	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ⁸	DIN IEC 93
Surface resistance	Ω	> 10 ⁸	DIN 53482

¹⁾ Without additional load; no sliding movement; relaxation possible

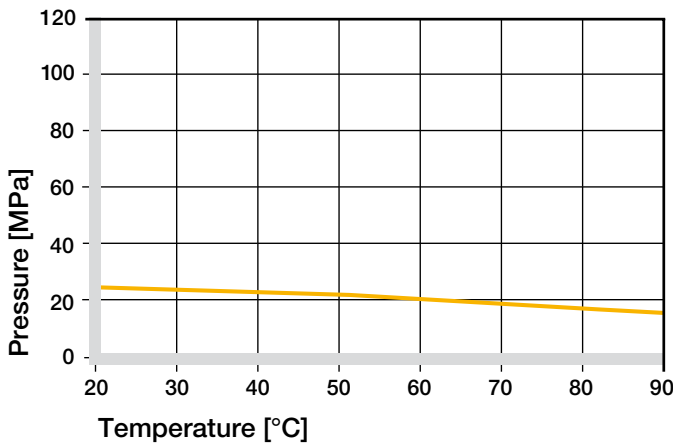
Table 01: Material data



Graph 01: Permissible pv values for iglidur® J200 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Mechanical Properties

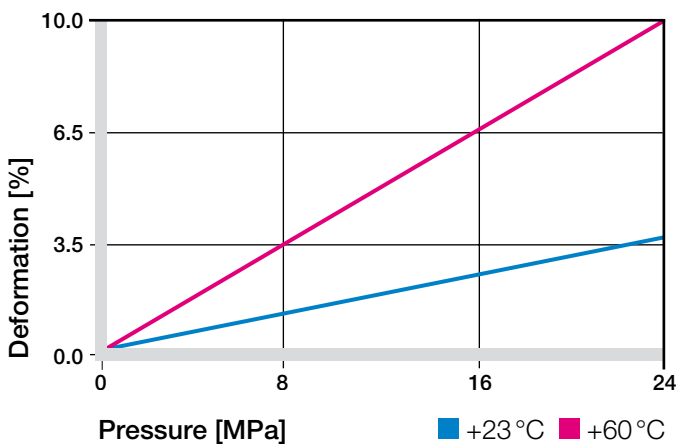
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® J200 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +90°C the permissible surface pressure is almost 15 MPa.



Graph 02: Recommended maximum surface pressure of a function of temperature (23 MPa at +20°C)

Graph 03 shows the deformation of the material at room temperature to the recommended maximum limit. At the recommended maximum surface pressure of 23 MPa the deformation is less than 3,5%. A plastic deformation can be neglected up to this value. It is nonetheless depending on the duration of the applied force.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® J200 attains high surface speeds through its excellent coefficients of friction. Continuous rotary speeds of 1 m/s are possible. The permitted speeds are clearly higher yet in linear movements or in short-term operation. Speeds of over 15 m/s were successfully tested in linear movements.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	10
Short term	1.5	1.1	15

Table 02: Maximum running speed

Temperatures

The bearings made of iglidur® J200 were not developed for high temperatures. The maximum permitted temperature of +120°C should not be exceeded. Thereby the ambient temperature generated by friction has to be added. From +60°C onward, the bearing should be mechanically fastened, so that the danger of bushings creeping out of the bores is avoided. The wear resistance too declines disproportionately from +70°C.

► Application Temperatures, page 46

iglidur® J200	Application temperature
Minimum	-50°C
Max. long term	+90°C
Max. short term	+120°C
Add. securing is required from	+60°C

Table 03: Temperature limits

Friction and Wear

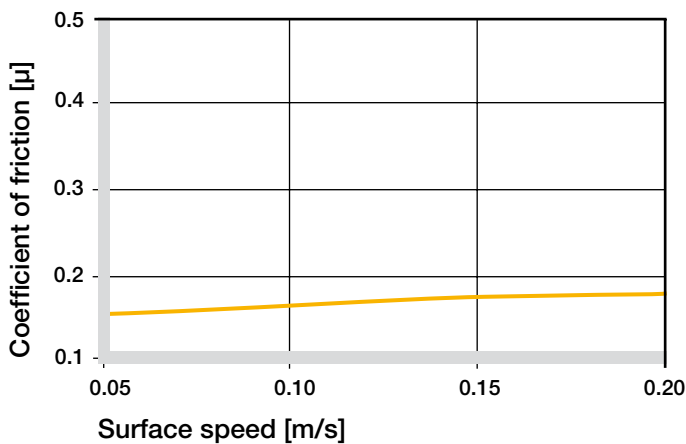
iglidur® J200 is the result of the development of extremely low friction plain bearing materials. When using plain bearings in linear motion, friction can be critical. Many materials can give low coefficients of friction under high loads, but iglidur® J200 can give excellent friction values even at low loads. iglidur® J200 presents the lowest coefficients of friction of all iglidur® materials. The average coefficient of friction of all measurements, even with different shaft materials, is 0.11. The use of hard anodized aluminum as a shaft material is also of importance.

iglidur® J200 | Technical Data

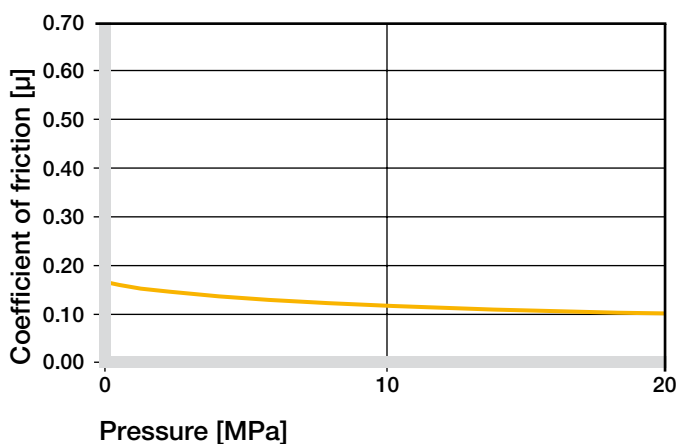
The comparison to the other iglidur® materials reveals that iglidur® J200 plain bearings are more suitable for lower loads. The influence of sliding speed and load on the wear is small. The change of the coefficient of friction at high loads is in the normal range (graph. 04 and 05). The optimum shaft roughness is between 0.2 and 0.4 $\mu\text{m Ra}$. The influence of the shaft material on the wear performance on the other hand is significant. Even at low loads, we recommend to have a closer look into the wear database.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$

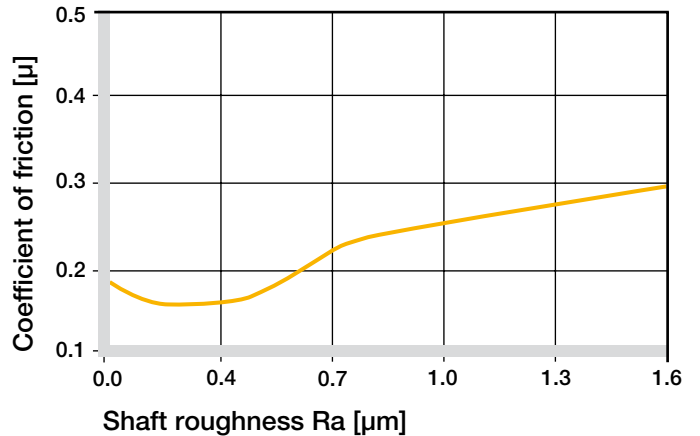


Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

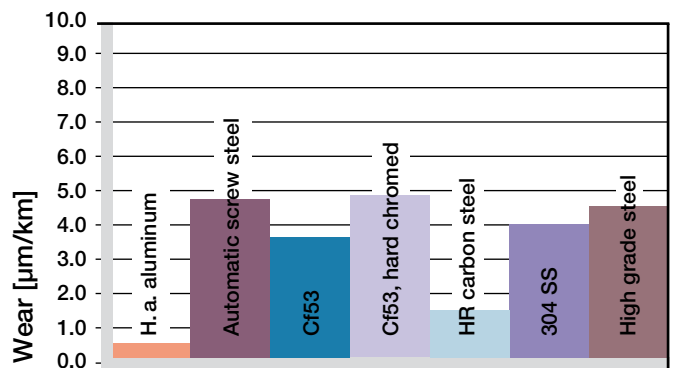
Shaft Materials

The shaft material used has a great impact on the wear resistance. In fact, all shaft materials (smooth or hardened) are suitable for use with iglidur® J200, but the best results are achieved with hard anodized aluminum. In particular when used in linear motion, this running surface has proven its value.

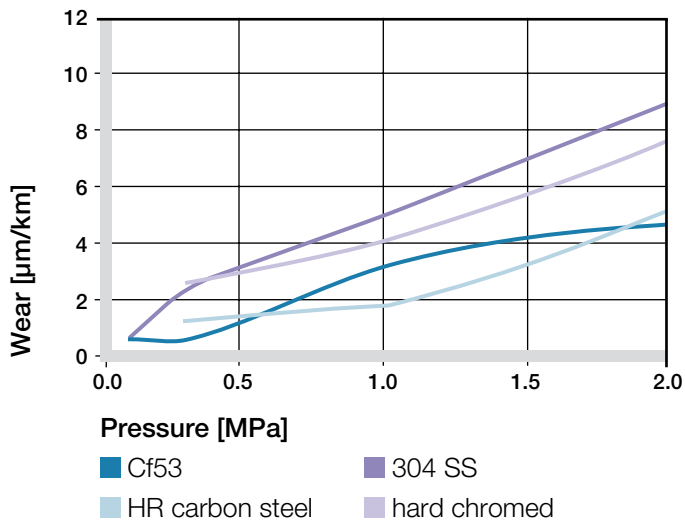
► Shaft Materials, **page 51**



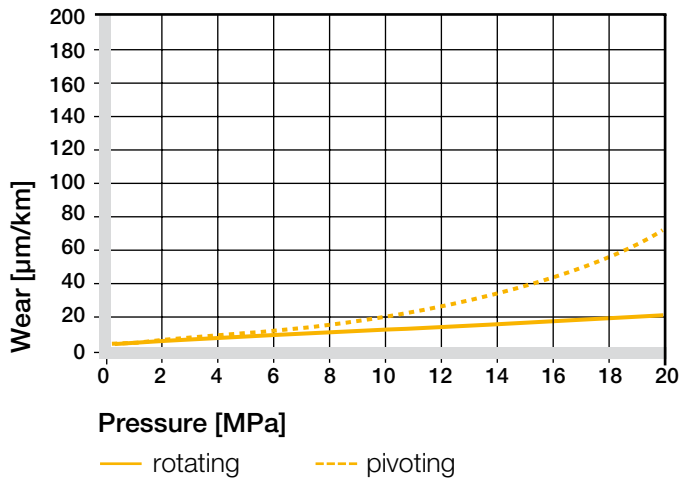
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for pivoting and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® J200	Dry	Greases	Oil	Water
C.o.f. µ	0,11-0,17	0,09	0,04	0,04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® J200 plain bearings are resistant to diluted alkalines, as well as to solvents and all types of lubricants.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to -
Strong acids	-
Diluted alkalines	+
Strong alkalines	+ to 0

+ resistant **0** conditionally resistant **-** not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® J200 are radiation resistant up to a radiation intensity of $3 \cdot 10^2$ Gy.

UV Resistance

iglidur® J200 plain bearings are very resistant to the impact of UV radiation.

Vacuum

Use in a vacuum is only possible to a limited extent. Also, only dehumidified bearings made from iglidur® J200 should be tested in a vacuum.

Electrical Properties

iglidur® J200 plain bearings are electrically insulating.

Volume resistance	> $10^8 \Omega\text{cm}$
Surface resistance	> $10^8 \Omega$

iglidur® J200 | Technical Data

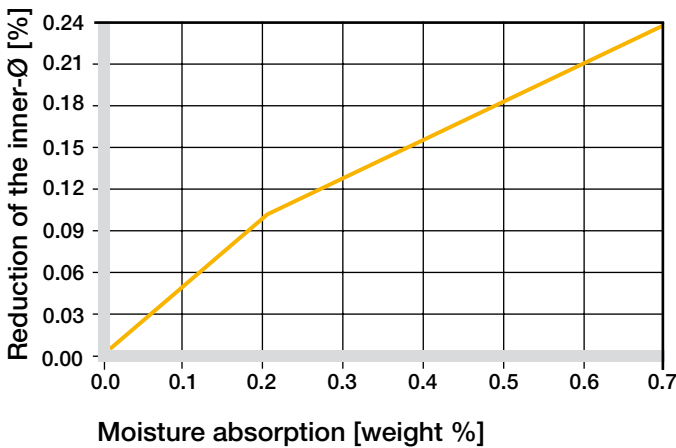
Moisture Absorption

The moisture absorption of iglidur® J200 plain bearings in standard atmosphere is approximately 0.2%. The saturation limit in water is 0.7%. Due to these low values considering expansion by moisture absorption is only required in extreme cases.

Maximum moisture absorption

At +23 °C/50 % r.h.	0.2 % weight
Max. moisture absorption	0.7 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® J200 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® J200 E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

At present, iglidur® J200 plain bearings are made to special order.



iglidur® V400

high chemical- and
temperature resistance

Standard range from stock ► from page 279



iglidur® X6 **NEW!***

runs up to six times
longer than iglidur® X

Standard range from stock ► from page 289



iglidur® Z

wear-resistant at
high loads and high
temperatures

Standard range from stock ► from page 299



iglidur® UW500

for use in hot liquids


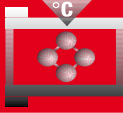
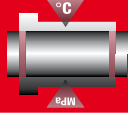
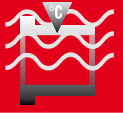












On request ► from page 313

* in this catalog

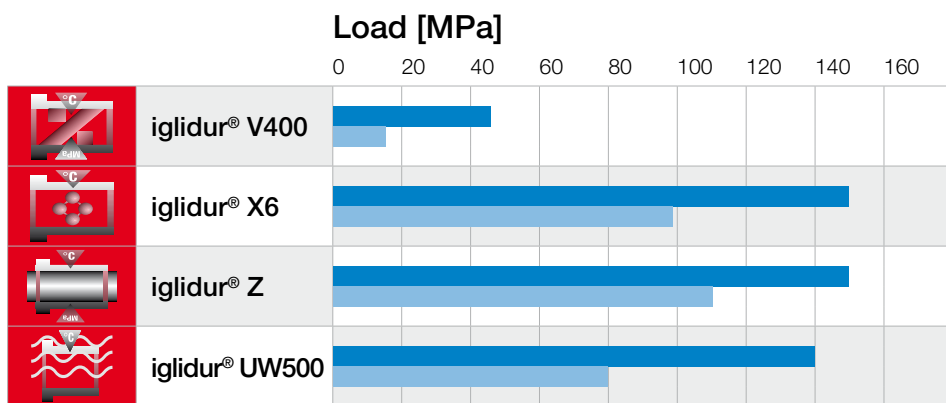
iglidur® Specialists | Selection According to Main Criteria

iglidur®
polymer
bearings

iglidur®- Specialists – High Temperatures

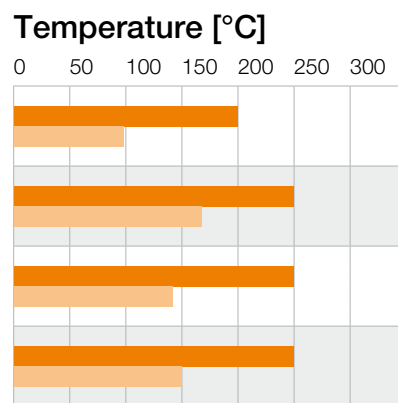
				
	iglidur® V400	iglidur® X6	iglidur® Z	iglidur® UW500
 Long life dry running	●	●	●	
 For high loads		●	●	
 For high temperatures	●	●	●	●
 Low friction/high speed	●	●	●	
 Dirt resistant				
 Chemicals resistant	●	●	●	●
 Low water absorption	●	●	●	●
 Food-suitable				
 Vibration-dampening				
 Edge pressure	●		●	
 For under water use				●
 Cost-effective				
from page	279	289	299	313

iglidur® Specialists | Selection According to Main Criteria



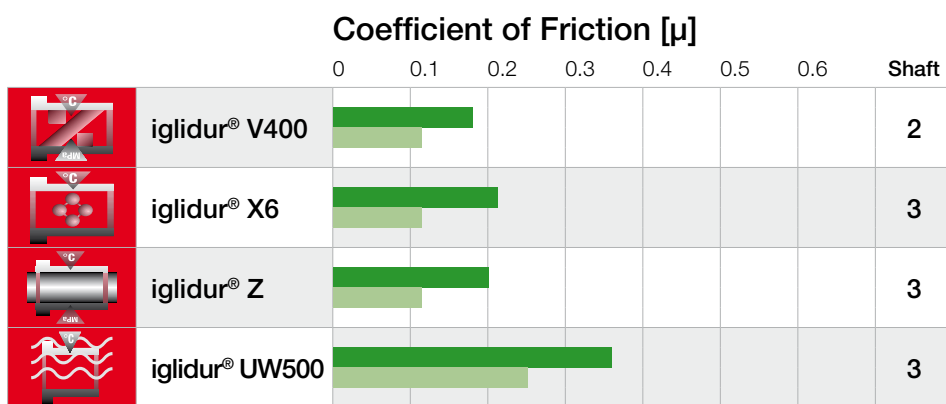
Maximum permissible radial load of iglidur® bearings at

- +20 °C
- +120 °C



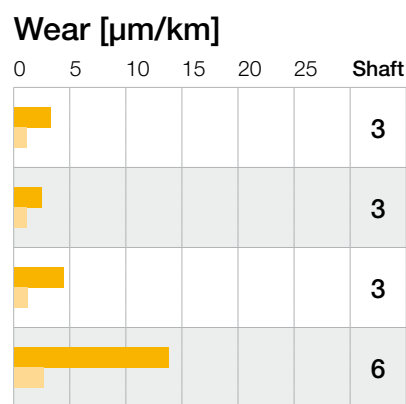
Important temperatur limits of iglidur® bearings

- Maximum permissible application temperature, continous
- Temperature where bearings need to be secured against radial or axial movement in the housing



Coefficients of friction of iglidur® bearings sliding against steel, $p = 1.2 \text{ MPa}$, $v = 0.3 \text{ m/s}$

- Average coefficient of all the seven sliding combinations tested
- Coefficient of friction of best combination



Wear of iglidur® bearings sliding against steel, $p = 1 \text{ MPa}$

- Average wear of all the seven sliding combination tested
- Wear of best combination

Shaft material:

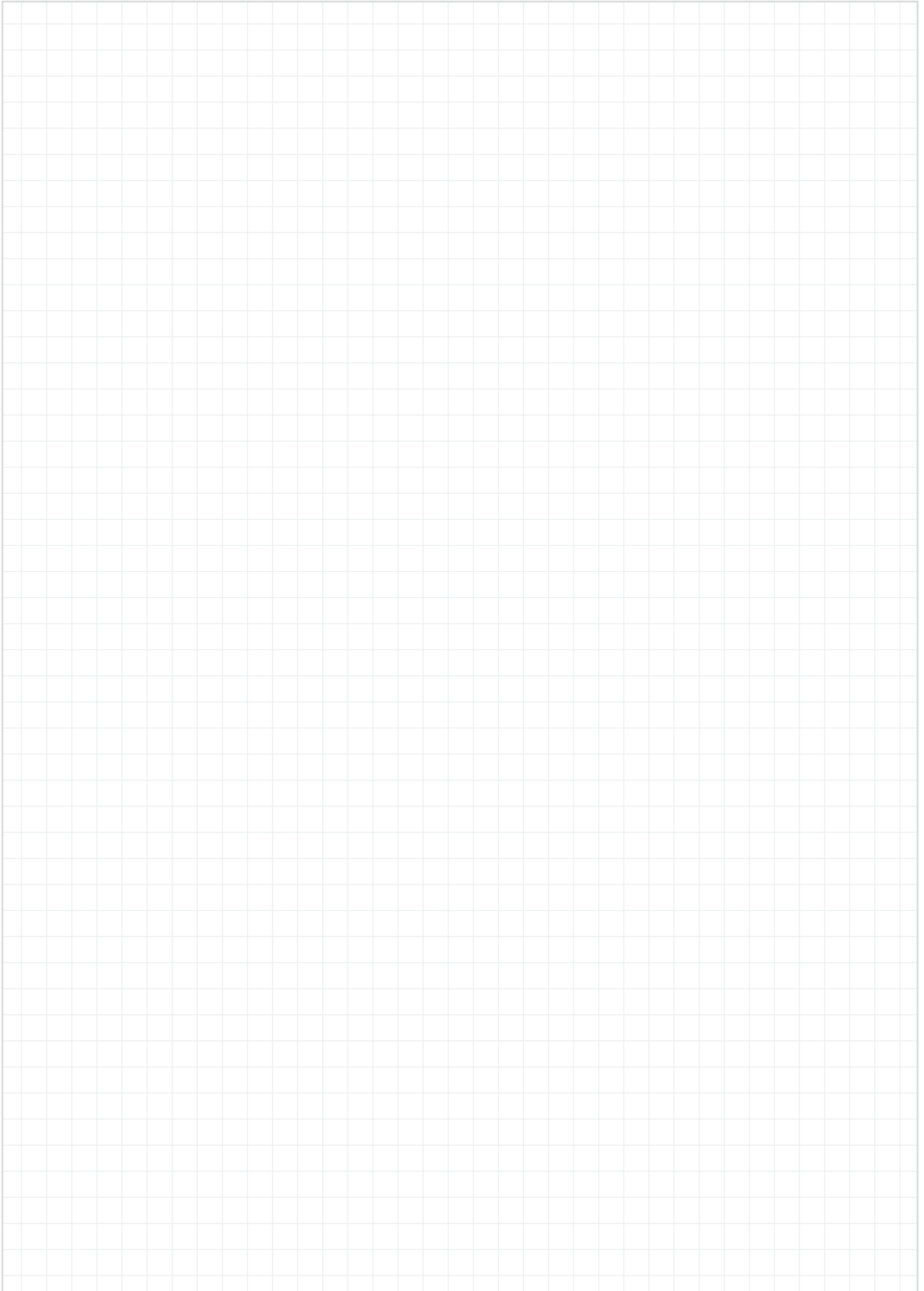
- 1 = Cf53
- 2 = hard chromed
- 3 = Aluminum, hc
- 4 = Automatic screw steel
- 5 = HR carbon steel
- 6 = 304 SS
- 7 = High grade steel

Material data					
General properties	Unit	iglidur® V400	iglidur® X6	iglidur® Z	iglidur® UW500
Density	g/cm³	1.51	1.53	1.40	1.49
Colour		white	anthracite blue	brown	black
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.1	0.1	0.3	0.1
Max. moisture absorption	% weight	0.2	0.5	1.1	0.5
Coefficient of sliding friction, dynamic against steel	μ	0.15–0.20	0.09–0.25	0.06–0.14	0.20–0.36
pv value, max. (dry)	MPa · m/s	0.5	1.35	0.84	0.35
Mechanical properties					
Modulus of elasticity	MPa	4,500	16,000	2,400	16,000
Tensile strength at +20 °C	MPa	95	290	95	260
Compressive strength	MPa	47	190	65	140
Max. recommended surface pressure (+20 °C)	MPa	45	150	150	140
Shore D hardness		74	89	81	86
Physical and thermal properties					
Max. long term application temperature	°C	+200	+250	+250	+250
Max. short term application temperature	°C	+240	+315	+310	+300
Min. application temperature	°C	-50	-100	-100	-100
Thermal conductivity	W/m · K	0.24	0.55	0.62	0.60
Coefficient of thermal expansion (at +23 °C)	K⁻¹ · 10⁻⁵	3	n.b.	4	4
Electrical properties					
Specific volume resistance	Ωcm	> 10 ¹²	< 10 ⁵	> 10 ¹¹	< 10 ⁹
Surface resistance	Ω	> 10 ¹²	< 10 ⁵	> 10 ¹¹	< 10 ⁹

Material resistance (at +20 °C)				
Chemical resistance	iglidur® V400	iglidur® X6	iglidur® Z	iglidur® UW500
Alcohol	+	+	0	+
Hydrocarbons	+	+	+	+
Greases, oils without additives	+	+	+	+
Fuels	+	+	+	+
Diluted acids	+	+	+	+
Strong acids	+	+	-	+
Diluted alkalines	+	+	+	+
Strong alkalines	-	+	-	+
Radiation resistance [Gy] to	2 · 10⁴	2 · 10⁵	1 · 10⁵	1 · 10⁵

+ resistant 0 conditionally resistant - not resistant

My Sketches





iglidur® V400 – high chemical- and temperature resistance



Standard range from stock

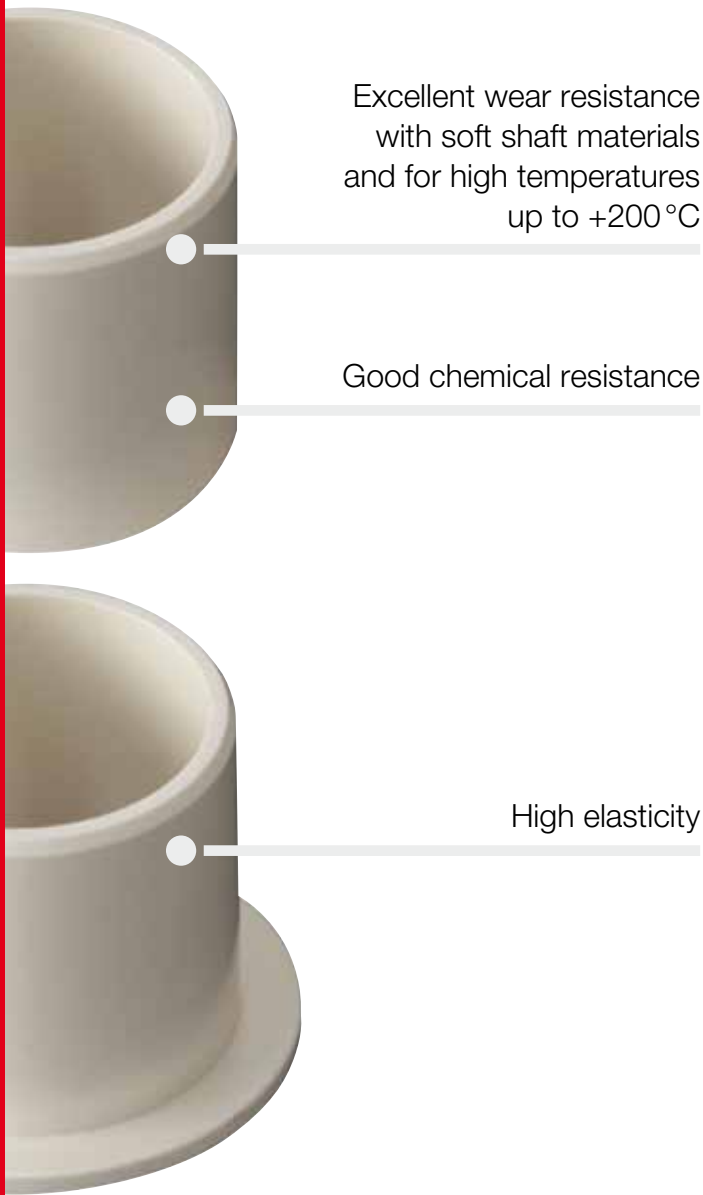
Excellent wear resistance with soft shaft materials and for temperatures up to +200°C

Good chemical resistance

High elasticity

iglidur® V400

High chemical- and temperature resistance. Highly wear-resistant bearing for soft shafts and temperatures up to +200 °C with low moisture absorption and excellent resistance to chemicals.



When to use it?

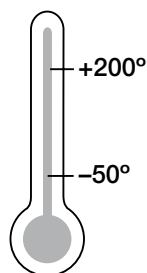
- When extreme wear resistance is required with soft shafts
- For applications at temperatures higher than +100 °C
- When vibrations and edge pressure are present
- When the bearing should be resistant to chemicals



When not to use it?

- For hardened shafts
 - ▶ iglidur® W300, page 131
- For applications at normal temperatures
 - ▶ iglidur® G, page 61
 - ▶ iglidur® J, page 89
 - ▶ iglidur® W300, page 131
- When a cost-effective universal bearing is required
 - ▶ iglidur® G, page 61

Temperature

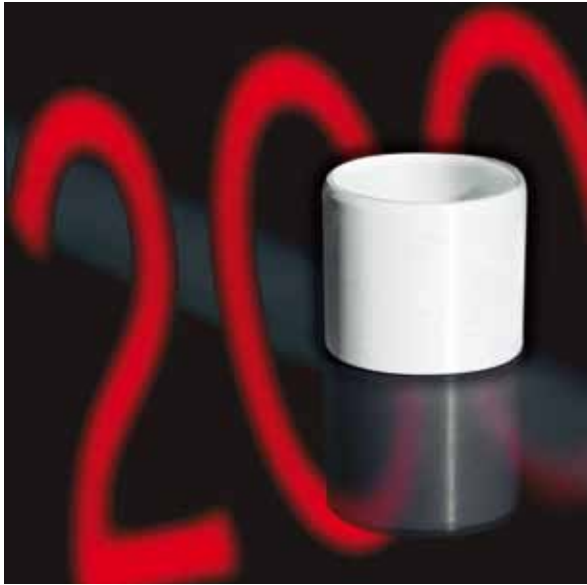


Product range

2 types
 Ø 6–20 mm
 more dimensions
 on request



iglidur® V400 | Application Examples



Typical sectors of industry and application areas

- Plant construction
- Automotive
- Automation
- Aerospace engineering
- Mechatronics etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications

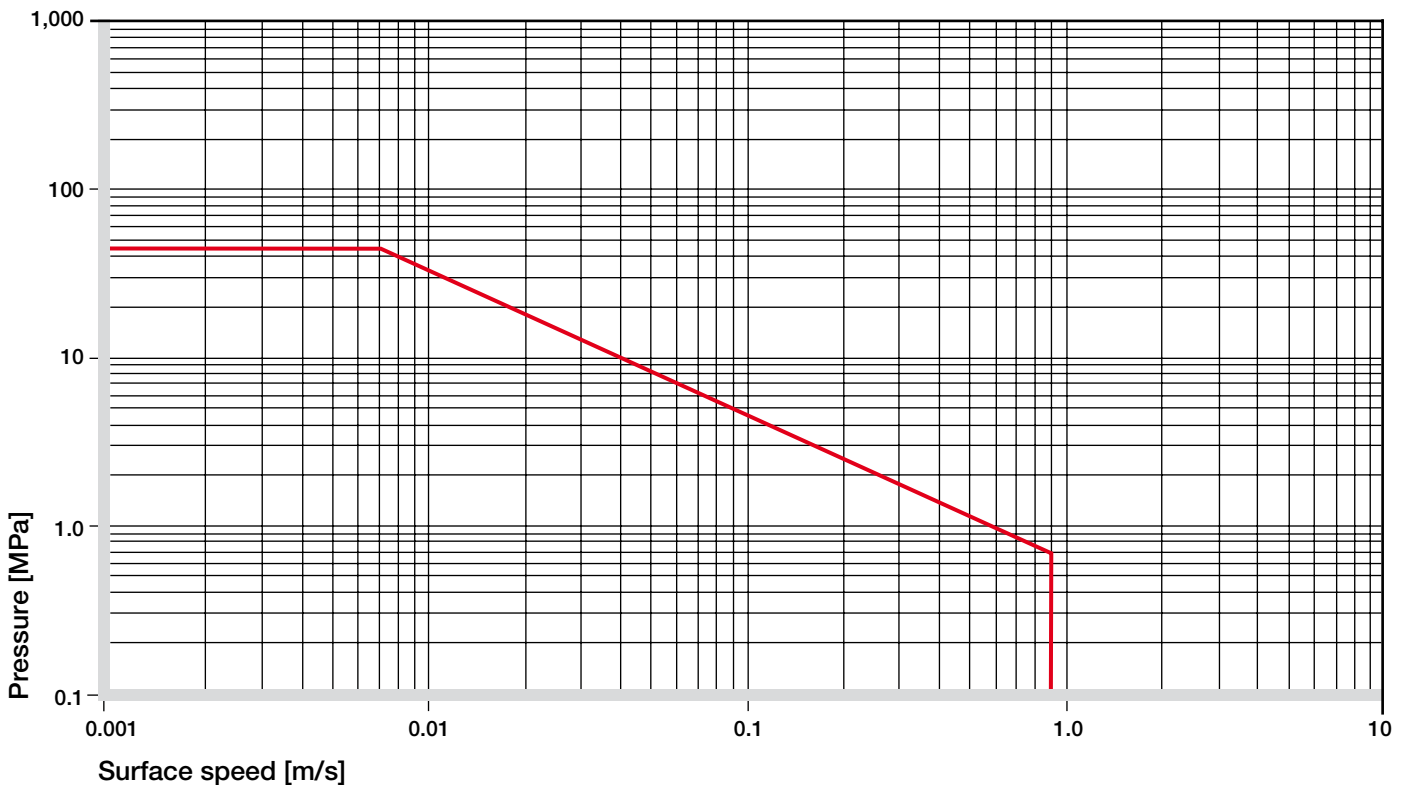


► www.igus.co.uk/blown-film-line

Material data			
General properties	Unit	iglidur® V400	Testing method
Density	g/cm ³	1.51	
Colour		white	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.2	
Coefficient of sliding friction, dynamic against steel	μ	0.15–0.20	
pv value, max. (dry)	MPa · m/s	0.50	
Mechanical properties			
Modulus of elasticity	MPa	4,500	DIN 53457
Tensile strength at +20 °C	MPa	95	DIN 53452
Compressive strength	MPa	47	
Max. recommended surface pressure (+20 °C)	MPa	45	
Shore D hardness		74	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+200	
Max. short term application temperature	°C	+240	
Max. ambient temperature, short term ¹⁾	°C	+250	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	3	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	< 10 ¹²	DIN IEC 93
Surface resistance	Ω	< 10 ¹²	DIN 53482

¹⁾ Without additional load; no sliding movement; relaxation possible

Table 01: Material data

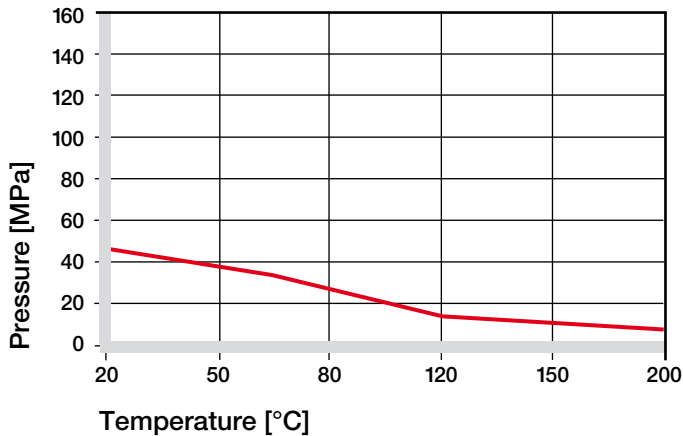


Graph 01: Permissible pv values for iglidur® V400 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® V400 | Technical Data

Mechanical Properties

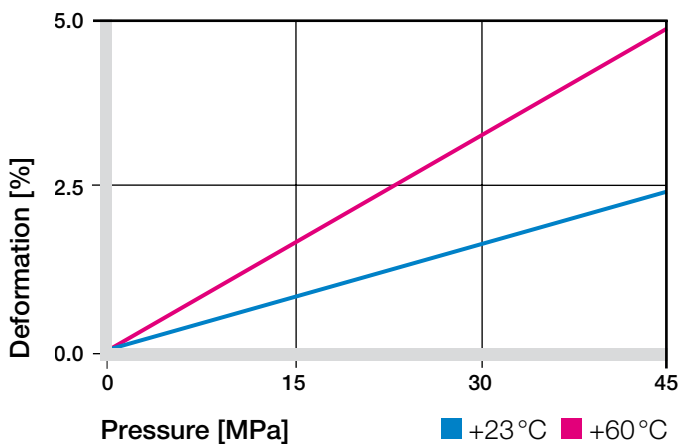
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® V400 plain bearings decreases. The Graph 02 shows this inverserelationship. However, at the longterm maximum temperature of +200 °C the permissible surface pressure is almost 10 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

iglidur® V400 bearings are not suitable for high pressures or static high loads. However they are characterized by a high wear resistance all the way up to the maximum recommended surface pressure. Moreover the limit of the permitted loads at +100 °C is still higher with 20 MPa. The high elasticity is seen also in Graph 03.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® V400 also permits high surface speeds due to the high temperature resistance. The very favorable coefficients of the bearing enable maximum surface speeds up to 1.3 m/s. Even higher are the permitted speeds for linear movement and 3 m/s can be attained on the short term.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	0.9	0.6	2
Short term	1.3	0.9	3

Table 02: Maximum running speed

Temperatures

The long-term maximum permissible application temperature is +200 °C, although at these temperatures the bearings have to be mechanically secured. Then, however, the wear resistance of the bearings is very good and adopts a leading position among all iglidur® materials. The compressive strength of iglidur® V400 plain bearings decreases with increasing temperatures. Graph 02 clarifies this connection.

► Application Temperatures, page 46

iglidur® V400	Application temperature
Minimum	-50 °C
Max. long term	+200 °C
Max. short term	+240 °C
Add. securing is required from	+100 °C

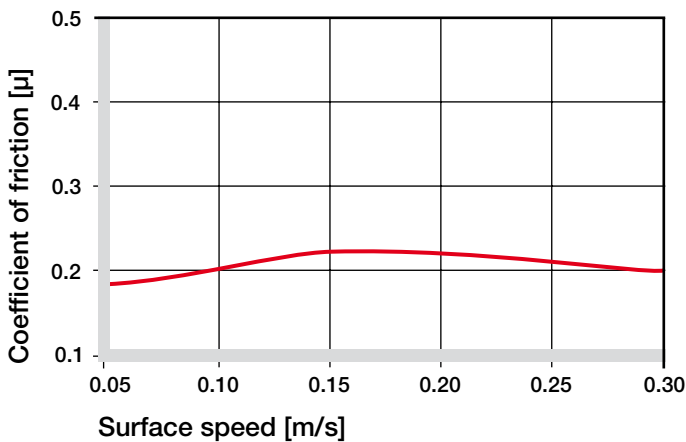
Table 03: Temperature limits

Friction and Wear

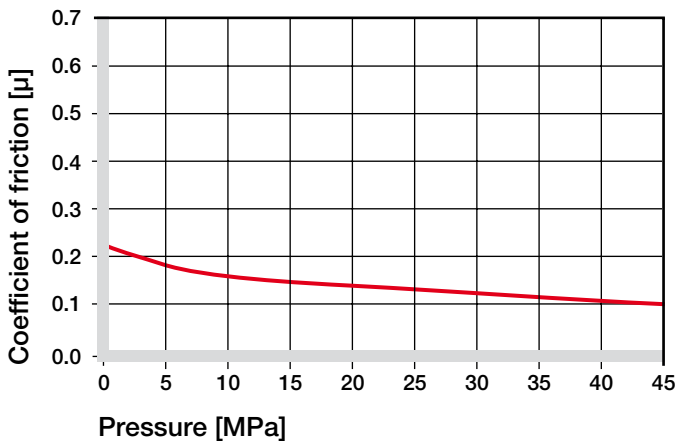
The coefficient of friction is dependent on the bearing's stressing capacity. When pv values exceed the permitted range, the bearings respond with a rise in coefficient of friction. As long as the loads are in the permitted range, the coefficient of friction of the bearing is very low. Furthermore, the coefficients of friction of iglidur® V400 are very constant. No other iglidur® bearing material exhibits a lower variance in the coefficients of friction, even when the shaft material is altered.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



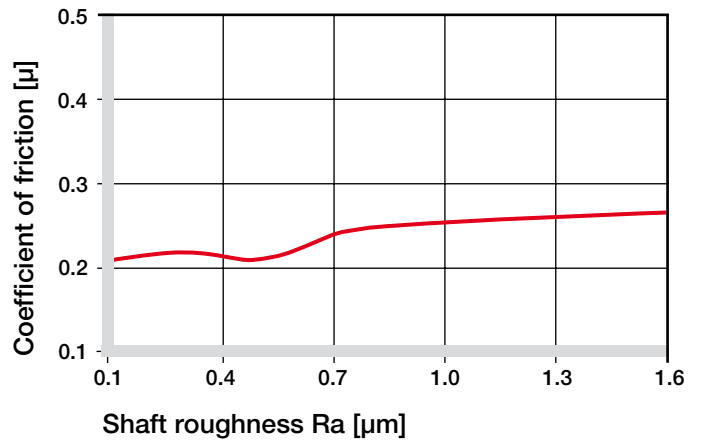
Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

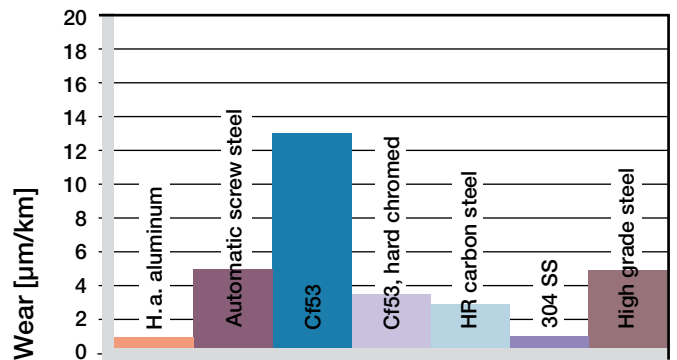
Greater is the influence on wear resistance. Here already at low loads (0.75 MPa) there could be significant variations, as Graph 07 shows.

iglidur® V400 is a material which clearly shows better wear performance in rotating than in oscillating applications.

► Shaft Materials, **page 51**

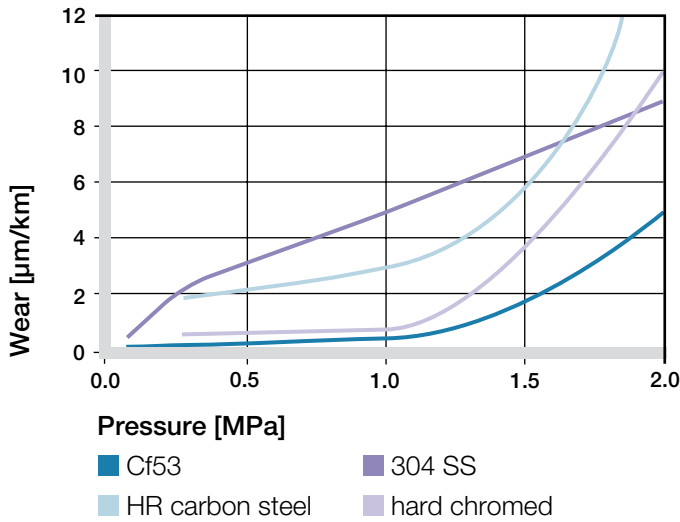


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

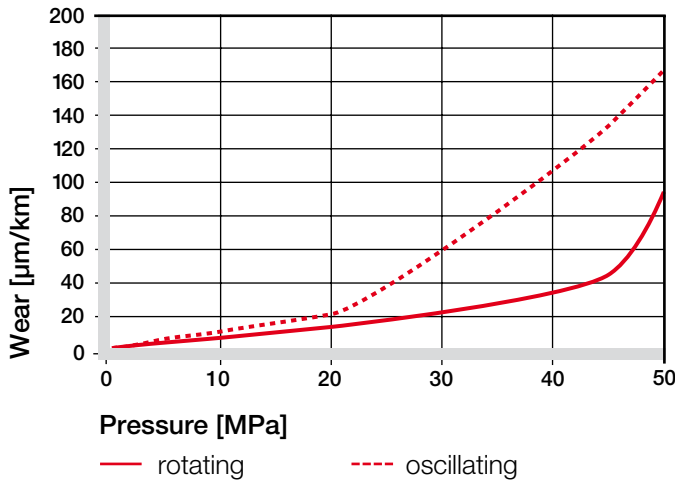


Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$

iglidur® V400 | Technical Data



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® V400	Dry	Greases	Oil	Water
C.o.f. μ	0.15–0.20	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ($R_a = 1 \mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® V400 plain bearings feature good chemical resistance. They are resistant to detergents, greases, oils, alcohol, solvents, diluted bases, as well as to diluted acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+
Strong acids	+
Diluted alkalines	+
Strong alkalines	-

+ resistant 0 conditionally resistant - not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® V400 are resistant to a radiation intensity of $2 \cdot 10^4$ Gy. Higher radiation affects the material and can result in a loss of important mechanical characteristics.

UV Resistance

iglidur® V400 plain bearings are resistant to UV radiation to a large extent.

Vakuum

In the vacuum, iglidur® V400 plain bearings can only be used to a limited extent. Outgassing takes place.

Electrical Properties

iglidur® V400 plain bearings are electrically insulating.

Volume resistance	$> 10^{12} \Omega\text{cm}$
Surface resistance	$> 10^{12} \Omega$

Moisture Absorption

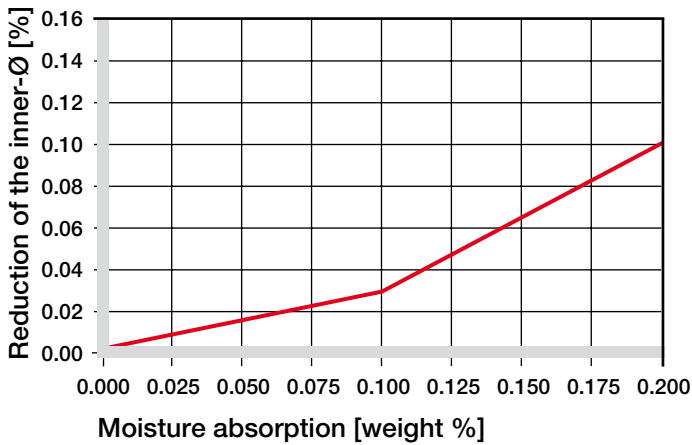
The moisture absorption of iglidur® V400 plain bearings is only 0.2 % after saturation in water.

Maximum moisture absorption

At +23 °C/50 % r.h. 0.1 % weight

Max. moisture absorption 0.2 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® V400 plain bearings are standard bearings for shafts with h tolerance (h9 recommended at least).

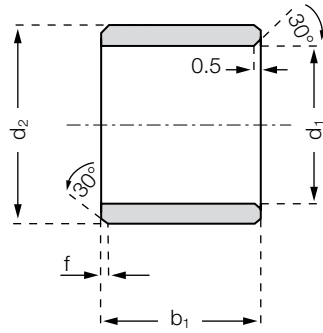
The bearings are designed for pressfit into a housing with a H7 tolerance. After being assembled into a nominal size housing, the inner diameter of the bearings is automatically adjusted to F10 tolerance.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® H F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

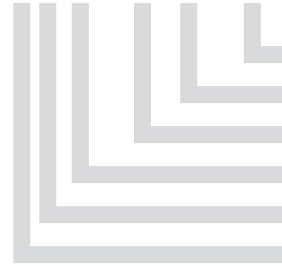
Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

VSM-0608-06



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form S)
Material iglidur® V400

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
VSM-0608-06	6.0	+0.010 +0.058	8.0	6.0
VSM-0810-10	8.0	+0.013 +0.071	10.0	10.0
VSM-1012-10	10.0	+0.013 +0.071	12.0	10.0
VSM-1214-12	12.0	+0.016 +0.086	14.0	12.0
VSM-1618-15	16.0	+0.016 +0.086	18.0	15.0
VSM-2023-20	20.0	+0.020 +0.104	23.0	20.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock

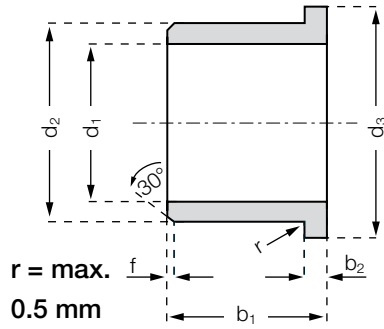


prices price list online
www.igus.co.uk/en/v400



order part number
example VSM-0608-06

Flange bearing



Order key

VFM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® V400

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
VFM-0608-06	6.0	+0.010 +0.058	8.0	12.0	6.0	1.0
VFM-0810-10	8.0	+0.013 +0.071	10.0	15.0	10.0	1.0
VFM-1012-10	10.0	+0.013 +0.071	12.0	18.0	10.0	1.0
VFM-1214-12	12.0	+0.016 +0.086	14.0	20.0	12.0	1.0
VFM-1618-17	16.0	+0.016 +0.086	18.0	24.0	17.0	1.0
VFM-2023-21	20.0	+0.020 +0.104	23.0	30.0	21.5	1.5

* after pressfit. Testing methods ► page 55



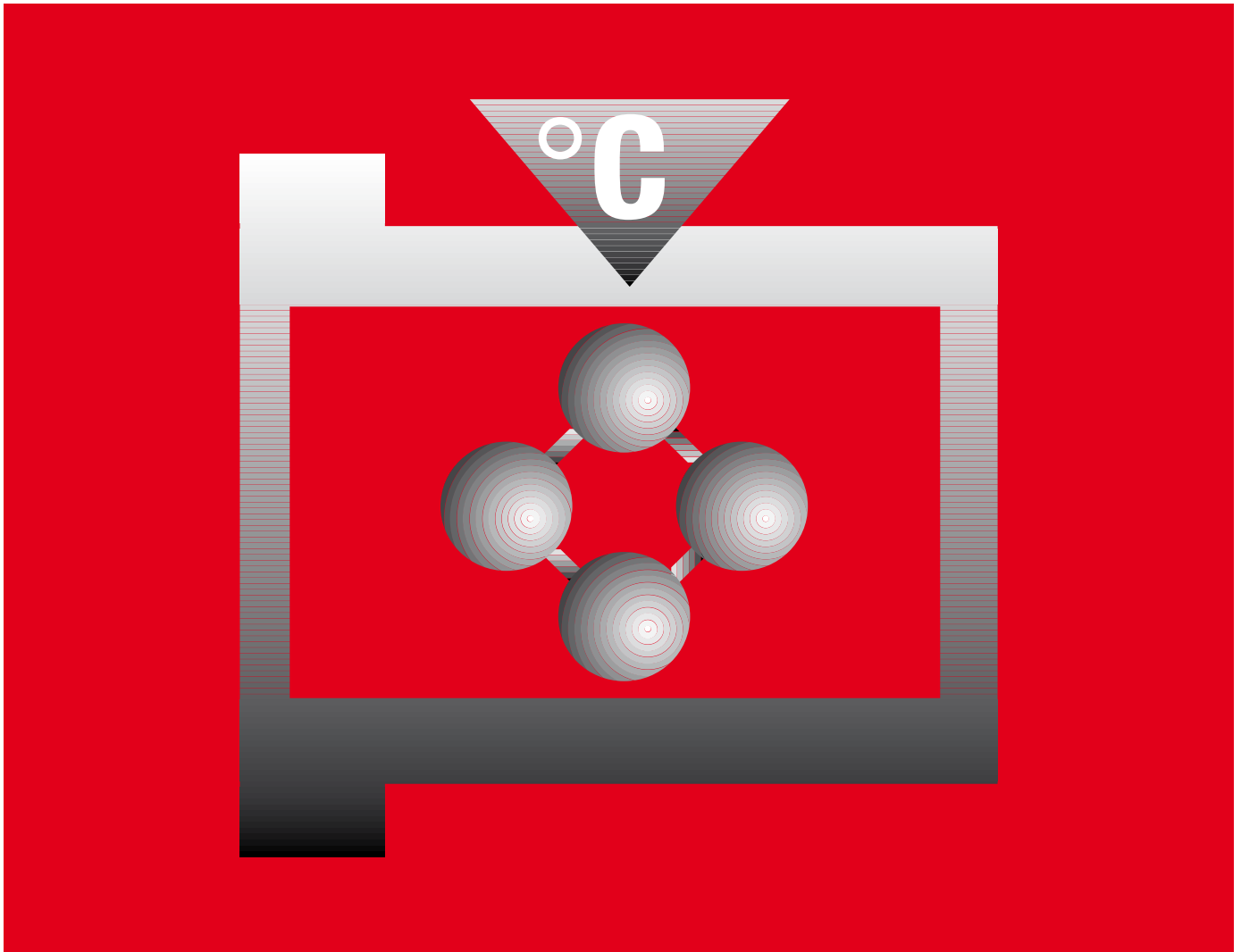
delivery available
time from stock



prices price list online
www.igus.co.uk/en/v400



order part number
example VFM-0608-06



iglidur® X6 – runs up to six times longer than iglidur® X



Standard range from stock

Lubrication and maintenance-free

Long term service temperature up to +250 °C

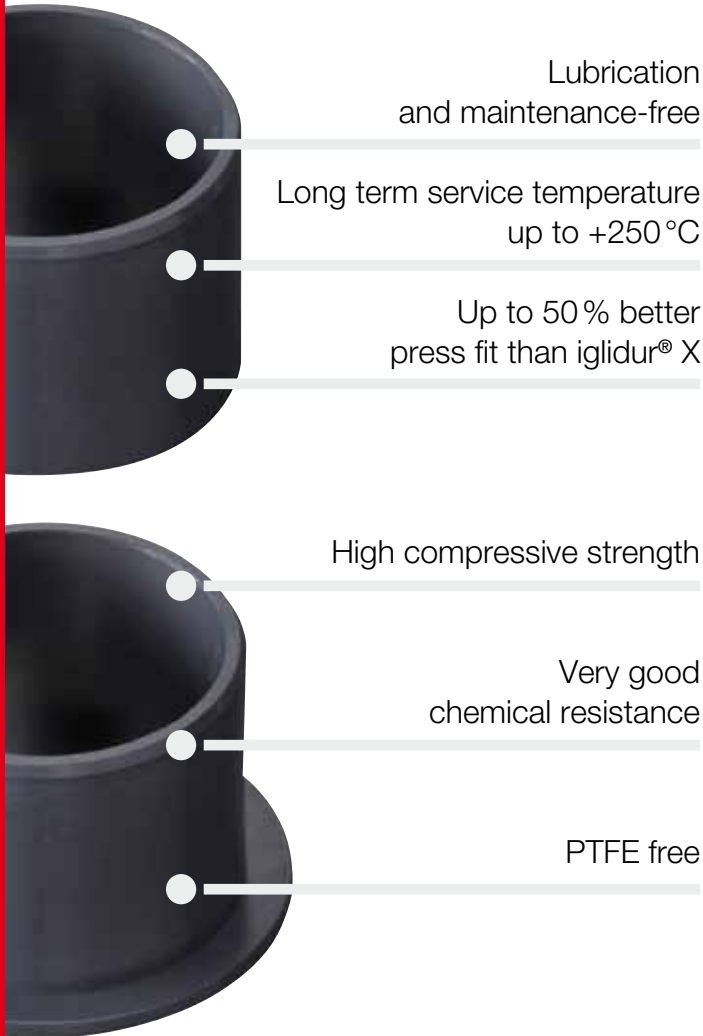
Up to 50 % better press fit than iglidur® X

High compressive strength

Very good chemical resistance

PTFE-free

Runs up to six times longer than iglidur® X. Due to nano-technology, iglidur® X6 shows up to six times better performance than iglidur® X in many oscillating and rotating applications – even at temperatures over +100 °C.



When to use it?

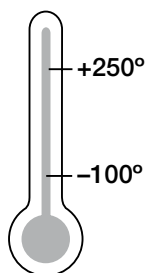
- If temperatures are higher than +150 °C
- When the wear performance of iglidur® X in oscillation and rotation is not sufficient.
- If the pressfit should be improved over iglidur® X
- If high media-resistance is required
- If you need a bearing which is free of PTFE



When not to use it?

- When you need a cost-effective universal bearing
 - ▶ iglidur® G, page 61
- If you need a bearing for underwater use
 - ▶ iglidur® UW500, page 313
 - ▶ iglidur® H370, page 347
- When a wear-resistant high temperature bearing for linear movements is needed.
 - ▶ iglidur® Z, page 299

Temperature



Product range

2 types
 Ø 3–40 mm
 more dimensions
 on request

iglidur® X6 | Application Examples



Typical sectors of industry and application areas

- Glass industry ● Food industry
- Fluid technology ● Textile technology
- Machine building etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



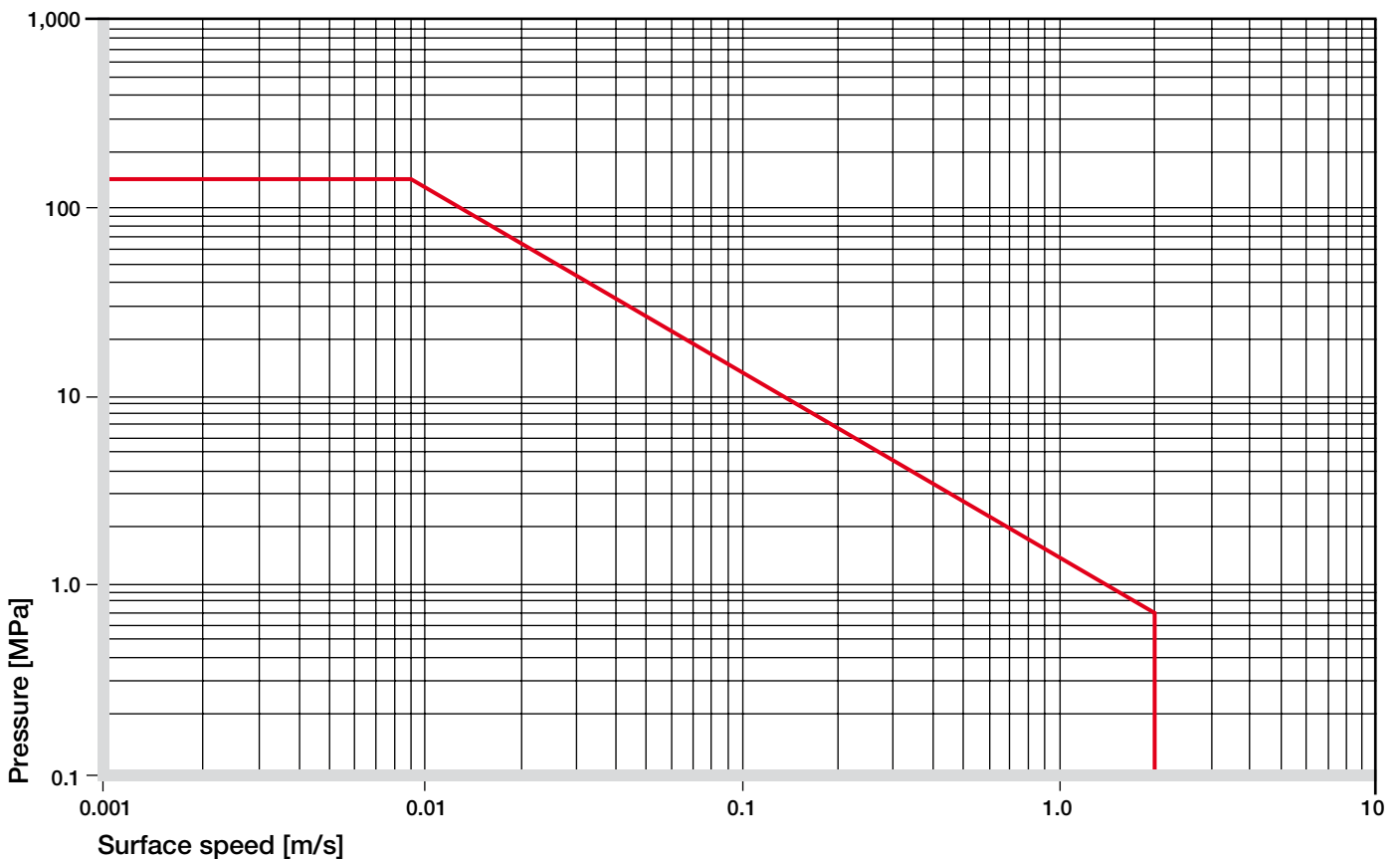
► www.igus.co.uk/pies



► www.igus.co.uk/baking-oven

Material data			
General properties	Unit	iglidur® X6	Testing method
Density	g/cm ³	1.53	
Colour		anthracite blue/grey	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.5	
Coefficient of sliding friction, dynamic against steel	μ	0.09–0.25	
pv value, max. (dry)	MPa · m/s	1.35	
Mechanical properties			
Modulus of elasticity	MPa	16,000	DIN 53457
Tensile strength at +20 °C	MPa	290	DIN 53452
Compressive strength	MPa	190	
Max. recommended surface pressure (+20 °C)	MPa	150	
Shore D hardness		89	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+250	
Max. short term application temperature	°C	+315	
Min. application temperature	°C	-100	
Thermal conductivity	W/m · K	0.55	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	1	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ⁵	DIN IEC 93
Surface resistance	Ω	> 10 ⁵	DIN 53482

Table 01: Material data

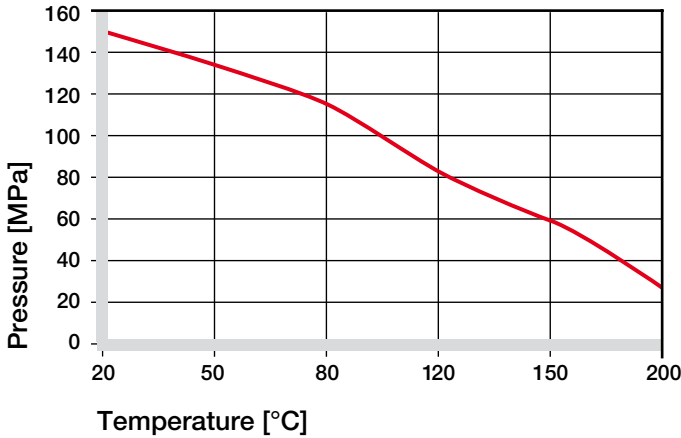


Graph 01: Permissible pv values for iglidur® X6 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® X6 | Technical Data

Mechanical Properties

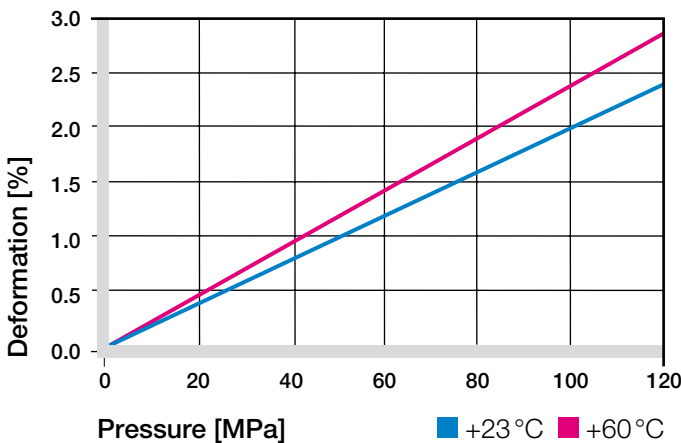
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® X6 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +250 °C the permissible surface pressure is almost 90 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (150 MPa at +20 °C)

Graph 03 shows the elastic deformation of iglidur® X6 during radial loading. At the recommended maximum surface pressure of 2 MPa the deformation is less than 100 %.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

The high temperature resistance and good thermal conductivity values mean that iglidur® X6 is suitable for high speed applications. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1.5	1.1	5
Short Term	3.5	2.5	10

Table 02: Maximum running speed

Temperatures

The ambient temperatures greatly influence the wear performance of plastic bearings. The temperature resistance of iglidur® X6 is among the highest in the iglidur® range. In many tests it has shown a six times higher wear performance compared to the established high-temperature specialist iglidur® X. Also, the temperature induced relaxation of the bearing in the housing bore is much lower so that iglidur X6 required additional axial securing only above +165 °C.

► Application Temperatures, page 46

iglidur® X6	Application temperature
Minimum	-100 °C
Max. long term	+250 °C
Max. short term	+315 °C
Add. securing is required from	+165 °C

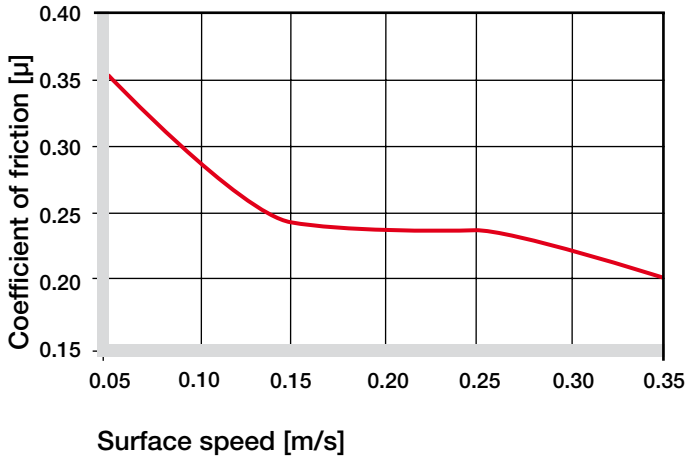
Table 03: Temperature limits

Friction and Wear

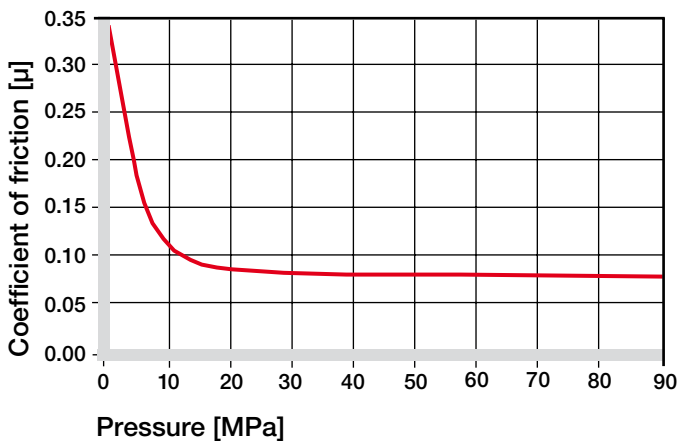
Similar to wear resistance, the coefficient of friction μ also changes with the load. The coefficient of friction of iglidur® X6 declines with higher pressure and is practically constant for pressures above 30 Mpa. A higher speed of the shaft also results in a lower coefficient of friction (Graph. 04 and 05).

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75$ MPa



Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01$ m/s

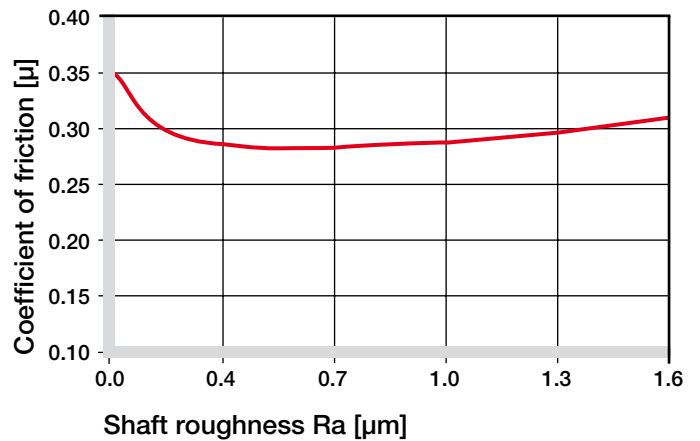
Shaft Materials

The friction and wear are also dependent, to a large degree, on the shaft material. Shafts that are too smooth, increase both the coefficient of friction and the wear of the bearing. The best case for iglidur® X6 is a ground surface with an average roughness $Ra = 0.4-0.7 \mu\text{m}$ (Graph 06). Graphs 07 and 09 show results of testing different shaft materials with plain bearings made of iglidur® X6. In Graph 07 it shows that iglidur® X6 can be combined with various shaft materials.

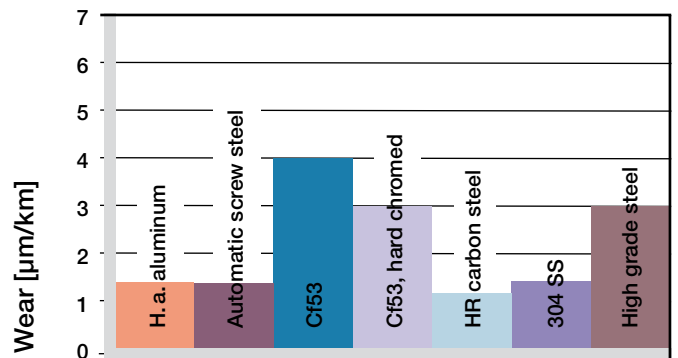
The best performance is achieved with the plain shaft materials free cutting steel and plain steel 1.0037. At higher loads, we recommend harder steel qualities. Non-hardened steel shafts can be worn by the bearing at pressures over 2 Mpa.

The wear database shows that iglidur® X6 is more suitable for rotating than for oscillating applications. If the shaft material you plan on using is not shown in these test results, please contact us.

► Shaft Materials, **page 51**

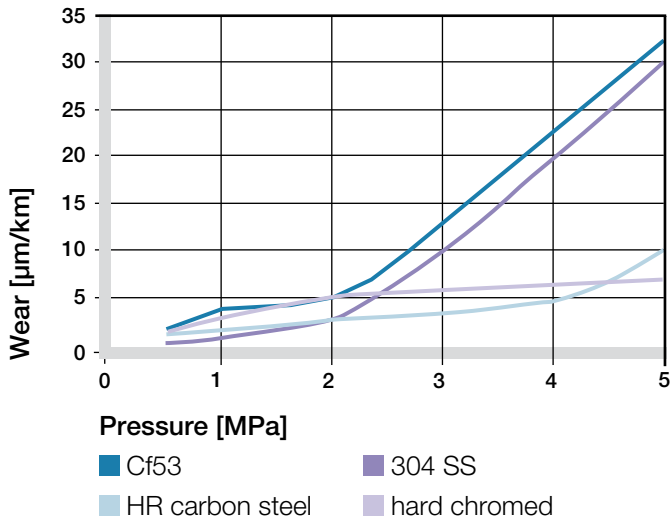


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

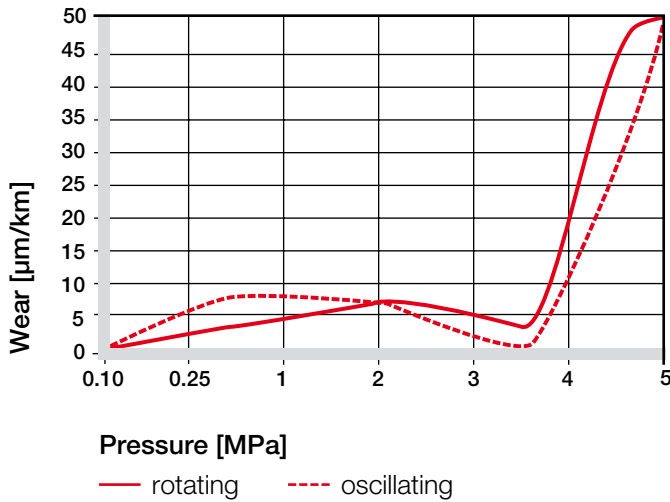


Graph 07: Wear, rotating with different shaft materials, pressure $p = 1$ MPa, $v = 0.3$ m/s

iglidur® X6 | Technical Data



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® X6	Dry	Greases	Oil	Water
C.o.f. μ	0.08–0.15	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 μm , 50 HRC)

Additional Properties

Chemical Resistance

iglidur® X6 bearings have almost universal chemical resistance. They are affected only by concentrated nitric acid and sulphuric acid. Due to the low water absorption, the material can be used in humid environment without problems. iglidur® X6 is resistant to most typical detergents used in the food and packaging industries.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+
Strong acids	+
Diluted alkalines	+
Strong alkalines	+

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Resistant to radiation up to an intensity of $2 \cdot 10^5$ Gy.

UV Resistance

Partly resistant against UV rays.

Vacuum

In a vacuum environment iglidur® X6 plain bearings can be used virtually without restrictions. Outgassing takes place to a very limited extent.

Electrical Properties

iglidur® X6 plain bearings are electrically insulating.

Volume resistance	$< 10^5 \Omega\text{cm}$
Surface resistance	$< 10^5 \Omega$

Moisture Absorption

The moisture absorption of iglidur® X6 plain bearings is approximately 0.1 % in the standard atmosphere. The saturation limit submerged in water is 0.5 %. These values are so low that the swelling only has to be considered in extreme applications.

Maximum moisture absorption

At +23°C/50% r.h.	0.1 % weight
Max. moisture absorption	0.5 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® X6 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, **page 55**

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® X6 F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

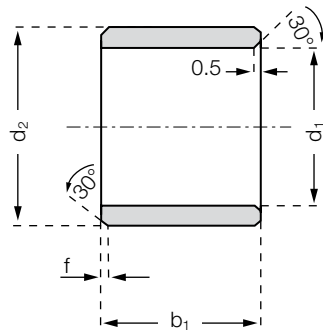
Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

NEW in this catalog!

iglidur® X6 | Product Range

iglidur®
X6

Sleeve bearing



Order key

X6SM-0304-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® X6

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	Tolerance pressfitted in H7	d2	b1
X6SM-0304-03	3	+0.010 +0.058	4.5	3
X6SM-0507-05	5	+0.010 +0.058	7	5
X6SM-0608-06	6	+0.010 +0.058	8	6
X6SM-0810-10	8	+0.013 +0.071	10	10
X6SM-1012-10	10	+0.013 +0.071	12	10
X6SM-1214-12	12	+0.016 +0.086	14	12
X6SM-1618-15	16	+0.016 +0.086	18	15
X6SM-2023-20	20	+0.020 +0.104	23	20
X6SM-2528-30	25	+0.020 +0.104	28	30
X6SM-3034-30	30	+0.020 +0.104	34	30
X6SM-3539-40	35	+0.025 +0.125	39	40
X6SM-4044-40	40	+0.025 +0.125	44	40



delivery available
time from stock

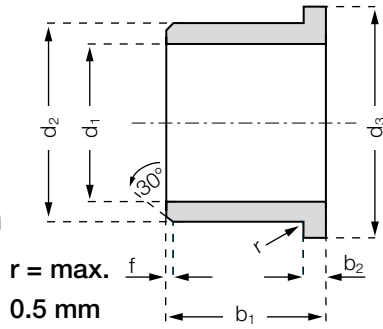


prices price list online
www.igus.co.uk/en/x6



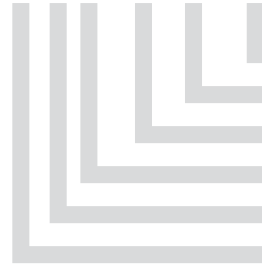
order part number
example X6SM-0304-03

Flange bearing



Order key

X6FM-0304-05



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® X6

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	Tolerance pressfitted in H7	d2	d3	b1	b2
X6FM-0304-05	3	+0.010 +0.058	4.5	7.5	5	0.75
X6FM-0507-05	5	+0.010 +0.058	7	11	5	1
X6FM-0608-06	6	+0.010 +0.058	8	12	6	1
X6FM-0810-10	8	+0.013 +0.071	10	15	10	1
X6FM-1012-10	10	+0.013 +0.071	12	18	10	1
X6FM-1214-12	12	+0.016 +0.086	14	20	12	1
X6FM-1618-17	16	+0.016 +0.086	18	24	17	1
X6FM-2023-21	20	+0.020 +0.104	23	30	21.5	1.5
X6FM-2528-21	25	+0.020 +0.104	28	35	21.5	1.5
X6FM-3034-40	30	+0.020 +0.104	34	42	40	2
X6FM-3539-26	35	+0.025 +0.125	39	47	26	2
X6FM-4044-40	40	+0.025 +0.125	44	52	40	2



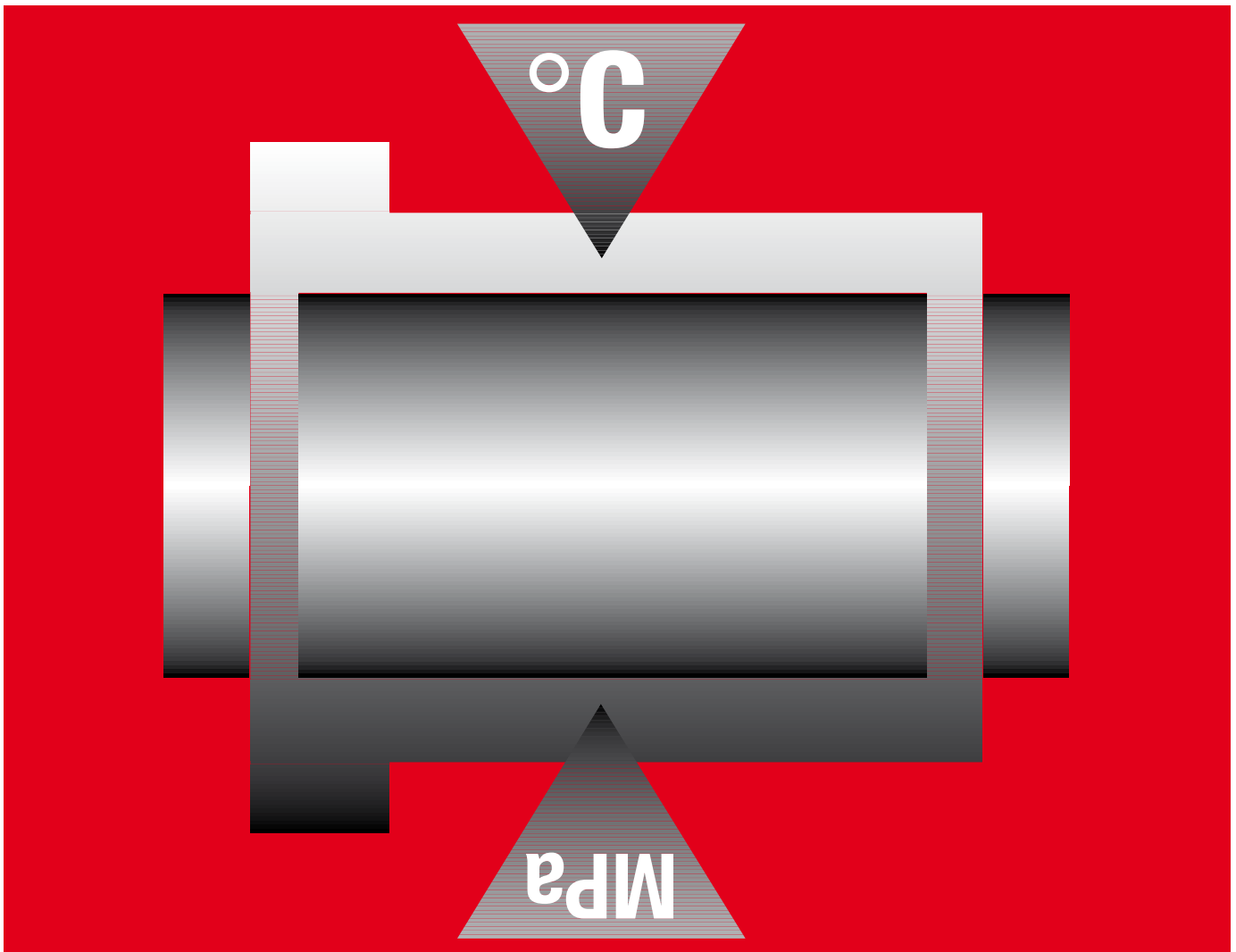
delivery available
time from stock



prices price list online
www.igus.co.uk/en/x6



order part number
example X6FM-0304-05



iglidur® Z – wear-resistant at high loads and temperatures



Standard range from stock

Excellent wear resistance especially with high loads

High thermal resistance

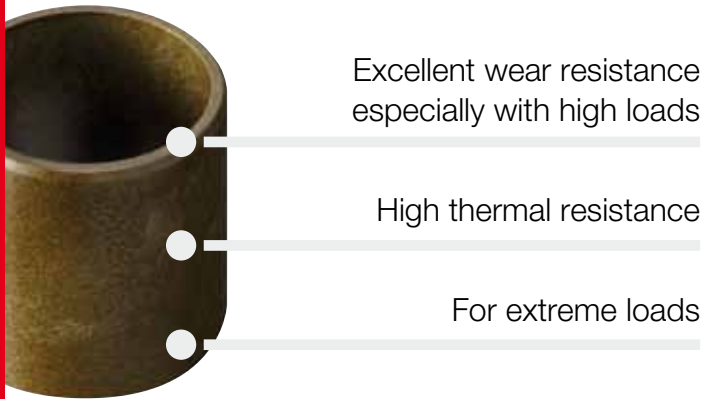
For extreme loads

For high surface speeds

Resistant to edge loads

iglidur® Z

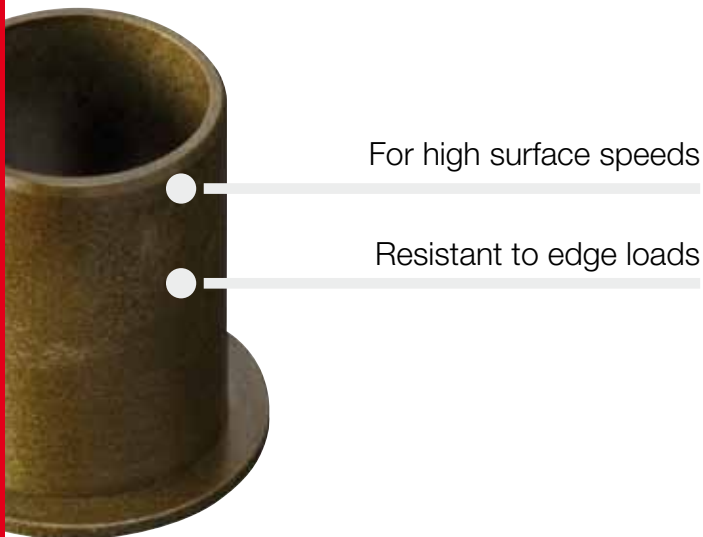
Wear-resistant at high loads and temperatures. Extremely high compressive strength coupled with high elasticity enables iglidur® Z bearings to attain their prominent features in association with soft shafts, edge loads and impacts. The bearings are at the same time suitable for temperatures up to +250°C.



Excellent wear resistance especially with high loads

High thermal resistance

For extreme loads

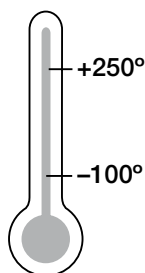


For high surface speeds

Resistant to edge loads



Temperature



When to use it?

- For continuous temperatures up to +250°C long term or +310°C short term
- When high wear resistance is required especially under high radial loads
- For high surface speeds
- For edge loading in connection with high surface pressures



When not to use it?

- For low loads and temperatures
 - ▶ **iglidur® P, page 185**
- When a cost-effective general purpose bearing is sought
 - ▶ **iglidur® G, page 61**
- When electrically conductive bearings are needed
 - ▶ **iglidur® F, page 439**
 - ▶ **iglidur® H, page 325**
 - ▶ **iglidur® H370, page 347**

Product range

3 types
 Ø 4–75 mm
 more dimensions
 on request



iglidur® Z | Application Examples



Typical sectors of industry and application areas

- Construction machinery
- Machine building ● Textile technology
- Aerospace engineering
- Glass industry etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/hip-jointsystem



► www.igus.co.uk/rollercoaster



► www.igus.co.uk/mooring-system

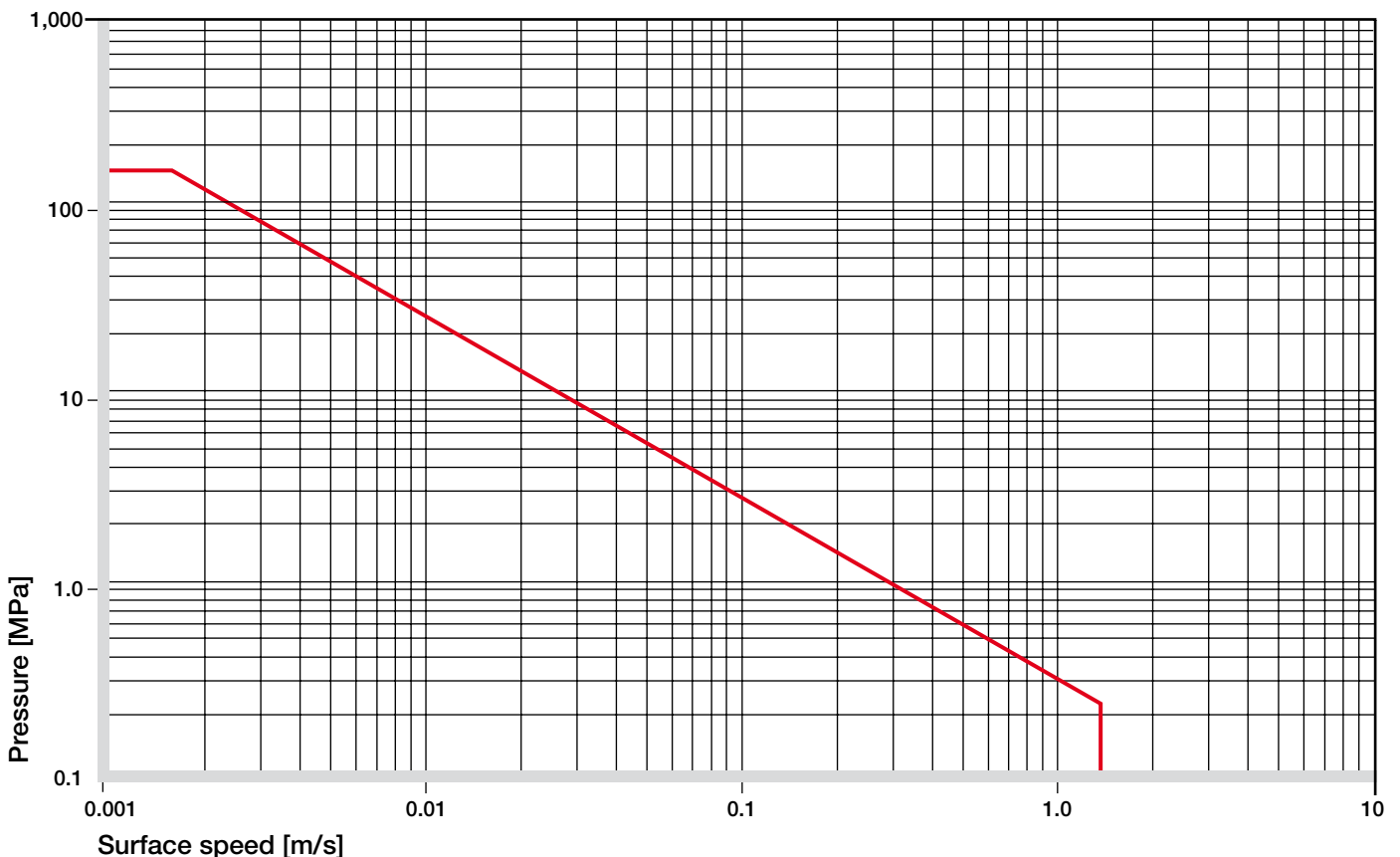


► www.igus.co.uk/railroad-platform

Material data

General Properties	Unit	iglidur® Z	Testing method
Density	g/cm ³	1.40	
Colour		brown	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.3	DIN 53495
Max. moisture absorption	% weight	1.1	
Coefficient of sliding friction, dynamic against steel	μ	0.06–0.14	
pv value, max. (dry)	MPa · m/s	0.84	
Mechanical properties			
Modulus of elasticity	MPa	2,400	DIN 53457
Tensile strength at +20 °C	MPa	95	DIN 53452
Compressive strength	MPa	65	
Max. recommended surface pressure (+20 °C)	MPa	150	
Shore D hardness		81	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+250	
Max. short term application temperature	°C	+310	
Min. application temperature	°C	-100	
Thermal conductivity	W/m · K	0.62	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	4	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹¹	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

Table 01: Material data

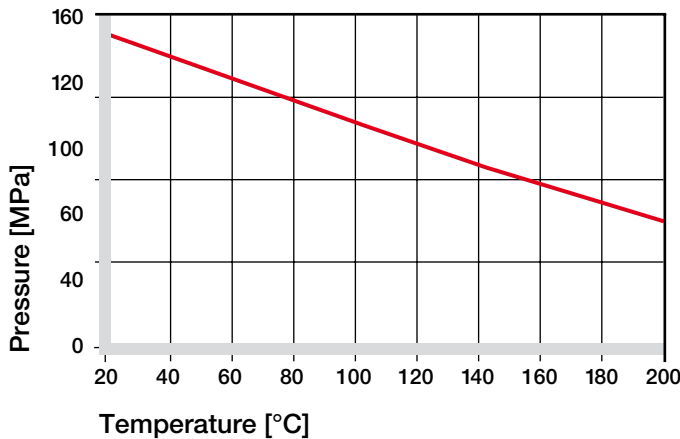


Graph 01: Permissible pv values for iglidur® Z with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur[®] Z | Technical Data

Mechanical Properties

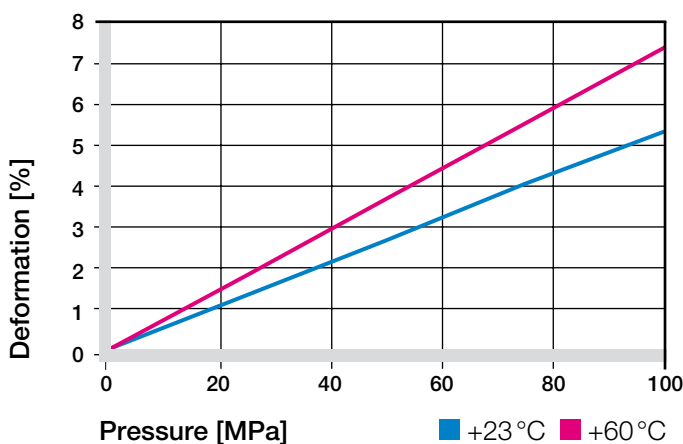
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur[®] Z plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +60°C the permissible surface pressure is almost 200 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (150 MPa at +20°C)

iglidur[®] Z is suited for both average and high speeds due to its high thermal resistance. Graph 03 shows the elastic deformation of iglidur[®] Z during radial loading. At the recommended maximum surface pressure of 150 MPa the deformation is ca. 5.5%.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur[®] Z is a high temperature bearing material, which is suited for applications with very high specific loads. The maximum values shown in table 02 can only be achieved at low pressures. At the given speeds, friction can cause a temperature increase to maximum permissible levels. In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1.5	1.1	5
Short term	3.5	2.5	6

Table 02: Maximum running speed

Temperatures

The maximum permissible short term temperature is +310°C. This is among the highest thermal resistance of any iglidur[®] material. Abb. 02 shows this relationship.

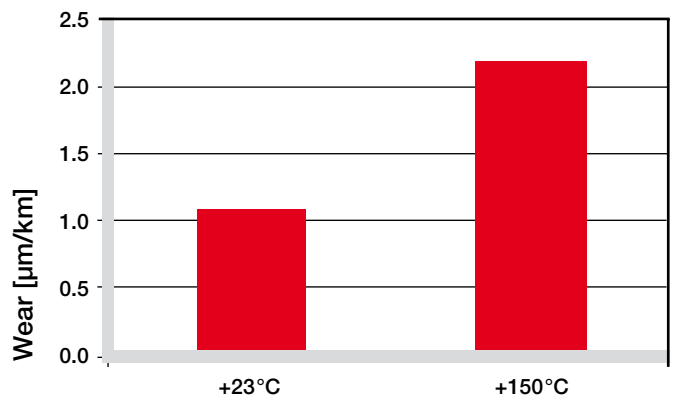
The ambient temperatures in the bearing system also have an effect on the bearing wear. With increasing temperatures, the wear rate increases.

At high temperatures iglidur[®] Z is also the most wear resistant material when running dry.

► Application Temperatures, page 46

iglidur [®] Z	Application temperature
Minimum	-100°C
Max. long term	+250°C
Max. short term	+310°C
Add. securing is required from	+145°C

Table 03: Temperature limits



Graph 04: Wear as a function of temperature, rotation with $p = 0.75$ MPa, $v = 0.5$ m/s (CF53 hardened and ground steel)

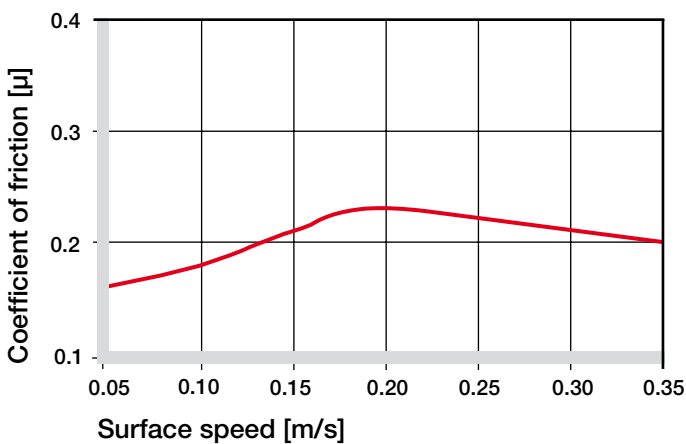
Friction and Wear

The coefficient of friction alters only slightly like the wear resistance with increasing load.

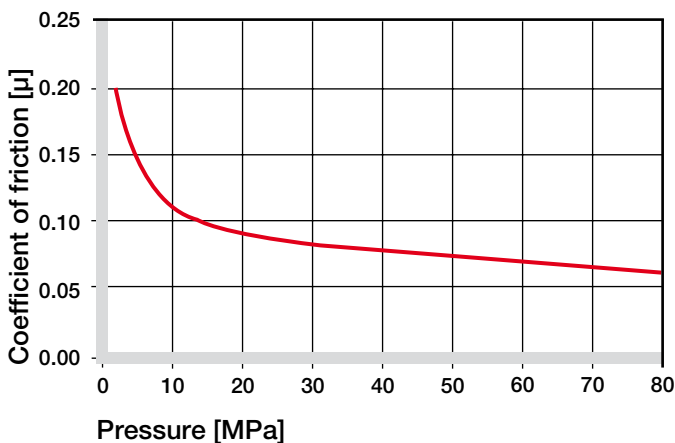
Friction and wear also depend to a high degree on the reverse partner. Very smooth shafts increase the coefficient of both friction and wear. iglidur[®] Z proves to be relatively insensitive with regard to the shaft surface. The best suited is a smoothed surface with an average surface finish coefficient of friction 0.4 to 0.7 μm , if the friction should be minimized.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 05: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



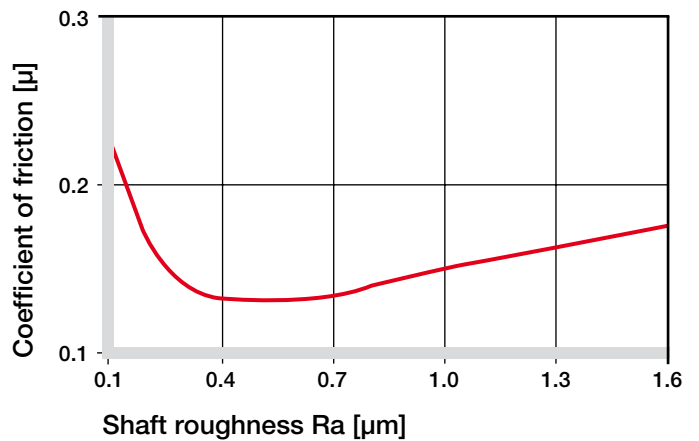
Graph 06: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

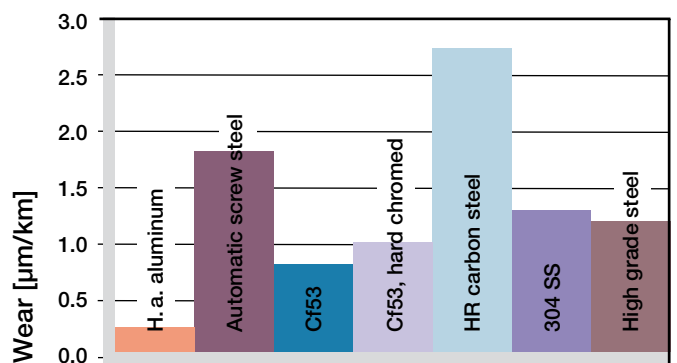
Graphs 08-11 show wear rates in the lower load range, which are very similar to those of other wear-resistant iglidur[®] materials. However, in the upper load range iglidur[®] Z outperforms all other materials in wear resistance. Provided a Cf53 hardened and ground steel shaft is used, the wear is at 45 MPa still only 15 $\mu\text{m}/\text{km}$.

For low loads iglidur[®] Z plain bearings wear less in oscillating operation than in rotation. 303 Stainless Steel and hard chromed shaft are of interest here. With higher loads the behavior reverses, but even with 100 MPa, iglidur[®] Z attains excellent coefficients of wear.

► Shaft Materials, **page 51**

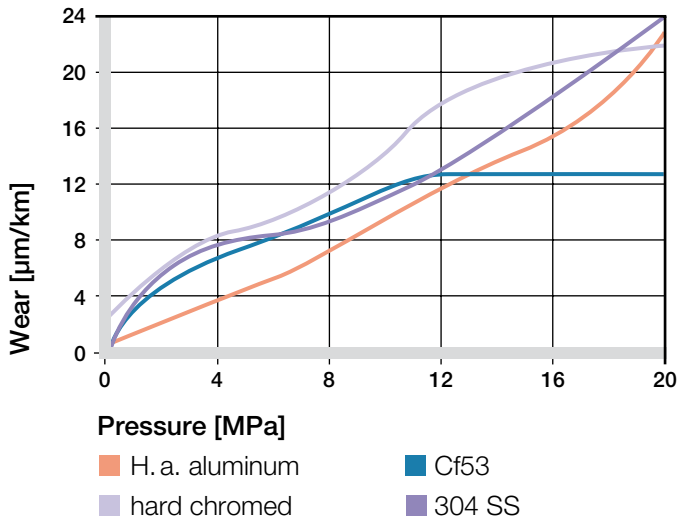


Graph 07: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

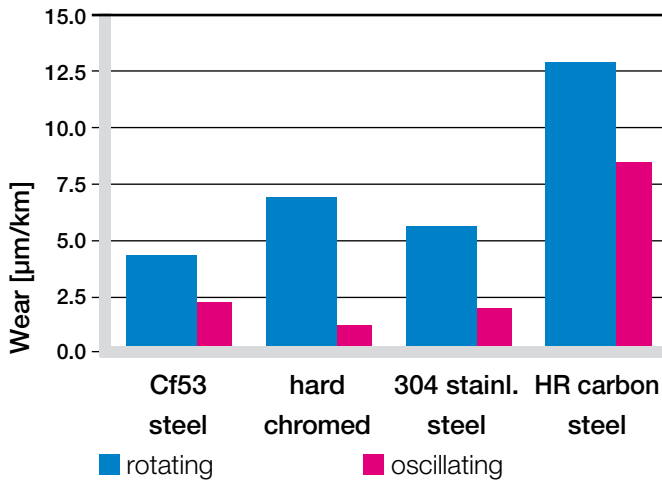


Graph 08: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$

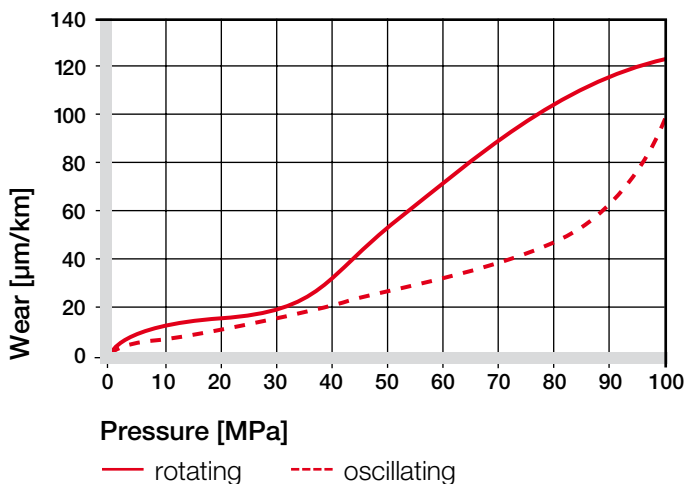
iglidur[®] Z | Technical Data



Graph 09: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 10: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa



Graph 11: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur [®] Z	Dry	Greases	Oil	Water
C.o.f. μ	0,06–0,14	0,09	0,04	0,04

Table 04: Coefficient of friction against steel (Ra = 1 μ m, 50 HRC)

Additional Properties

Chemical Resistance

iglidur[®] Z plain bearings have a very good resistance to chemicals. They have an excellent resistance against organic solvents, fuels, oils and greases. The material is only partially resistant against weak acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+
Strong acids	-
Diluted alkalines	+
Strong alkalines	-

+ resistant 0 conditionally resistant - not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur[®] Z are resistant to radiation up to an intensity of $1 \cdot 10^5$ Gy.

UV Resistance

UV radiation causes approximately 50 % decline of the tribological properties (wear resistance) of plain bearings made from iglidur[®] Z.

Vacuum

For use in a vacuum environment, moisture content is released as vapour. Therefore, only dehumidified bearings made of iglidur[®] Z are suitable for a vacuum environment.

Electrical Properties

iglidur[®] Z plain bearings are electrically insulating.

Volume resistance	> 10^{11} Ω cm
Surface resistance	> 10^{11} Ω 10

Moisture Absorption

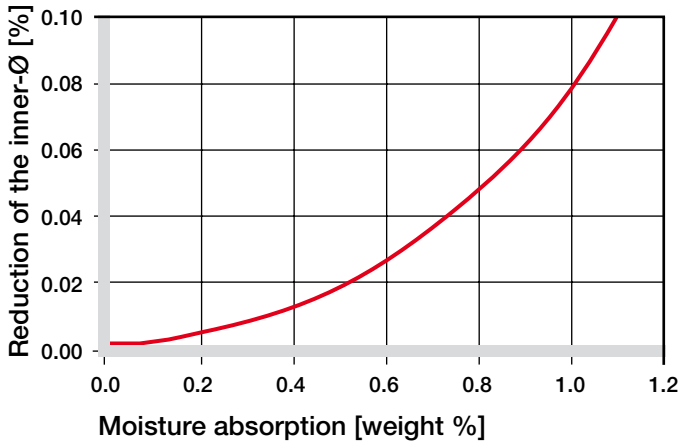
The moisture absorption of iglidur[®] Z plain bearings is approximately 0.3% in standard atmosphere. The saturation limit in water is 1.1%.

Maximum moisture absorption

At +23 °C/50 % r.h. 0.3 % weight

Max. moisture absorption 1.1 % weight

Table 06: Moisture absorption



Graph 12: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur[®] Z plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

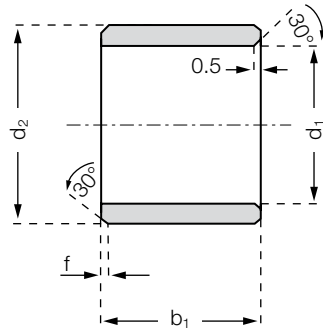
► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur [®] Z F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

iglidur® Z | Product Range

Sleeve bearing



Order key

ZSM-0405-04



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form S)
Material iglidur® Z

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
ZSM-0405-04	4.0	+0.010 +0.058	5.5	4.0
ZSM-0507-05	5.0	+0.010 +0.058	7.0	5.0
ZSM-0608-08	6.0	+0.010 +0.058	8.0	8.0
ZSM-0608-12	6.0	+0.010 +0.058	8.0	12.0
ZSM-0810-08	8.0	+0.013 +0.071	10.0	8.0
ZSM-0810-10	8.0	+0.013 +0.071	10.0	10.0
ZSM-1012-08	10.0	+0.013 +0.071	12.0	8.0
ZSM-1012-10	10.0	+0.013 +0.071	12.0	10.0
ZSM-1012-12	10.0	+0.013 +0.071	12.0	12.0
ZSM-1214-15	12.0	+0.016 +0.086	14.0	15.0
ZSM-1517-15	15.0	+0.016 +0.086	17.0	15.0
ZSM-1618-12	16.0	+0.016 +0.086	18.0	12.0
ZSM-1618-15	16.0	+0.016 +0.086	18.0	15.0
ZSM-1820-20	18.0	+0.016 +0.086	20.0	20.0
ZSM-2023-15	20.0	+0.020 +0.104	23.0	15.0

Part number	d1	d1-Tolerance*	d2	b1 h13
ZSM-2023-20	20.0	+0.020 +0.104	23.0	20.0
ZSM-2023-30	20.0	+0.020 +0.104	23.0	30.0
ZSM-2023-35	20.0	+0.020 +0.104	23.0	35.0
ZSM-2225-20	22.0	+0.020 +0.104	25.0	20.0
ZSM-2528-20	25.0	+0.020 +0.104	28.0	20.0
ZSM-2528-30	25.0	+0.020 +0.104	28.0	30.0
ZSM-2528-48	25.0	+0.020 +0.104	28.0	48.0
ZSM-3034-30	30.0	+0.020 +0.104	34.0	30.0
ZSM-3034-40	30.0	+0.020 +0.104	34.0	40.0
ZSM-3539-20	35.0	+0.025 +0.125	39.0	20.0
ZSM-4044-40	40.0	+0.025 +0.125	44.0	40.0
ZSM-4044-47	40.0	+0.020 +0.104	44.0	47.0
ZSM-5055-60	50.0	+0.025 +0.125	55.0	60.0
ZSM-6065-60	60.0	+0.030 +0.150	65.0	60.0



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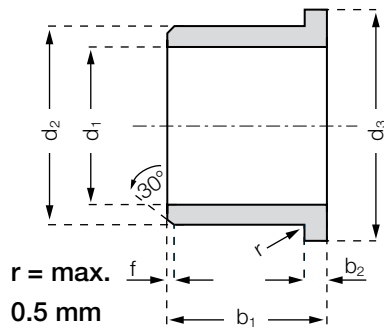


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order part number
example ZSM-0405-04

Flange bearing



Order key

ZFM-0405-04



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® Z

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
ZFM-0405-04	4.0	+0.010 +0.058	5.5	9.5	4.0	0.75
ZFM-0507-05	5.0	+0.010 +0.058	7.0	11.0	5.0	1.0
ZFM-0608-08	6.0	+0.010 +0.058	8.0	12.0	8.0	1.0
ZFM-0810-055	8.0	+0.013 +0.071	10.0	15.0	5.5	1.0
ZFM-0810-09	8.0	+0.013 +0.071	10.0	15.0	9.0	1.0
ZFM-1012-05	10.0	+0.013 +0.071	12.0	18.0	5.0	1.0
ZFM-1012-09	10.0	+0.013 +0.071	12.0	18.0	9.0	1.0
ZFM-1214-09	12.0	+0.016 +0.086	14.0	20.0	9.0	1.0
ZFM-1214-12	12.0	+0.016 +0.086	14.0	20.0	12.0	1.0
ZFM-1214-20	12.0	+0.016 +0.086	14.0	20.0	20.0	1.0
ZFM-1416-17	14.0	+0.016 +0.086	16.0	22.0	17.0	1.0
ZFM-1517-11	15.0	+0.016 +0.086	17.0	23.0	11.0	1.0
ZFM-1517-15	15.0	+0.016 +0.086	17.0	23.0	15.0	1.0
ZFM-1820-04	18.0	+0.016 +0.086	20.0	26.0	4.0	1.0
ZFM-1820-17	18.0	+0.016 +0.086	20.0	26.0	17.0	1.0
ZFM-2022-21	20.0	+0.020 +0.104	22.0	30.0	21.0	1.0
ZFM-2023-11	20.0	+0.020 +0.104	23.0	30.0	11.5	1.5
ZFM-2023-21	20.0	+0.020 +0.104	23.0	30.0	21.5	1.5
ZFM-2023-31	20.0	+0.020 +0.104	23.0	30.0	31.5	1.5
ZFM-2528-16	25.0	+0.020 +0.104	28.0	35.0	16.5	1.5
ZFM-2528-21	25.0	+0.020 +0.104	28.0	35.0	21.5	1.5
ZFM-2528-31	25.0	+0.020 +0.104	28.0	35.0	31.5	1.5
ZFM-3034-20	30.0	+0.020 +0.104	34.0	42.0	20.0	2.0
ZFM-3034-26	30.0	+0.020 +0.104	34.0	42.0	26.0	2.0
ZFM-3034-37	30.0	+0.020 +0.104	34.0	42.0	37.0	2.0

* after pressfit. Testing methods ► page 55



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order part number
example ZFM-0405-04



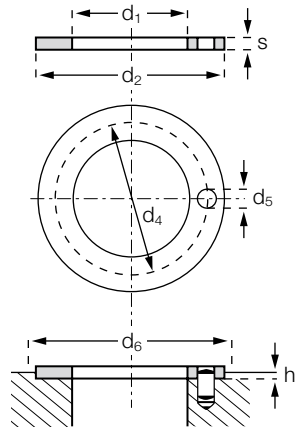
Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
ZFM-3539-26	35.0	+0.025 +0.125	39.0	47.0	26.0	2.0
ZFM-4044-20	40.0	+0.025 +0.125	44.0	52.0	20.0	2.0
ZFM-4044-40	40.0	+0.025 +0.125	44.0	52.0	40.0	2.0
ZFM-5055-50	50.0	+0.025 +0.125	55.0	63.0	50.0	2.0
ZFM-6065-50	60.0	+0.030 +0.150	65.0	73.0	50.0	2.5
ZFM-7580-50	75.0	+0.030 +0.150	80.0	88.0	50.0	2.5

* after pressfit. Testing methods ► page 55

Thrust washer



Order key

ZTM-1527-015



- Thickness s
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form T)
- Material iglidur® Z

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

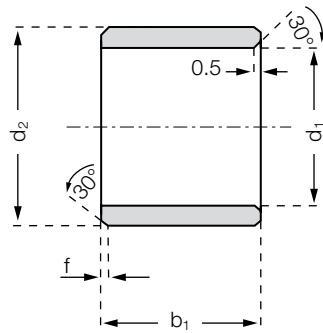
Part number	d1 ±0.25	d2 -0.25	s -0.05	d4 -0.12 +0.12	d5 +0.375 +0.125	h +0.2 -0.2	d6 +0.12
ZTM-1527-015	15.0	27.0	1.5	-	-	1.0	27.0
ZTM-1623-015	16.0	23.0	1.5	-	-	1.0	23.0
ZTM-2644-015	26.0	44.0	1.5	35.0	3.0	1.0	44.0
ZTM-3254-015	32.0	54.0	1.5	43.0	4.0	1.0	54.0
ZTM-4874-020	48.0	74.0	2.0	61.0	4.0	1.5	74.0
ZTM-6290-020	62.0	90.0	2.0	-	-	1.5	90.0

 **delivery** available
time from stock

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 **order** part number
example ZTM-1527-015

Sleeve bearings



Order key

ZSI-0203-03



Length b1
Outer diameter d2
Inner diameter d1
Inch
Type (Form S)
Material iglidur® Z

Chamfer in relation to the d1

d1 [Inch]:	Ø 0.040–0.236	Ø 0.236–0.472	Ø 0.472–1.18	Ø > 1.18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
ZSI-0203-03	1/8	3/16	3/16	.1269	.1251	.1878	.1873	.1243	.1236
ZSI-0506-06	5/16	3/8	3/8	.3148	.3125	.3753	.3747	.3115	.3106
ZSI-0607-04	3/8	15/32	1/4	.3768	.3745	.4691	.4684	.3740	.3731
ZSI-0607-06	3/8	15/32	3/8	.3768	.3745	.4691	.4684	.3740	.3731
ZSI-0607-08	3/8	15/32	1/2	.3768	.3745	.4691	.4684	.3740	.3731
ZSI-0708-08	7/16	17/32	1/2	.4399	.4371	.5316	.5309	.4365	.4355
ZSI-0809-12	1/2	19/32	3/4	.5024	.4996	.5941	.5934	.4990	.4980
ZSI-0810-12	1/2	5/8	3/4	.5034	.5006	.6260	.6250	.5000	.4990
ZSI-1011-12	5/8	23/32	3/4	.6274	.6246	.7192	.7184	.6240	.6230
ZSI-1214-12	3/4	7/8	3/4	.7532	.7499	.8755	.8747	.7491	.7479
ZSI-1214-16	3/4	7/8	1	.7532	.7499	.8755	.8747	.7491	.7479
ZSI-1416-16	7/8	1	1	.8782	.8749	1.0005	.9997	.8741	.8729
ZSI-1618-16	1	1 1/8	1	1.0032	.9999	1.1255	1.1247	.9991	.9979
ZSI-1618-24	1	1 1/8	1 1/2	1.0032	.9999	1.1255	1.1247	.9991	.9979
ZSI-1820-24	1 1/8	1 9/32	1 1/2	1.1279	1.1246	1.2818	1.2808	1.1238	1.1226
ZSI-2022-20	1 1/4	1 13/32	1 1/4	1.2537	1.2498	1.4068	1.4058	1.2488	1.2472
ZSI-2426-24	1 1/2	1 21/32	1 1/2	1.5037	1.4998	1.6568	1.6558	1.4988	1.4972
ZSI-2831-32	1 3/4	1 15/16	2	1.7536	1.7497	1.9381	1.9371	1.7487	1.7471

* after pressfit. Testing methods ► page 55



delivery available
time from stock

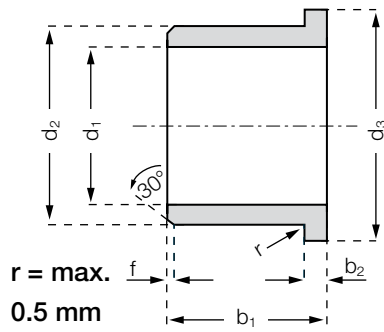


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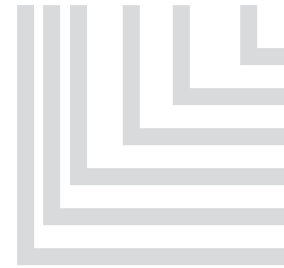
order part number
example ZSI-0203-03

Flange bearing



Order key

ZSI-3235-16



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form F)
- Material iglidur® Z

Chamfer in relation to the d1

d1 [Inch]:	Ø 0.040–0.236	Ø 0.236–0.472	Ø 0.472–1.18	Ø > 1.18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
ZSI-3235-16	2	23/16	1	2.0040	1.9993	2.1883	2.1871	1.9981	1.9969
ZSI-3235-32	2	23/16	2	2.0040	1.9993	2.1883	2.1871	1.9981	1.9969
ZSI-3639-32	2 1/4	27/16	2	2.2556	2.2519	2.4377	2.4365	2.2507	2.2489

* after pressfit. Testing methods ► page 55



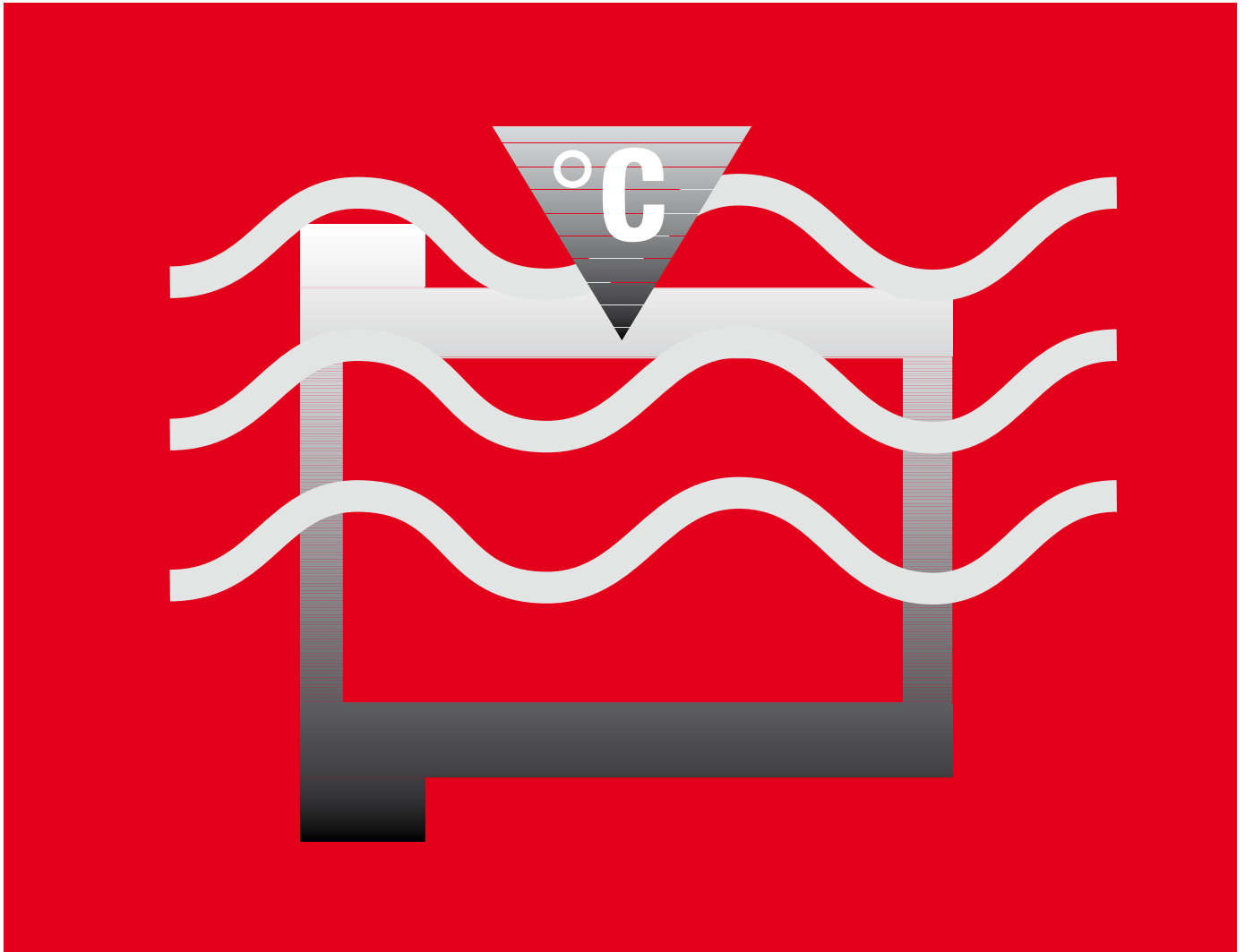
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order part number
example ZSI-3235-16



iglidur® UW500 – for use in hot liquids

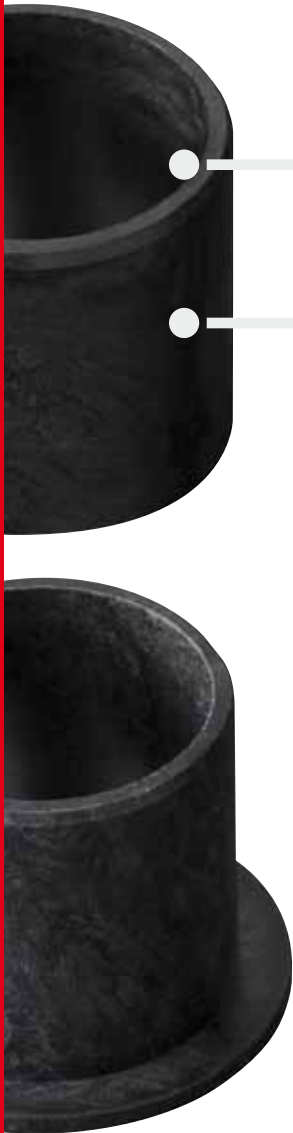


For underwater use at high temperatures

For fast and constant movements

iglidur® UW500

For use in hot liquids. iglidur® UW500 was developed for underwater applications at temperatures up to +250°C. In addition, the bearings will run in chemicals which would act as a lubricant.



For underwater use
at high temperatures

For fast and
constant movements



When to use it?

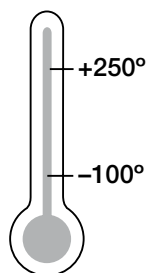
- When bearings need to be used in liquids
- For high speeds
- For high temperatures
- When a high chemical resistance is required



When not to use it?

- When a cost-effective underwater bearing is required
▶ **iglidur® UW, page 475**
- When a cost-efficient underwater bearing is sought for rare operations
▶ **iglidur® H, page 325**
- When a cost-effective universal bearing is required
▶ **iglidur® G, page 61**

Temperature



Product range

on request



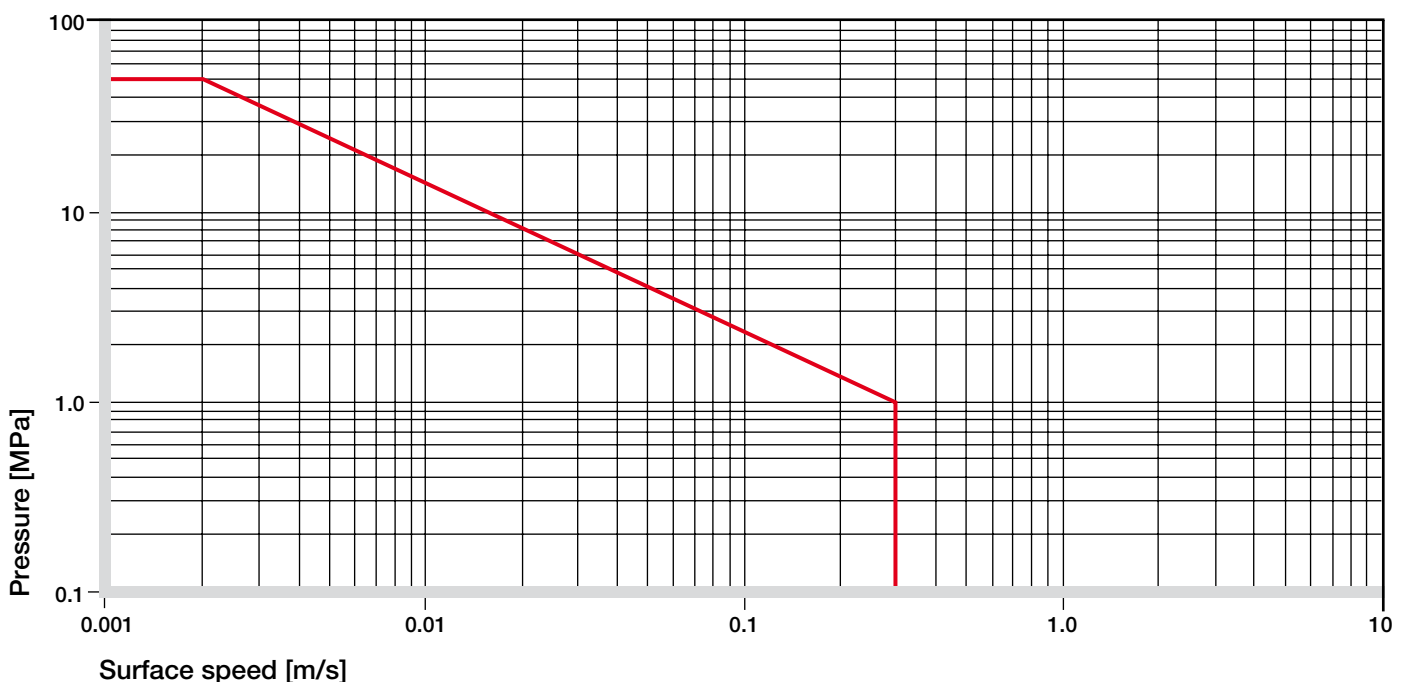
Material data			
General properties	Unit	iglidur® UW 500	Testing method
Density	g/cm ³	1.49	
Colour		black	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.1	DIN 53495
Max. water absorption ³⁾	% weight	0.5	
Coefficient of sliding friction, dynamic against steel	μ	0.20–0.36	
pv value, max. (dry)	MPa · m/s	0.35	
Mechanical properties			
Modulus of elasticity	MPa	16,000	DIN 53457
Tensile strength at +20 °C	MPa	260	DIN 53452
Compressive strength	MPa	140	
Max. recommended surface pressure (+20 °C)	MPa	140	
Shore D hardness		86	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+250	
Max. short term application temperature	°C	+300	
Min. application temperature ¹⁾	°C	+315	
untere Anwendungstemperatur	°C	-100	
Thermal conductivity	W/m · K	0.60	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	4	DIN 53752
Electrical properties ²⁾			
Specific volume resistance	Ωcm	< 10 ⁹	DIN IEC 93
Surface resistance	Ω	< 10 ⁹	DIN 53482

¹⁾ Without additional load; no sliding movement; relaxation possible

²⁾ The good conductivity of this plastic material under certain circumstances can favour the formation of corrosion on the metallic contact component

³⁾ With respect to the use of the material in direct contact with water, it has to be pointed out that all results have been attained under laboratory conditions DW (fully demineralised water). We therefore recommend custom-designed tests under real application conditions.

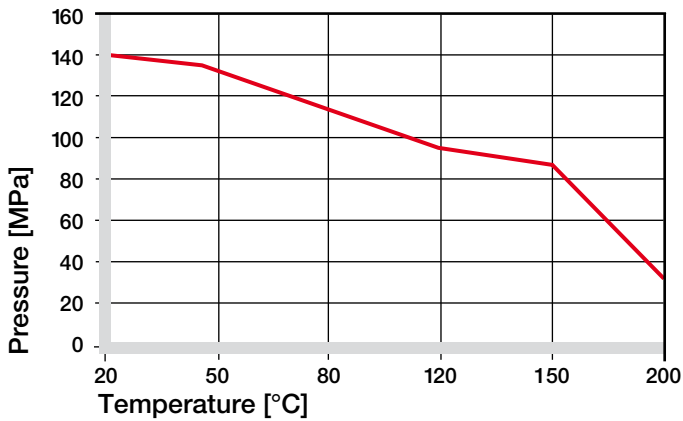
Table 01: Material data



Graph 01: Permissible pv values for iglidur® UW500 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Mechanical Properties

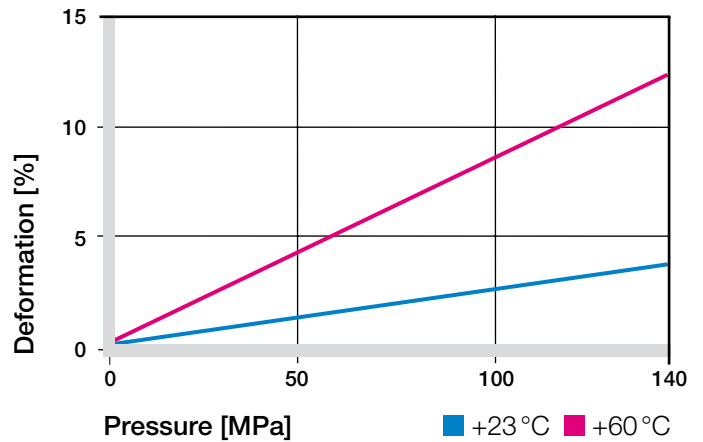
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® UW500 plain bearings decreases. The Graph 02 shows this inverse relationship. Of +200 °C the permissible surface pressure is almost 35 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (130 MPa at +20 °C)

The plain bearings of iglidur® UW500 were developed for underwater applications with high temperatures. Examples for this are water pumps in automotive engineering, but also the field of medical engineering and related fields. iglidur® UW500 can be used in applications with continuous temperatures of +150 °C. If the bearings are additionally secured, these temperatures can even exceed +200 °C. Unless the underwater operation is explicitly stated, the information in this chapter describes iglidur® UW500 in when running dry. Graph 03 illustrates how iglidur® UW500 plain bearings elastically deform under load. Graph 01 on the preceding page shows the maximum pv values at room temperature. The high pv values are attained by the high temperature resistance.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® UW500 bearings can be used both dry running and in media like water in a wide range of conditions. Permitted surface speeds iglidur® UW500 is excellent in both dry and wet operations. Through a hydrodynamic lubrication, attained under water with high speeds, surface speeds far above 2 m/s can be achieved. In dry operation the iglidur® UW500 bearings can be used anyhow up to 1.5 m/s on the short term.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	0.8	0.6	2
Short term	1.5	1.1	3

Table 02: Maximum running speed

Temperatures

iglidur® UW500 can be used in applications with permanent temperatures of +150 °C. If the bearings are fixed specially, the temperatures can even be higher than +200 °C. iglidur® UW500 are among the most temperature-resistant iglidur materials, tolerating temperatures of up to +250 °C permanently. Short-term it can even be heated up to +315 °C! Nonetheless, the pressfit can be loosened over a temperature of +150 °C due to relaxation. We therefore recommend to secure the bearing axially if these temperatures are reached in the application.

► Application Temperatures, page 46

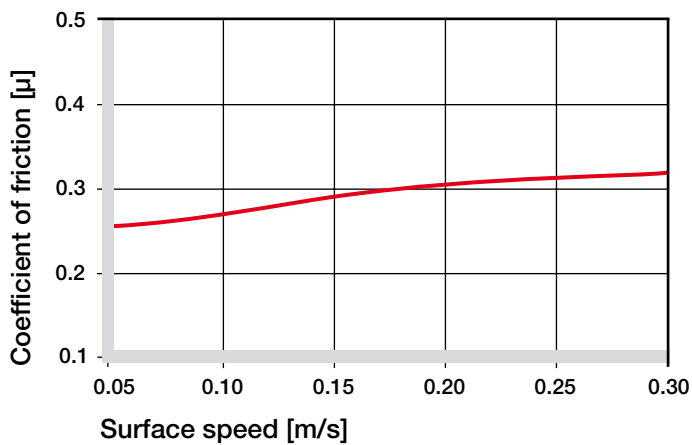
iglidur® UW500	Application temperature
Minimum	-100 °C
Max. long term	+250 °C
Max. short term	+300 °C
Add. securing is required	+150 °C

Table 03: Temperature limits

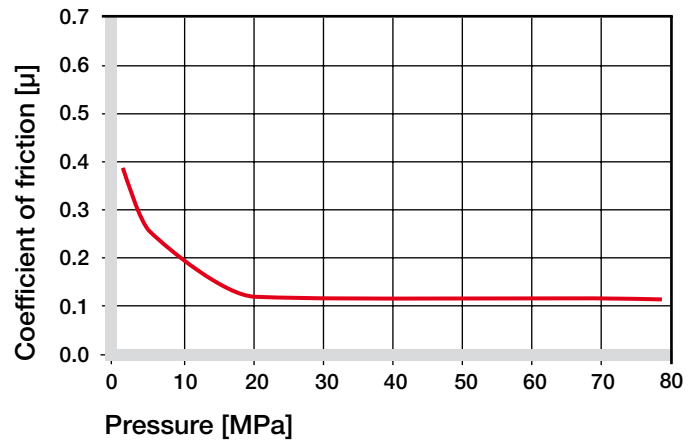
Friction and Wear

With increasing load the friction of the bearing system with iglidur® UW500 bearings declines. Instead of that the coefficient of friction rises with increasing speed. This illustrates the excellent suitability of iglidur® UW500 bearings with high loads. Friction and wear also depend to a high degree on the reverse partner. Extremely smooth and extremely coarse shafts enhance the coefficient of friction of the bearing. Ideal are smoothed surfaces with an average surface finish of Ra of 0.1 to 0.4.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

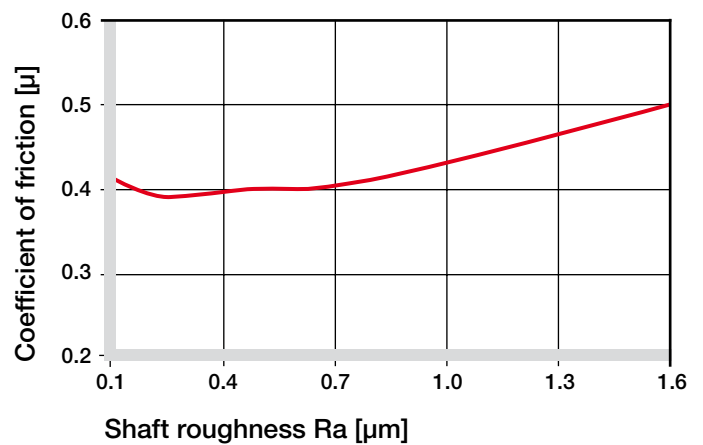


Graph 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

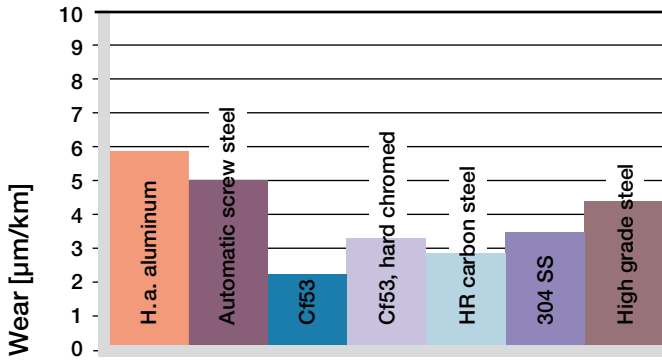
Shaft Materials

The Graphs 06–09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® UW500. With low loads in the rotating application, the coefficients of wear are ideal with Cf53 shafts.

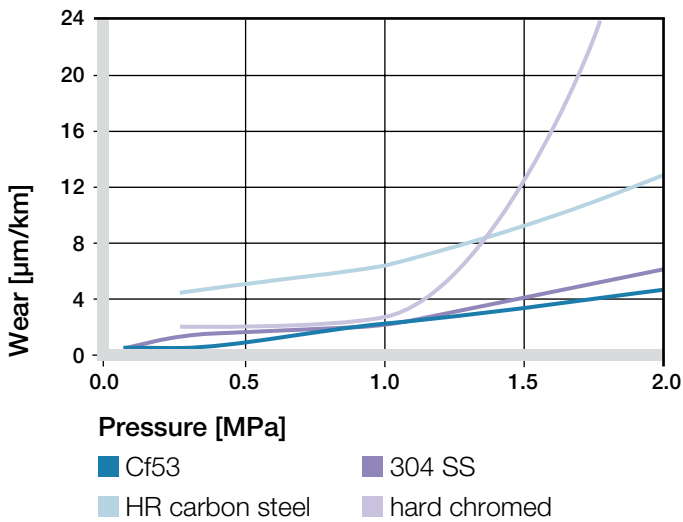
- ▶ Shaft Materials, **page 51**



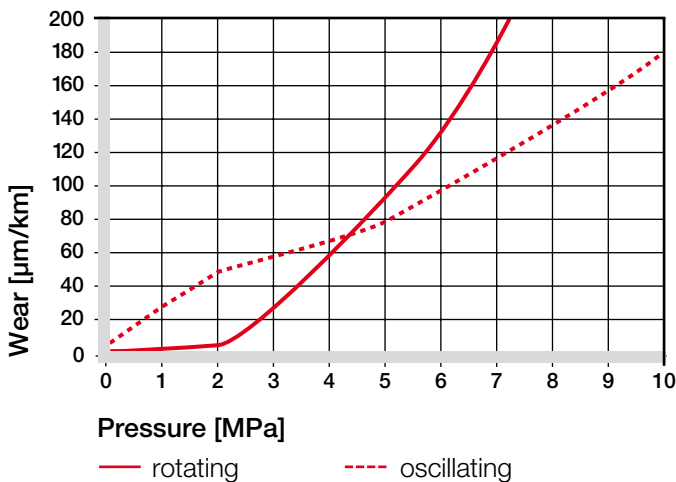
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® UW500	Dry	Greases	Oil	Water
C.o.f. μ	0,2–0,36	0,09	0,04	0,04

Table 04: Coefficient of friction against steel ($R_a = 1 \text{ }\mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® UW500 bearings have almost universal chemical resistance. They are affected only by concentrated nitric acid and sulfuric acid.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+
Strong acids	+
Diluted alkalines	+
Strong alkalines	+

+ resistant **0** conditionally resistant **-** not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® UW500 are radiation resistant up to a radiation intensity of $1 \cdot 10^5 \text{ Gy}$. With regard to radiation, iglidur® UW500 is one of the most resistant materials of the iglidur® range.

iglidur® UW500 is very resistant to hard gamma radiation and endures a radiation dose of 1,000 Mrad without noticeable losses of its characteristics. The material also endures an alpha or beta radiation 10,000 Mrad with practically no effect.

UV Resistance

Under UV radiation and other atmospheric influences, the excellent material characteristics of iglidur® UW500 are not affected.

Vacuum

Also in vacuum atmosphere, iglidur® UW500 plain bearings can be used almost without restrictions. Outgassing only takes place to a minor degree.

Electrical Properties

iglidur® UW500 plain bearings are electrically conductive.

Volume resistance	< 10 ⁹ Ωcm
Surface resistance	< 10 ⁹ Ω 10

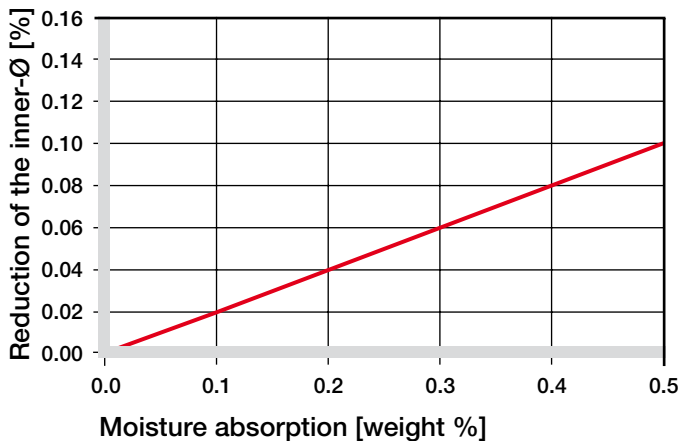
Moisture Absorption

The moisture absorption of iglidur® UW500 plain bearings is extremely low. In standard atmosphere it is below 0.1 % by weight. Therefore, even with regard to applications under water, iglidur® UW500 plain bearings can be used without adjusting the fitting conditions. The maximum moisture absorption is 0.5 % by weight.

Maximum moisture absorption

At +23 °C/50 % r.h.	0.1 % weight
Max. moisture absorption	0.5 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® UW500 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® UW500 F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® UW500 plain bearings are manufactured to special order.



iglidur® H

the standard for wet and hot conditions

Standard range from stock ► from page 325



iglidur® H1

long life operation

Standard range from stock ► from page 337



iglidur® H370

wear resistant under water

Standard range from stock ► from page 347





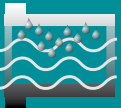













iglidur® H2

low-cost
high temperature material

On request ► from page 359

iglidur® Specialists | Selection According to Main Criteria

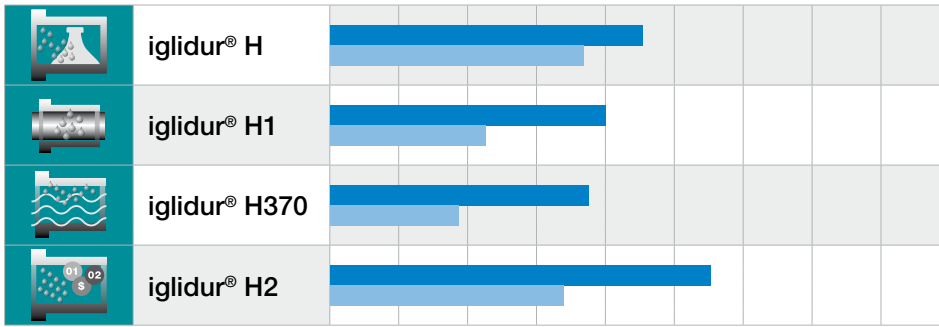
iglidur®- Specialists – High Resistance to Liquid Media

				
	iglidur® H	iglidur® H1	iglidur® H370	iglidur® H2
 Long life dry running		●		
 For high loads		●		
 For high temperatures	●	●	●	●
 Low friction/high speed		●	●	
 Dirt resistant				
 Chemicals resistant	●	●	●	●
 Low water absorption	●	●	●	●
 Food-suitable				
 Vibration-dampening				
 Edge pressure		●		
 For under water use	●	●	●	●
 Cost-effective				●
from page	325	337	347	359

iglidur® Specialists | Selection According to Main Criteria

Load [MPa]

0 20 40 60 80 100 120 140 160

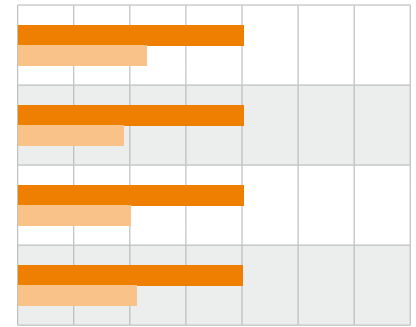


Maximum permissible radial load of iglidur® bearings at

- +20°C
- +120°C

Temperature [°C]

0 50 100 150 200 250 300

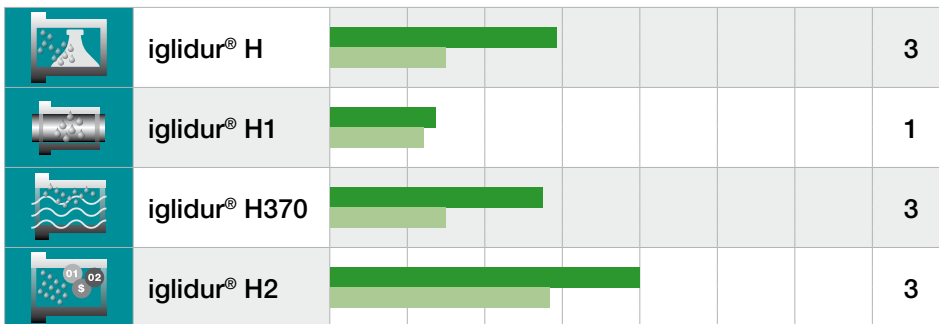


Important temperature limits of iglidur® bearings

- Maximum permissible application temperature, continuous
- Temperature where bearings need to be secured against radial or axial movement in the housing

Coefficient of Friction [μ]

0 0.1 0.2 0.3 0.4 0.5 0.6 Shaft

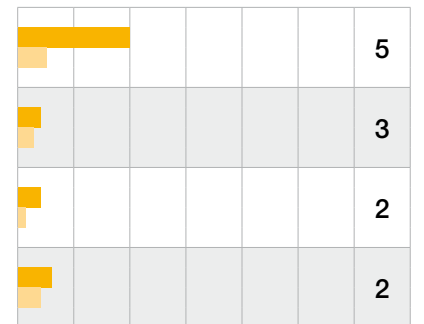


Coefficients of friction of iglidur® bearings sliding against steel, $p = 1.2 \text{ MPa}$, $v = 0.3 \text{ m/s}$

- Average coefficient of all the seven sliding combinations tested
- Coefficient of friction of best combination

Wear [μm/km]

0 5 10 15 20 25 Shaft



Wear of iglidur® bearings sliding against steel, $p = 1 \text{ MPa}$

- Average wear of all the seven sliding combination tested
- Wear of best combination

Shaft material:

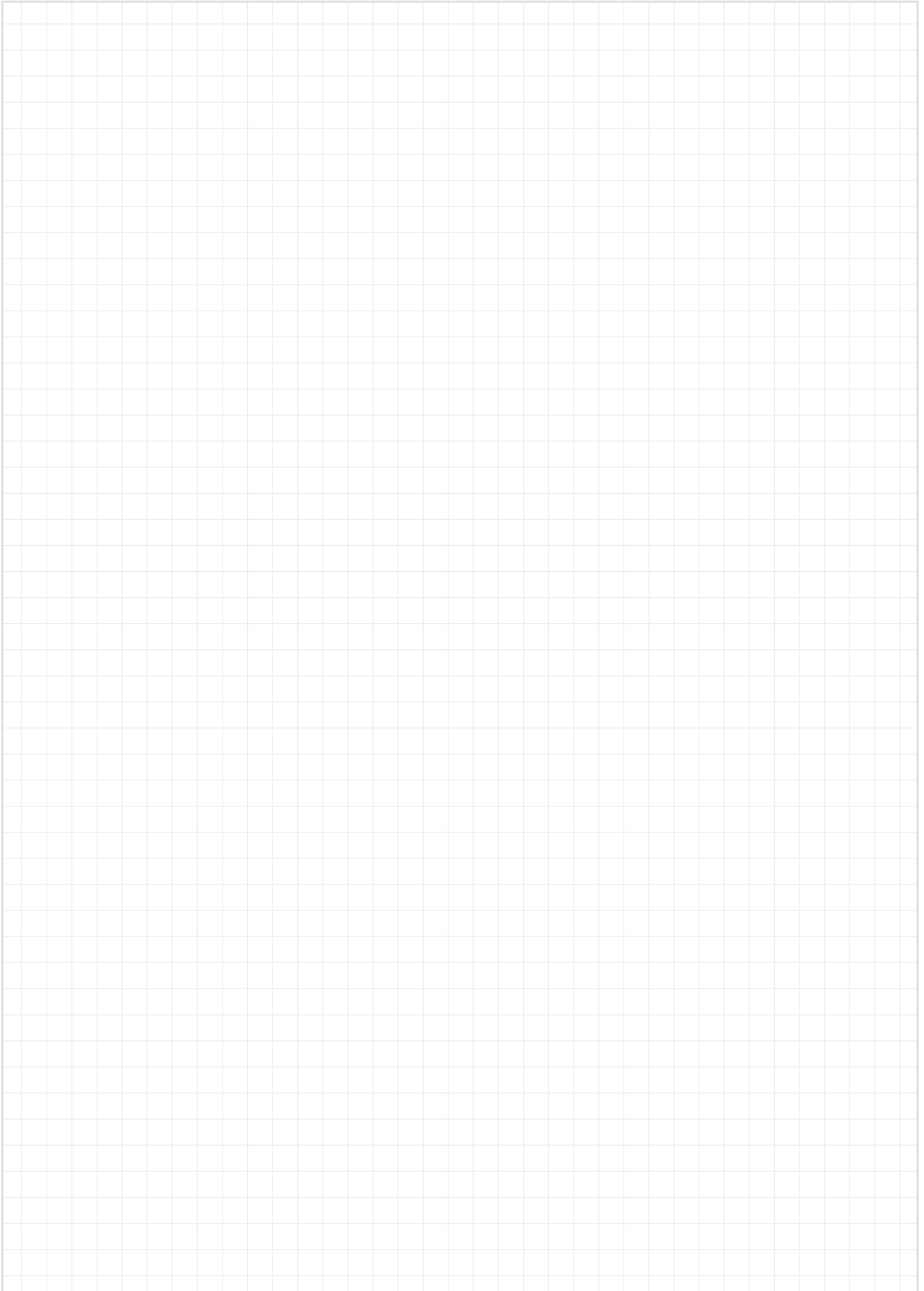
- 1 = Cf53
- 2 = hard chromed
- 3 = Aluminum, hc
- 4 = Automatic screw steel
- 5 = HR carbon steel
- 6 = 304 SS
- 7 = High grade steel

Material data					
General properties	Unit	iglidur® H	iglidur® H1	iglidur® H370	iglidur® H2
Density	g/cm ³	1.71	1.60	1.60	1.69
Colour		grey	cream	grey	brown
Max. moisture absorption at +23 °C/50% r.h.	% weight	0.1	0.1	< 0.1	< 0.1
Max. moisture absorption	% weight	0.3	0.3	< 0.1	0.2
Coefficient of sliding friction, dynamic against steel	μ	0.07–0.2	0.06–0.20	0.07–0.17	0.07–0.3
pv value, max. (dry)	MPa · m/s	1.37	0.8	0.74	0.58
Mechanical properties					
Modulus of elasticity	MPa	12,500	2,800	11,100	10,300
Tensile strength at +20 °C	MPa	175	55	135	210
Compressive strength	MPa	81	78	79	109
Max. recommended surface pressure (+20 °C)	MPa	90	80	75	110
Shore D hardness		87	77	82	88
Physical and thermal properties					
Max. long term application temperature	°C	+200	+200	+200	+200
Max. short term application temperature	°C	+240	+240	+240	+240
Min. application temperature	°C	-40	-40	-40	-40
Thermal conductivity	W/m · K	0.6	0.24	0.5	0.24
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	4	6	5	4
Electrical properties					
Specific volume resistance	Ωcm	< 10 ⁵	> 10 ¹²	< 10 ⁵	> 10 ¹⁵
Surface resistance	Ω	< 10 ²	> 10 ¹¹	< 10 ⁵	> 10 ¹⁴

Material resistance (at +20 °C)				
Chemical resistance	iglidur® H	iglidur® H1	iglidur® H370	iglidur® H2
Alcohol	+	+	+	+
Hydrocarbons	+	+	+	+
Greases, oils without additives	+	+	+	+
Fuels	+	+	+	+
Diluted acids	+ to 0	+ to 0	+ to 0	+ to 0
Strong acids	+ to -	+ to -	+ to -	+ to -
Diluted alkalines	+	+	+	+
Strong alkalines	+	+ bis -	+	+
Radiation resistance [Gy] to	2 · 10 ²	2 · 10 ²	2 · 10 ²	2 · 10 ²

+ resistant 0 conditionally resistant - not resistant

My Sketches





iglidur® H – the standard for wet and hot conditions



Standard range from stock

Underwater applications

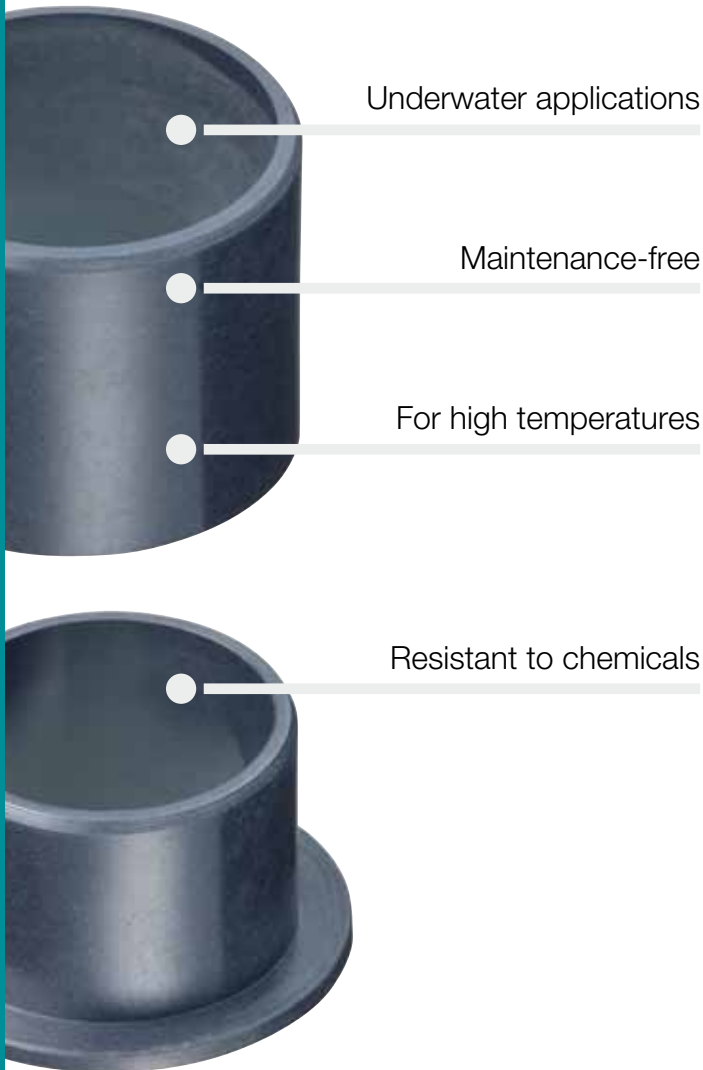
Maintenance-free

For high temperatures

Resistant to chemicals

iglidur® H

The standard for wet and hot conditions. Resistant to chemicals and suitable for temperatures up to +200 °C. Very low coefficients of friction when used with hardened shafts.



When to use it?

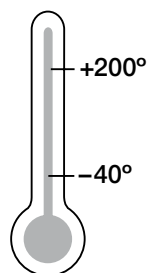
- Suitable for underwater applications
- When high temperature resistance is necessary
- For high mechanical loading
- For applications in contact with chemicals



When not to use it?

- When extremely high wear resistance under water is required
▶ **iglidur® H370, page 347**
- When universal resistance to chemicals is needed
▶ **iglidur® X, page 153**
- For the maximum pressure at higher temperatures
▶ **iglidur® X, page 153**
▶ **iglidur® Z, page 299**

Temperature



Product Range

2 types
Ø 3–70 mm
more dimensions
on request



iglidur® H | Application Examples



Typical sectors of industry and application areas

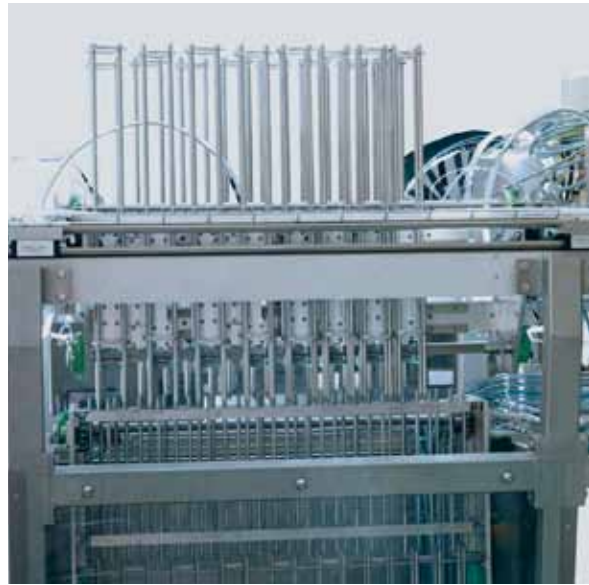
- Offshore ● Marine engineering
- Beverage technology ● Medical
- Mechatronics etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

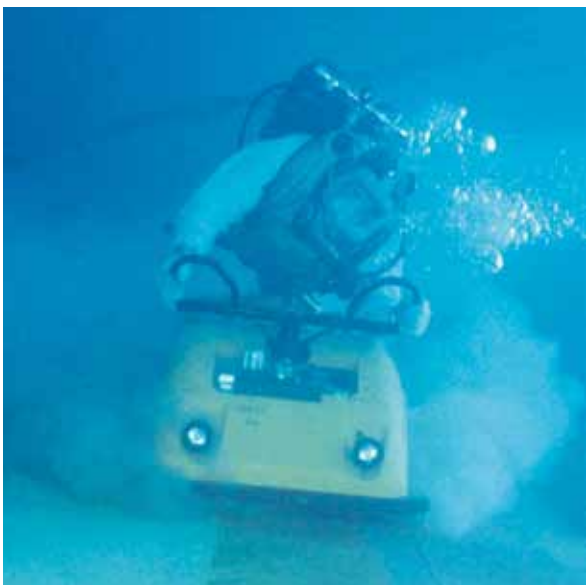
► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/cup-filling-line



► www.igus.co.uk/pneumatic-lifting



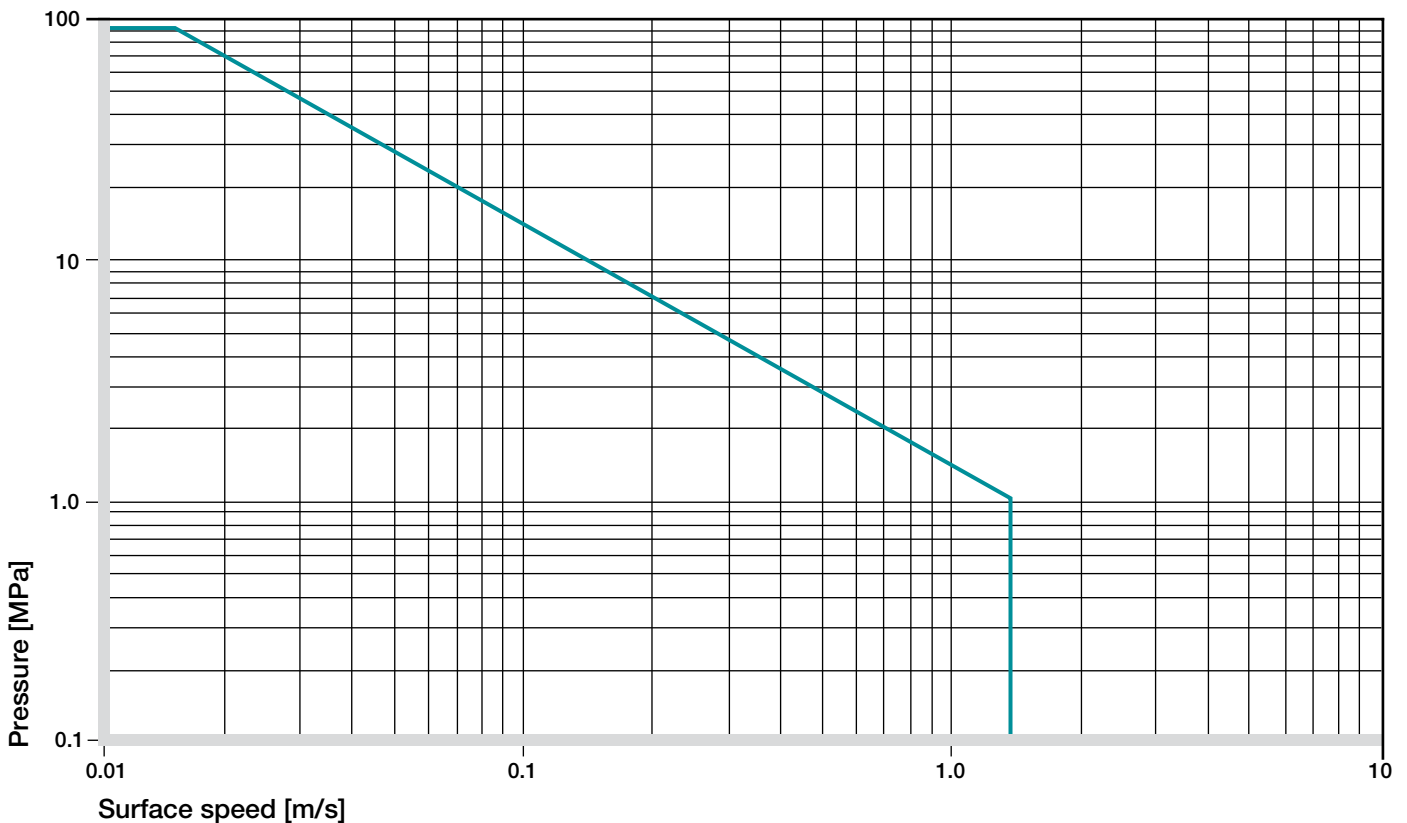
► www.igus.co.uk/hull-cleaning

Material data

General properties	Unit	iglidur® H	Testing method
Density	g/cm ³	1.71	
Colour		grey	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.3	
Coefficient of sliding friction, dynamic against steel	μ	0.07–0.2	
pv value, max. (dry)	MPa · m/s	1.37	
Mechanical properties			
Modulus of elasticity	MPa	12,500	DIN 53457
Tensile strength at +20°C	MPa	175	DIN 53452
Compressive strength	MPa	81	
Max. recommended surface pressure (+20°C)	MPa	90	
Shore D hardness		87	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+200	
Max. short term application temperature	°C	+240	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.6	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	4	DIN 53752
Electrical properties ¹⁾			
Specific volume resistance	Ωcm	< 10 ⁵	DIN IEC 93
Surface resistance	Ω	< 10 ²	DIN 53482

¹⁾ The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact component.

Table 01: Material data

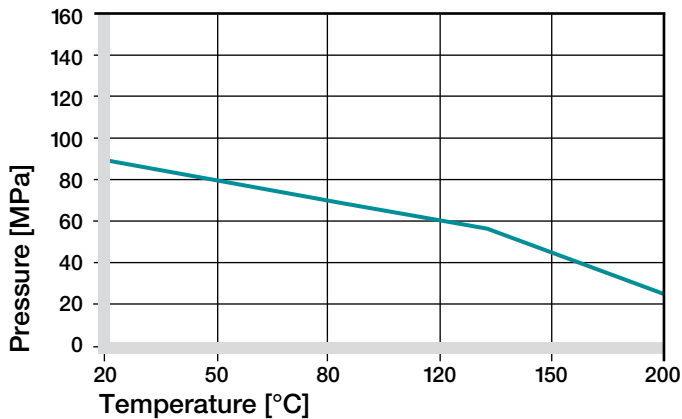


Graph 01: Permissible pv values for iglidur® H with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

iglidur[®] H | Technical Data

Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur[®] H plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +200 °C the permissible surface pressure is almost 25 MPa.

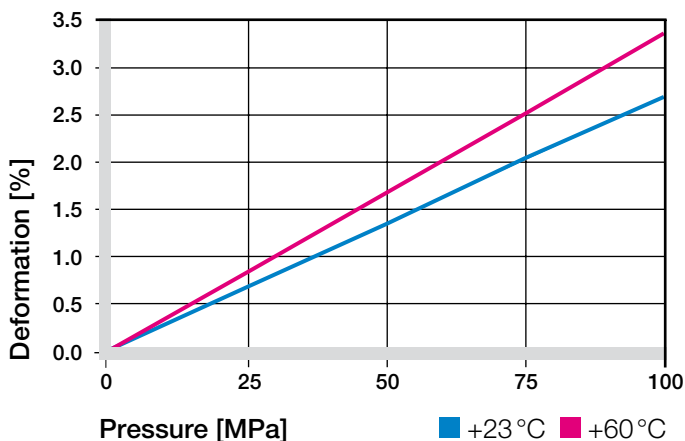


Graph 02: Recommended maximum surface pressure as a function of temperature (90 MPa at +20 °C)

iglidur[®] H is a fibre-reinforced thermoplastic material especially developed for applications in high atmospheric humidity or under water. Bearings made of iglidur[®] H can be used completely free of lubrication; in wet applications, the surrounding media acts as additional lubricant.

Graph 03 shows the elastic deformation of iglidur[®] H during radial loading. At the recommended maximum surface pressure of 90 MPa the deformation is less than 2.5 %.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

The maximum permitted surface speed is dependent on whether the temperature in the bearing location rises or not. Running dry, iglidur[®] H can be used at a maximum surface speed of 1 m/s (rotating) and 4 m/s (linear) respectively. Linear movements enable higher surface speeds, as a large area of the shaft contributes to the cooling.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	3
Short term	1.5	1.1	4

Table 02: Maximum running speed

Temperatures

iglidur[®] H is an extremely temperature resistant material. With a maximum permissible short term temperature of +240 °C iglidur[®] H plain bearings may be used in heat treated applications at low loads.

With increasing temperatures, the compressive strength of iglidur[®] H plain bearings decreases. Graph 02 shows this relationship.

The ambient temperatures prevalent in the bearing system also have an effect on the bearing wear.

► Application Temperatures, page 46

iglidur [®] H	Application temperature
Minimum	-40 °C
Max. long term	+200 °C
Max. short term	+240 °C
Add. securing is required from	+120 °C

Table 03: Temperature limits

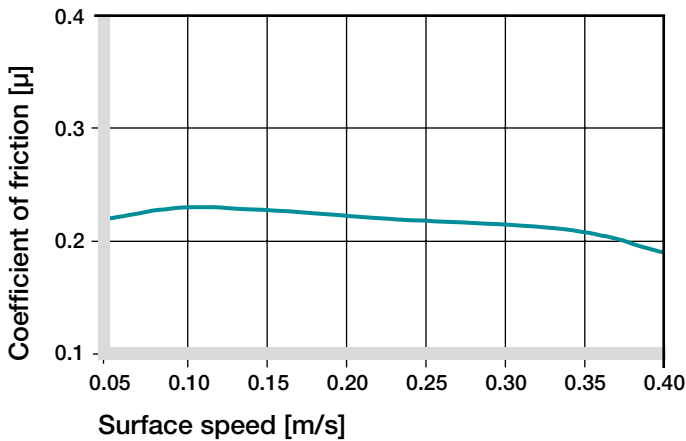
Friction and Wear

Both the wear rate and the coefficient of friction values change depending on the pressure. Interestingly, the friction coefficient μ lowers slightly with the increase of surface speed at constant load (see Graphs 04 and 05).

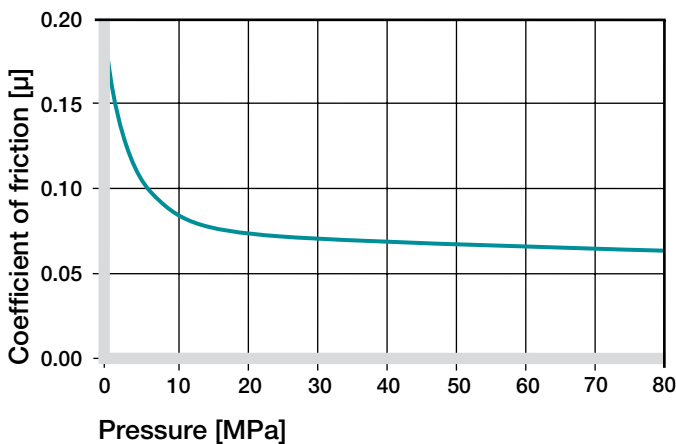
The choice of the shaft material to run against iglidur® H bearings is critical, as this has a large impact on the wear and friction values. More than $Ra = 0.1 \mu\text{m}$ shaft surface finish raises the coefficient of friction. For applications with high loads, we recommend hardened and ground surfaces with an average surface finish of $Ra = 0.3$ to $0.4 \mu\text{m}$.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



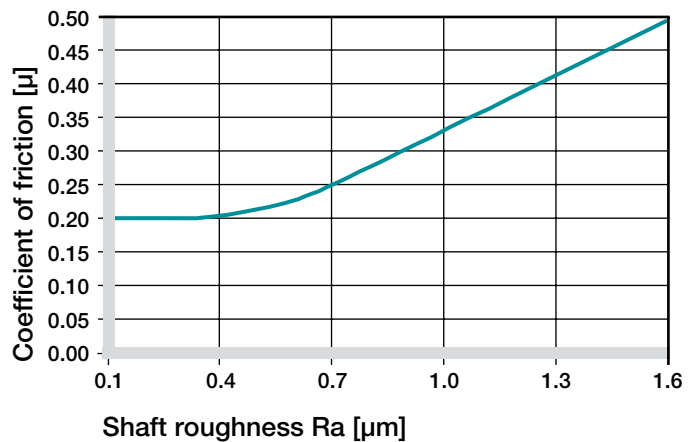
Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

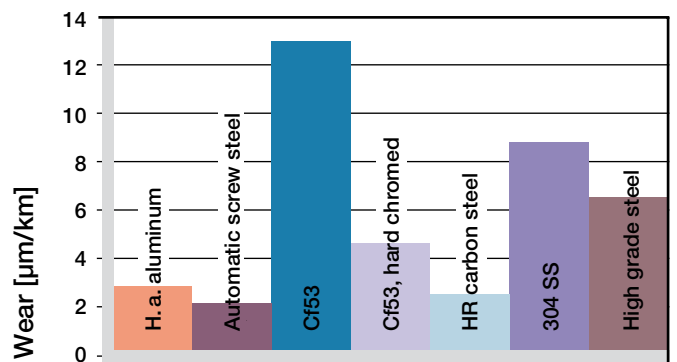
Graphs 07 to 09 show the test results of iglidur® H bearings running against various shaft materials.

The iglidur® H bearings give different results when used in rotating and pivoting applications. The CF53 and St37 shafts give the best wear values in rotary applications, whereas the V2A shafts (which are not so good for rotation) give the best results in oscillating applications. Hard chromed shafts only give an advantage at low pressures when used with iglidur® H bearings.

► Shaft Materials, **page 51**

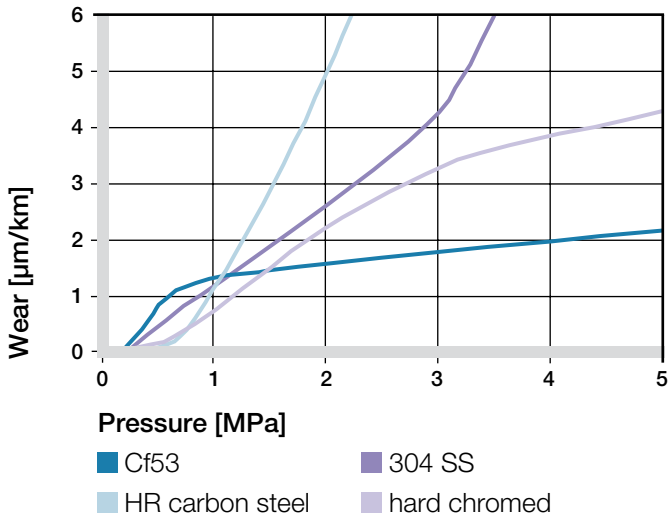


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

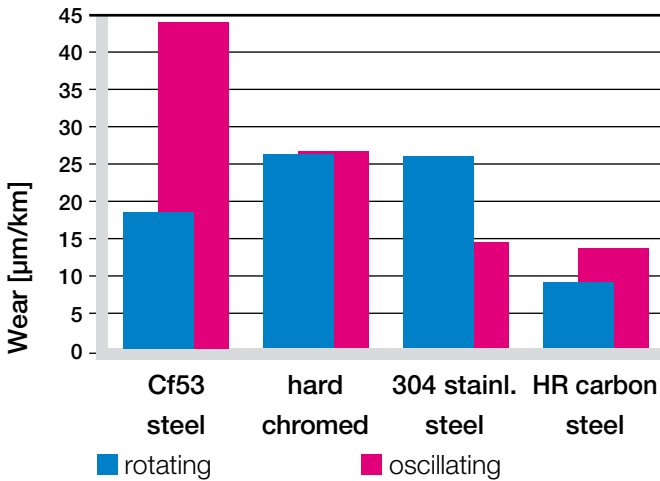


Graph 07: Wear, rotating with different shaft materials, pressure $p = 1 \text{ MPa}$, $v = 0.3 \text{ m/s}$

iglidur[®] H | Technical Data



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur [®] H	Dry	Greases	Oil	Water
C.o.f. μ	0.07–0.2	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur[®] H plain bearings have a good resistance to chemicals. Thus, even aggressive chemicals can act as lubricants.

Plain bearings made of iglidur[®] H are not resistant to hot, oxidizing acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+ to 0
Strong acids	+ to –
Diluted alkalines	+
Strong alkalines	+

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

iglidur[®] H withstands both neutron as well as gamma particle radiation without noticeable loss to the excellent mechanical properties. Plain bearings made from iglidur[®] H are resistant to radiation up to an intensity of $2 \cdot 10^2$ Gy.

UV Resistance

iglidur[®] H plain bearings are only conditionally resistant against UV radiation. Under the effects of weathering, the surface of iglidur[®] H becomes rougher, and the compressive strength of the material decreases.

Vacuum

For use in a vacuum environment, it must be taken into account that a small amount of moisture is released as vapour.

Electrical Properties

iglidur[®] H bearings are electrically conductive.

Volume resistance	< $10^5 \Omega\text{cm}$
Surface resistance	< $10^2 \Omega$

Moisture Absorption

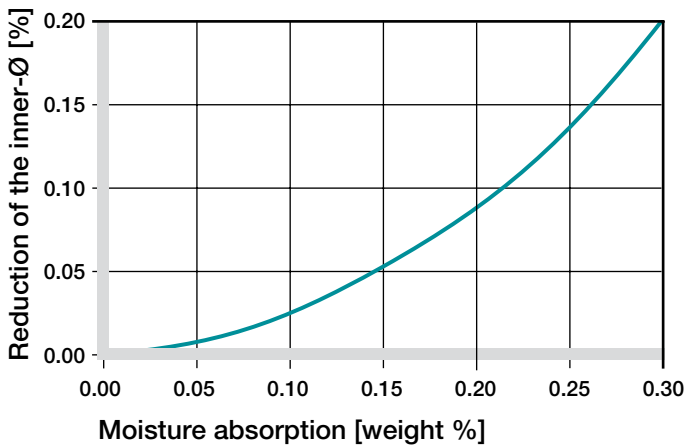
The moisture absorption of iglidur® H plain bearings is below 0.1 % in standard atmosphere. The saturation limit in water is 0.3 %. iglidur® H is very well suited for use in wet applications.

Maximum moisture absorption

At +23 °C/50 % r.h. 0.1 % weight

Max. moisture absorption 0.3 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® H plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9).

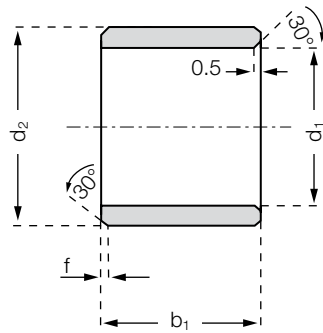
The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, **page 55**

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® H F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

HSM-0304-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® H

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
HSM-0304-03	3.0	+0.006 +0.046	4.5	3.0
HSM-0405-04	4.0	+0.010 +0.058	5.5	4.0
HSM-0507-05	5.0	+0.010 +0.058	7.0	5.0
HSM-0608-03	6.0	+0.010 +0.058	8.0	3.0
HSM-0608-06	6.0	+0.010 +0.058	8.0	6.0
HSM-0810-08	8.0	+0.013 +0.071	10.0	8.0
HSM-0810-10	8.0	+0.013 +0.071	10.0	10.0
HSM-1012-06	10.0	+0.013 +0.071	12.0	6.0
HSM-1012-10	10.0	+0.013 +0.071	12.0	10.0
HSM-1214-10	12.0	+0.016 +0.086	14.0	10.0
HSM-1214-12	12.0	+0.016 +0.086	14.0	12.0
HSM-1214-15	12.0	+0.016 +0.086	14.0	15.0
HSM-1214-20	12.0	+0.016 +0.086	14.0	20.0
HSM-1416-20	14.0	+0.016 +0.086	16.0	20.0
HSM-1517-15	15.0	+0.016 +0.086	17.0	15.0
HSM-1618-15	16.0	+0.016 +0.086	18.0	15.0
HSM-1618-20	16.0	+0.016 +0.086	18.0	20.0
HSM-1618-25	16.0	+0.016 +0.086	18.0	25.0

Part number	d1	d1-Tolerance*	d2	b1 h13
HSM-1820-15	18.0	+0.016 +0.086	20.0	15.0
HSM-1820-25	18.0	+0.016 +0.086	20.0	25.0
HSM-2023-20	20.0	+0.020 +0.104	23.0	20.0
HSM-2225-20	22.0	+0.020 +0.104	25.0	20.0
HSM-2528-15	25.0	+0.020 +0.104	28.0	15.0
HSM-2528-20	25.0	+0.020 +0.104	28.0	20.0
HSM-3034-20	30.0	+0.020 +0.104	34.0	20.0
HSM-3034-30	30.0	+0.020 +0.104	34.0	30.0
HSM-3034-40	30.0	+0.020 +0.104	34.0	40.0
HSM-3236-30	32.0	+0.025 +0.125	36.0	30.0
HSM-3539-40	35.0	+0.025 +0.125	39.0	40.0
HSM-4044-20	40.0	+0.025 +0.125	44.0	20.0
HSM-4044-50	40.0	+0.025 +0.125	44.0	50.0
HSM-4550-30	45.0	+0.025 +0.125	50.0	30.0
HSM-5055-40	50.0	+0.025 +0.125	55.0	40.0
HSM-5560-26	55.0	+0.030 +0.150	60.0	26.0
HSM-6065-60	60.0	+0.030 +0.150	65.0	60.0
HSM-7075-50	70.0	+0.030 +0.150	75.0	50.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock

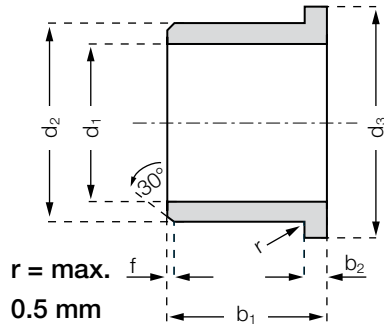


prices price list online
www.igus.co.uk/en/h



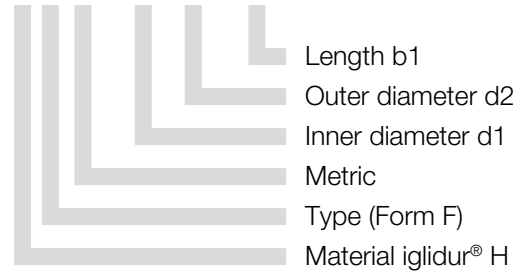
order part number
example HSM-0304-03

Flange bearing



Order key

HFM-0405-04



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0,14
HFM-0405-04	4.0	+0.010 +0.058	5.5	9.5	4.0	0.75
HFM-0507-05	5.0	+0.010 +0.058	7.0	11.0	5.0	1.0
HFM-0507-08	5.0	+0.010 +0.058	7.0	11.0	8.0	1.0
HFM-0608-04	6.0	+0.010 +0.058	8.0	12.0	4.0	1.0
HFM-0608-06	6.0	+0.010 +0.058	8.0	12.0	6.0	1.0
HFM-0810-07	8.0	+0.013 +0.071	10.0	15.0	7.0	1.0
HFM-0810-10	8.0	+0.013 +0.071	10.0	15.0	10.0	1.0
HFM-0810-15	8.0	+0.013 +0.071	10.0	15.0	15.0	1.0
HFM-1012-04	10.0	+0.013 +0.071	12.0	18.0	4.0	1.0
HFM-1012-09	10.0	+0.013 +0.071	12.0	18.0	9.0	1.0
HFM-1012-15	10.0	+0.013 +0.071	12.0	18.0	15.0	1.0
HFM-1012-20	10.0	+0.013 +0.071	12.0	18.0	20.0	1.0
HFM-1214-07	12.0	+0.016 +0.086	14.0	20.0	7.0	1.0
HFM-1214-10	12.0	+0.016 +0.086	14.0	20.0	10.0	1.0
HFM-1214-15	12.0	+0.016 +0.086	14.0	20.0	15.0	1.0
HFM-1416-12	14.0	+0.016 +0.086	16.0	22.0	12.0	1.0
HFM-1517-17	15.0	+0.016 +0.086	17.0	23.0	17.0	1.0
HFM-1618-17	16.0	+0.016 +0.086	18.0	24.0	17.0	1.0
HFM-1820-17	18.0	+0.016 +0.086	20.0	26.0	17.0	1.0
HFM-2023-16	20.0	+0.020 +0.104	23.0	30.0	16.5	1.5
HFM-2023-30	20.0	+0.020 +0.104	23.0	30.0	30.0	1.5

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/h



order part number
example HFM-0405-04



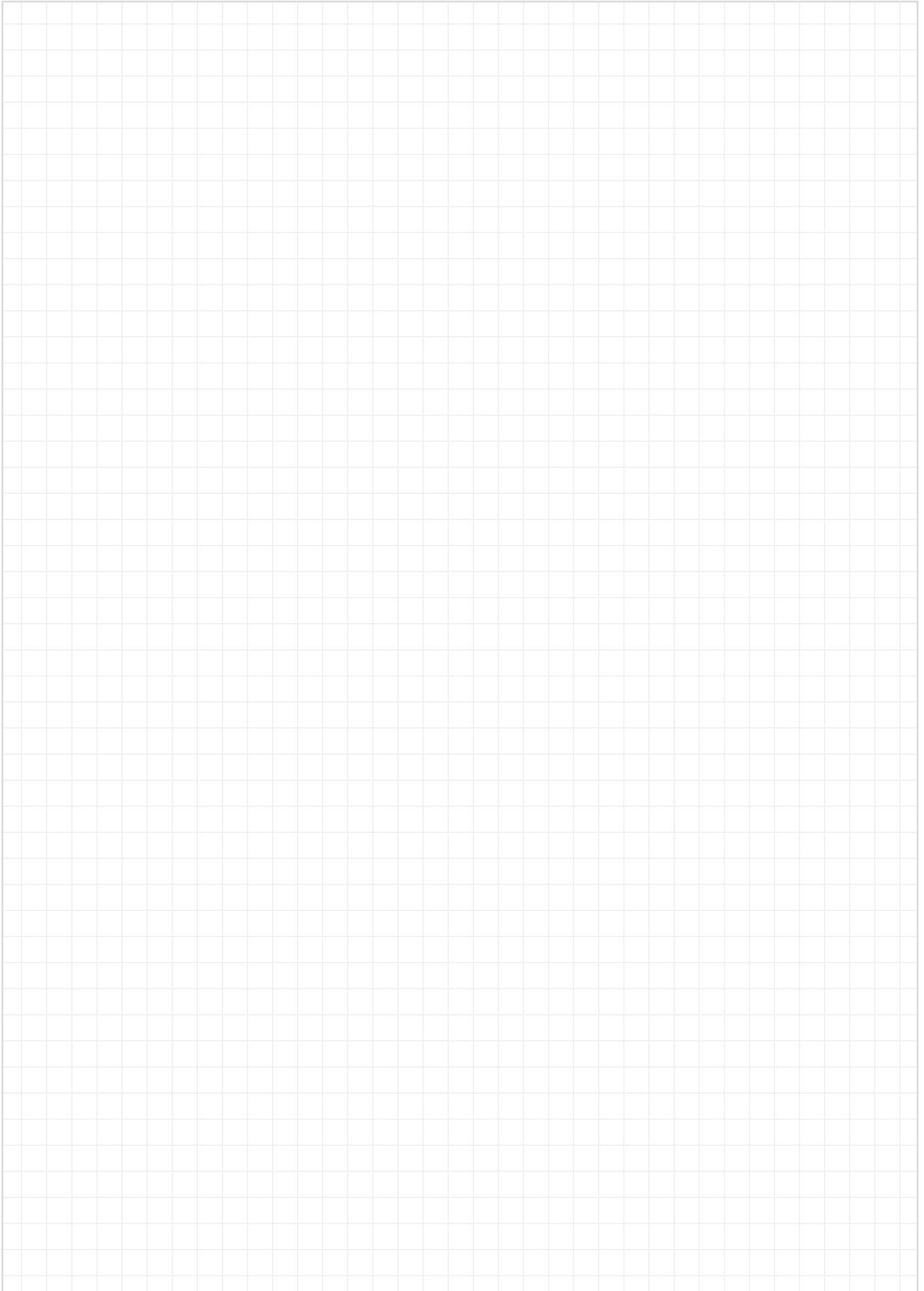
Flange bearing

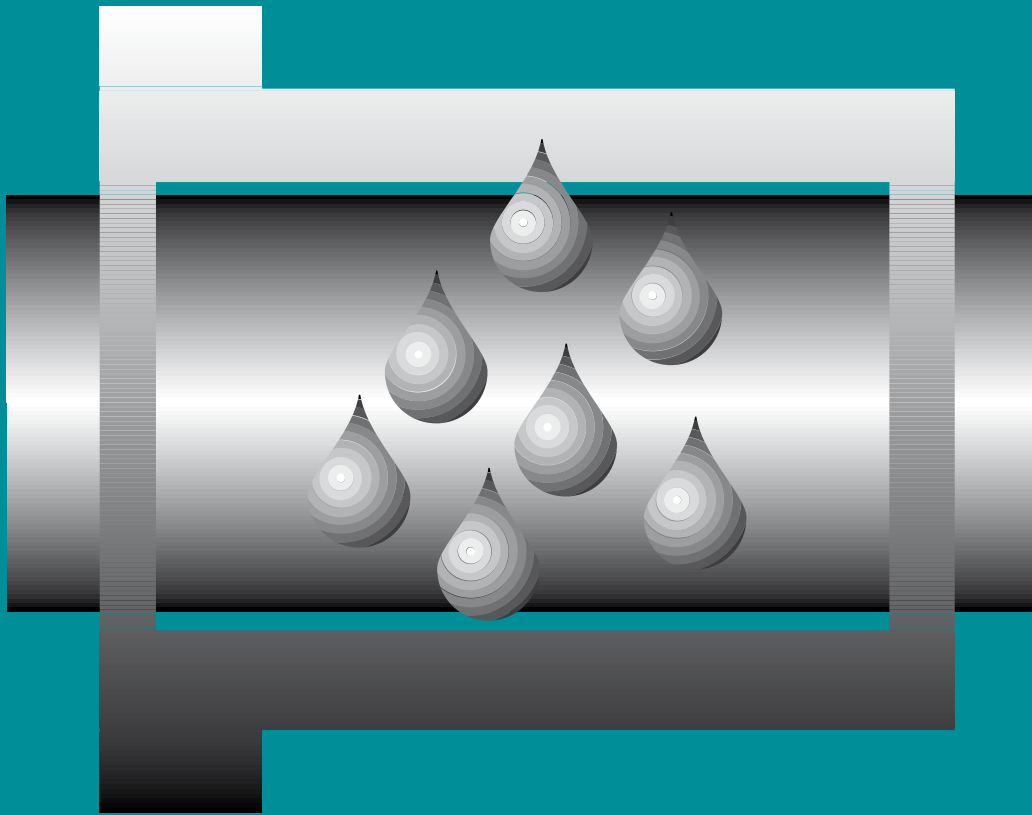
Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0,14
HFM-2528-30	25.0	+0.020 +0.104	28.0	35.0	30.0	1.5
HFM-2730-20	27.0	+0.020 +0.104	30.0	38.0	20.0	1.5
HFM-3034-40	30.0	+0.020 +0.104	34.0	42.0	40.0	2.0
HFM-3438-13	34.0	+0.025 +0.125	38.0	46.0	13.0	2.0
HFM-3539-26	35.0	+0.025 +0.125	39.0	47.0	26.0	2.0
HFM-4044-40	40.0	+0.025 +0.125	44.0	52.0	40.0	2.0
HFM-5055-50	50.0	+0.025 +0.125	55.0	63.0	50.0	2.0
HFM-6065-50	60.0	+0.030 +0.150	65.0	73.0	50.0	2.0
HFM-7075-50	70.0	+0.030 +0.150	75.0	83.0	50.0	2.0

* after pressfit. Testing methods ► page 55

My Sketches





iglidur® H1 – long life operation



Standard range from stock

High wear resistance in extreme ambient conditions

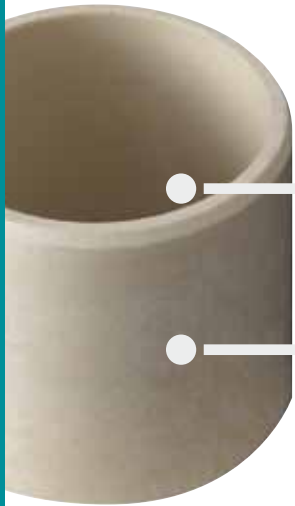
Very low coefficient of friction

High resistance to temperature and chemicals

For underbonnet applications

iglidur® H1

Long life operation. iglidur® H1 is the first choice when high holding times are required in extreme environmental conditions. Extreme wear resistance is coupled with excellent resistance to temperature and chemicals – not only in the packaging and foodstuff industries or the automotive industry.



High wear resistance
in extreme
ambient conditions

Very low
coefficient of friction



High resistance
to temperature and chemicals

For underbonnet
applications



When to use it?

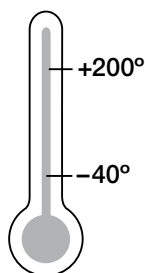
- When extreme service life is required under the influence of temperature and humidity
- When low coefficients of friction at high temperature are important
- When regular aggressive cleaning is required (splashes, steam blasting)
- When the bearings are used in the engine compartment



When not to use it?

- Wenn hohe Flächenpressungen auftreten
▶ **iglidur® Z, page 299**
- When the best universal chemical resistance is required
▶ **iglidur® X, page 153**
- When a cost-efficient high temperature bearing is sought, not the ideal wear resistance
▶ **iglidur® H2, page 359**
- When an FDA-compliant plain bearing with high temperature resistance is required
▶ **iglidur® A500, page 407**

Temperature

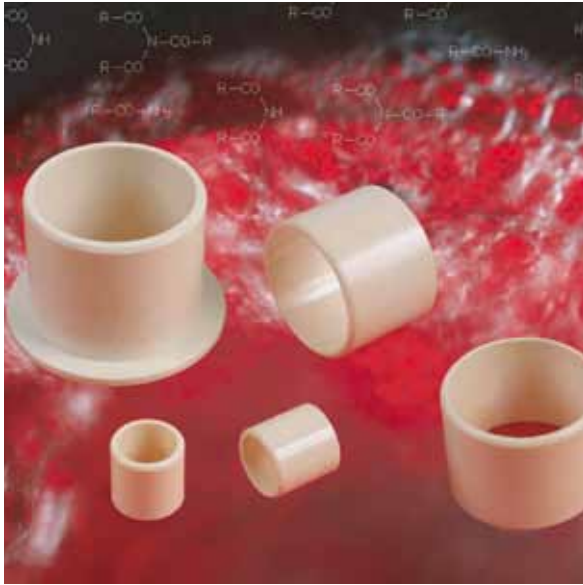


Product range

2 types
Ø 6–20 mm
more dimensions
on request



iglidur® H1 | Application Examples



Typical sectors of industry and application areas

- Beverage technology ● Automation
- Packaging ● Textile technology
- Optical industry etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/washing-chain

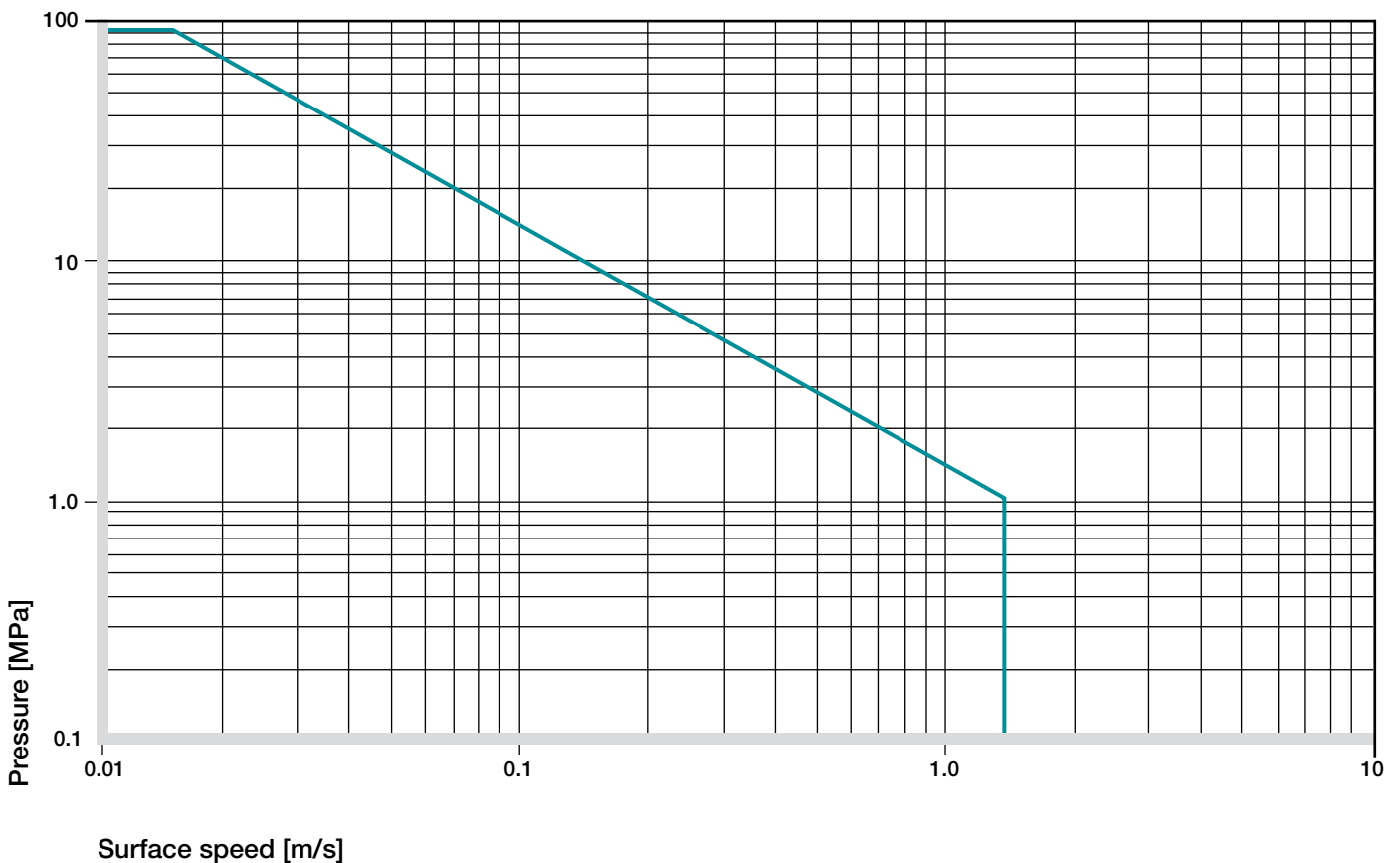


► www.igus.co.uk/form-fill-seal

Material data

General properties	Unit	iglidur® H1	Testing method
Density	g/cm ³	1.53	
Colour		cream	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.3	
Coefficient of sliding friction, dynamic against steel	μ	0.06–0.20	
pv value, max. (dry)	MPa · m/s	0.8	
Mechanical properties			
Modulus of elasticity	MPa	2,800	DIN 53457
Tensile strength at +20°C	MPa	55	DIN 53452
Compressive strength	MPa	78	
Max. recommended surface pressure (+20°C)	MPa	80	
Shore D hardness		77	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+200	
Max. short term application temperature	°C	+240	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	6	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹²	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

Table 01: Material data

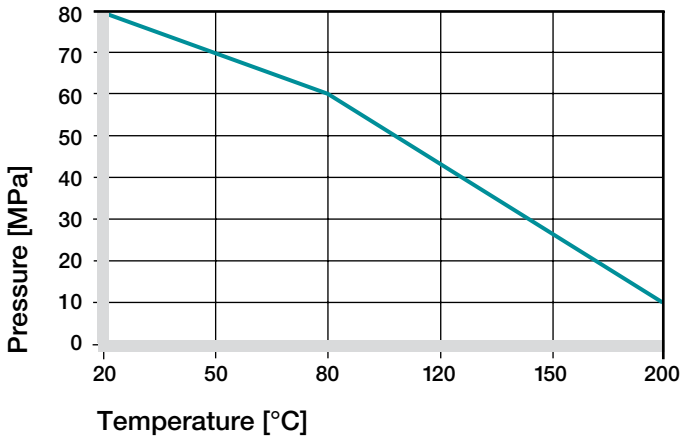


Graph 01: Permissible pv values for iglidur® H1 with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

iglidur[®] H1 | Technical Data

Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur[®] H1 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +200 °C the permissible surface pressure is almost 10 MPa.

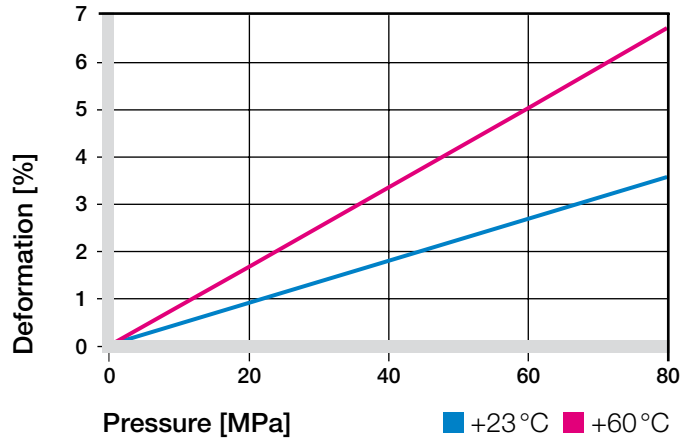


Graph 02: Recommended maximum surface pressure as a function of temperature (80 MPa at +20 °C)

iglidur[®] H1 plain bearings have been specially developed for use under extreme environmental conditions. Their strengths are the extremely high wear resistance and the excellent coefficients of friction even in applications in which the bearing is exposed to extreme temperatures and/or aggressive chemicals. iglidur[®] H1 bearings can be used completely free of lubrication; in wet area applications, the surrounding medium acts as additional lubricant.

Graph 03 shows the elastic deformation of iglidur[®] H1 during radial loading. Among the iglidur[®] H materials, iglidur[®] H1 material has the greatest elasticity. This must be considered for applications with high pressure or strong edge pressure.

► Surface Pressure, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

Due to the excellent coefficients of friction, rotating surface speeds up to 2 m/s are possible with iglidur[®] H1 plain bearings in dry operation. Linear speeds up to 5 m/s are attained. The speeds stated in Table 02 are limit values for the lowest bearing loads. With higher loads, the permitted speed drops with the extent of the load due to the limitations by the pv value.

► Surface Speed, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	2	1.0	5
Short term	2.5	1.5	7

Table 02: Maximum running speed

Temperatures

iglidur[®] H is an extremely temperature-resistant material. The short term maximum temperature is +240 °C. The pressure-resistance of iglidur[®] H1 decreases with rising temperature. Apart from the surrounding temperature, the friction heat resulting from the movement of the shaft in the bearing must be considered. The ambient temperatures that are pre-valent in applications also have an effect on the bearing wear. The wear rate rises with higher temperatures, but with iglidur[®] H1, this increase is small.

The temperature above which we recommend an additional axial securing is +90 °C for iglidur[®] H1, lower than for the other iglidur[®] H materials.

► Application Temperatures, [page 46](#)

iglidur® H1	Application temperature
Minimum	-40 °C
Max. long term	+200 °C
Max. short term	+240 °C
Add. securing is required from	+ 80 °C

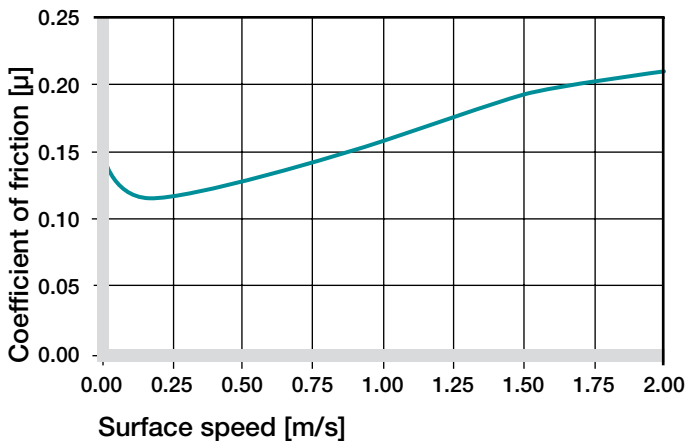
Table 03: Temperature limits

Friction and Wear

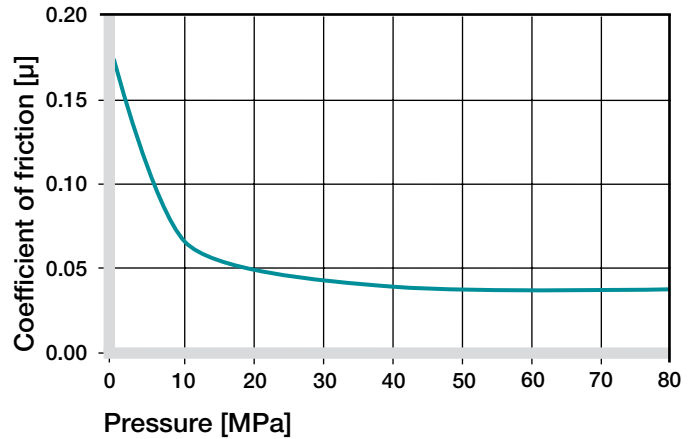
The coefficient of friction alters like the wear resistance with increasing load and speed. At constant load the coefficient of friction μ increases with the speed. At constant speed the coefficient of friction lowers with increasing load, whereupon almost constant values result from 40 MPa.

As the counter partner has a large influence on friction and wear, the choice of the appropriate shaft can be decisive. Smoother shafts than $R_a = 0.1 \mu\text{m}$ raises the coefficient of friction. For applications with high loads, we recommend hardened and smoothed surfaces with an average surface finish of $R_a = 0.3$ to $0.4 \mu\text{m}$.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



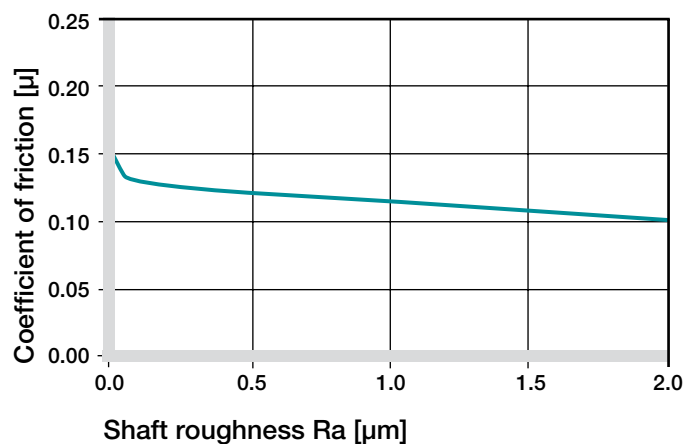
Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

Graphs 06 to 09 display a summary of the results of tests with different shaft materials conducted with iglidur® H1 plain bearings in the igus® laboratory.

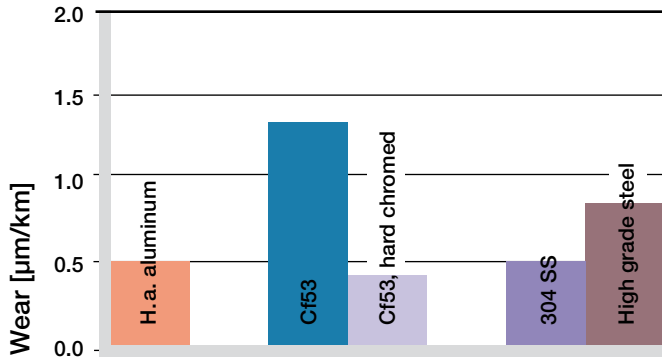
The iglidur® H1 plain bearings display excellent wear behavior in combination with a wide variety of shaft materials both in rotating and pivoting operations. On the V2A shafts in particular, iglidur® H1 attains very low wear rates both in rotating and pivoting operations. Even on hard-coated aluminum shafts, iglidur® H1 plain bearings attain high service life in rotating applications with low to medium loads.

- ▶ Shaft Materials, **page 51**

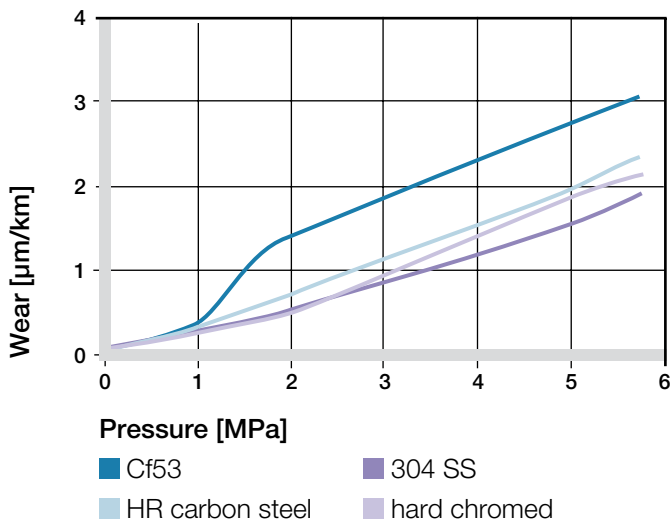


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

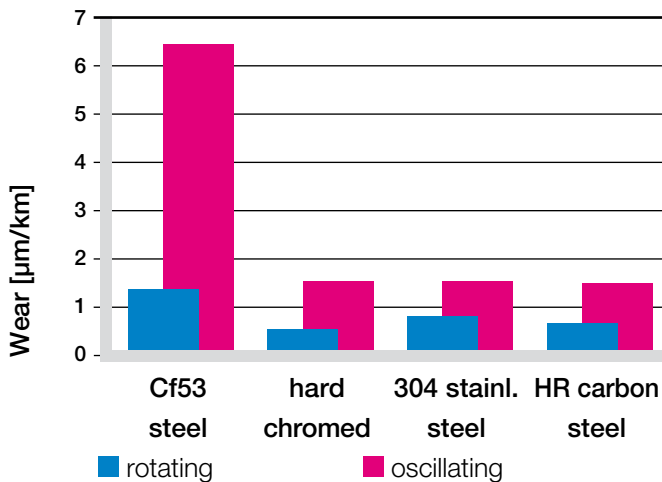
iglidur[®] H1 | Technical Data



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, $p = 2 \text{ MPa}$

iglidur [®] H1	Dry	Greases	Oil	Water
C.o.f. μ	0.06–0.20	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ($R_a = 1 \text{ }\mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur[®] H1 bearings have a good resistance against chemicals. Hence even chemicals can act as lubricants. The iglidur[®] H1 plain bearings are not resistant against hot, oxidizing acids and some other particularly aggressive chemicals.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+ to 0
Strong acids	+ to -
Diluted alkalines	+
Strong alkalines	+ to -

+ resistant 0 conditionally resistant - not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Resistant to radiation up to an intensity of $2 \cdot 10^2 \text{ Gy}$

UV Resistance

iglidur[®] H1 bearings are only conditionally resistant to UV rays. The surface of iglidur[®] H1 becomes coarser under the influence of atmospheric conditions and the wear increases. Therefore the use of iglidur[®] H1 plain bearings in applications directly exposed to weathering should be tested in individual cases.

Vacuum

Water elements, even if only little, should be degassed for use in vacuum. The use in vacuum is generally possible.

Electrical Properties

iglidur[®] H1 plain bearings are electrically insulating.

Volume resistance	$> 10^{12} \text{ }\Omega\text{cm}$
Surface resistance	$> 10^{11} \text{ }\Omega$

Moisture Absorption

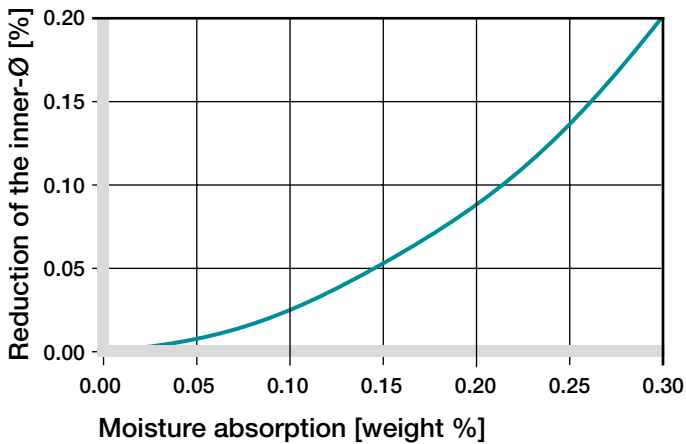
The moisture absorption of iglidur® H1 bearings is approximately 0.1 % in standard climatic conditions. The saturation limit in water is 0.3 %. Therefore iglidur® H1 is very well suited for use in wet environments.

Maximal moisture absorption

At +23 °C/50 % r.h. 0.1 % weight

Max. moisture absorption 0.3 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® H1 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9).

The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

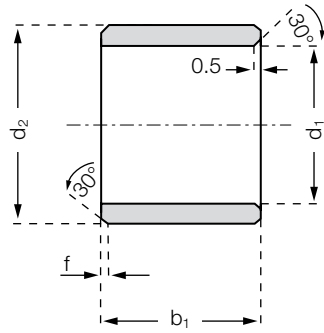
► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® H1 F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

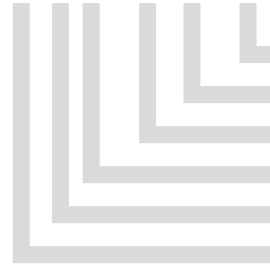
iglidur® H1 | Product Range

Sleeve bearing



Order key

H1SM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® H1

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
H1SM-0304-05	3.0	+0.006 +0.046	4.0	5.0
H1SM-0507-05	5.0	+0.010 +0.058	7.0	5.0
H1SM-0608-06	6.0	+0.010 +0.058	8.0	6.0
H1SM-0608-10	6.0	+0.010 +0.058	8.0	10.0
H1SM-0810-10	8.0	+0.013 +0.071	10.0	10.0
H1SM-0810-15	8.0	+0.013 +0.071	10.0	15.0
H1SM-1012-10	10.0	+0.013 +0.071	12.0	10.0
H1SM-1012-15	10.0	+0.013 +0.071	12.0	15.0
H1SM-1214-12	12.0	+0.016 +0.086	14.0	12.0
H1SM-1618-15	16.0	+0.016 +0.086	18.0	15.0
H1SM-2023-15	20.0	+0.020 +0.104	23.0	15.0
H1SM-2023-20	20.0	+0.020 +0.104	23.0	20.0
H1SM-2528-30	25.0	+0.020 +0.104	28.0	30.0
H1SM-3034-30	30.0	+0.020 +0.104	34.0	30.0
H1SM-3539-30	35.0	+0.025 +0.125	39.0	30.0
H1SM-4044-40	40.0	+0.025 +0.125	44.0	40.0

* after pressfit. Testing methods ► page 55



delivery available
time ex stock

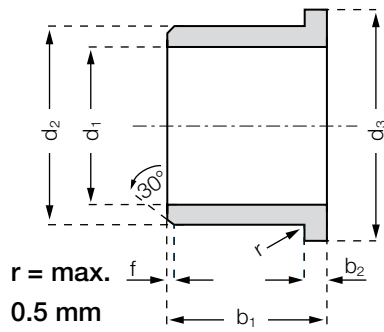


prices price list online
www.igus.co.uk/en/h1



order part number
example H1SM-0608-06

Flange bearing



Order key

H1FM-0608-06



Length b1

Outer diameter d2

Inner diameter

Metric

Type (Form F)

Material iglidur® H1

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0,14
H1FM-0304-05	3.0	+0.006 +0.046	4.0	7.5	5.0	0.75
H1FM-0507-05	5.0	+0.010 +0.058	7.0	11.0	5.0	1.0
H1FM-0608-06	6.0	+0.010 +0.058	8.0	12.0	6.0	1.0
H1FM-0810-10	8.0	+0.013 +0.071	10.0	15.0	10.0	1.0
H1FM-1012-10	10.0	+0.013 +0.071	12.0	18.0	10.0	1.0
H1FM-1214-12	12.0	+0.016 +0.086	14.0	20.0	12.0	1.0
H1FM-1214-20	12.0	+0.016 +0.086	14.0	20.0	20.0	1.0
H1FM-1618-17	16.0	+0.016 +0.086	18.0	24.0	17.0	1.0
H1FM-1618-25	16.0	+0.016 +0.086	18.0	24.0	25.0	1.0
H1FM-1820-12	18.0	+0.016 +0.086	20.0	26.0	12.0	1.0
H1FM-2023-21	20.0	+0.020 +0.104	23.0	30.0	21.0	1.5
H1FM-2023-30	20.0	+0.020 +0.104	23.0	30.0	30.0	1.5
H1FM-2528-21	25.0	+0.020 +0.104	28.0	35.0	21.0	1.5
H1FM-3034-26	30.0	+0.020 +0.104	34.0	42.0	26.0	2.0
H1FM-3539-26	35.0	+0.025 +0.125	39.0	47.0	26.0	2.0
H1FM-4044-40	40.0	+0.025 +0.125	44.0	52.0	40.0	2.0

* after pressfit. Testing methods ► page 55



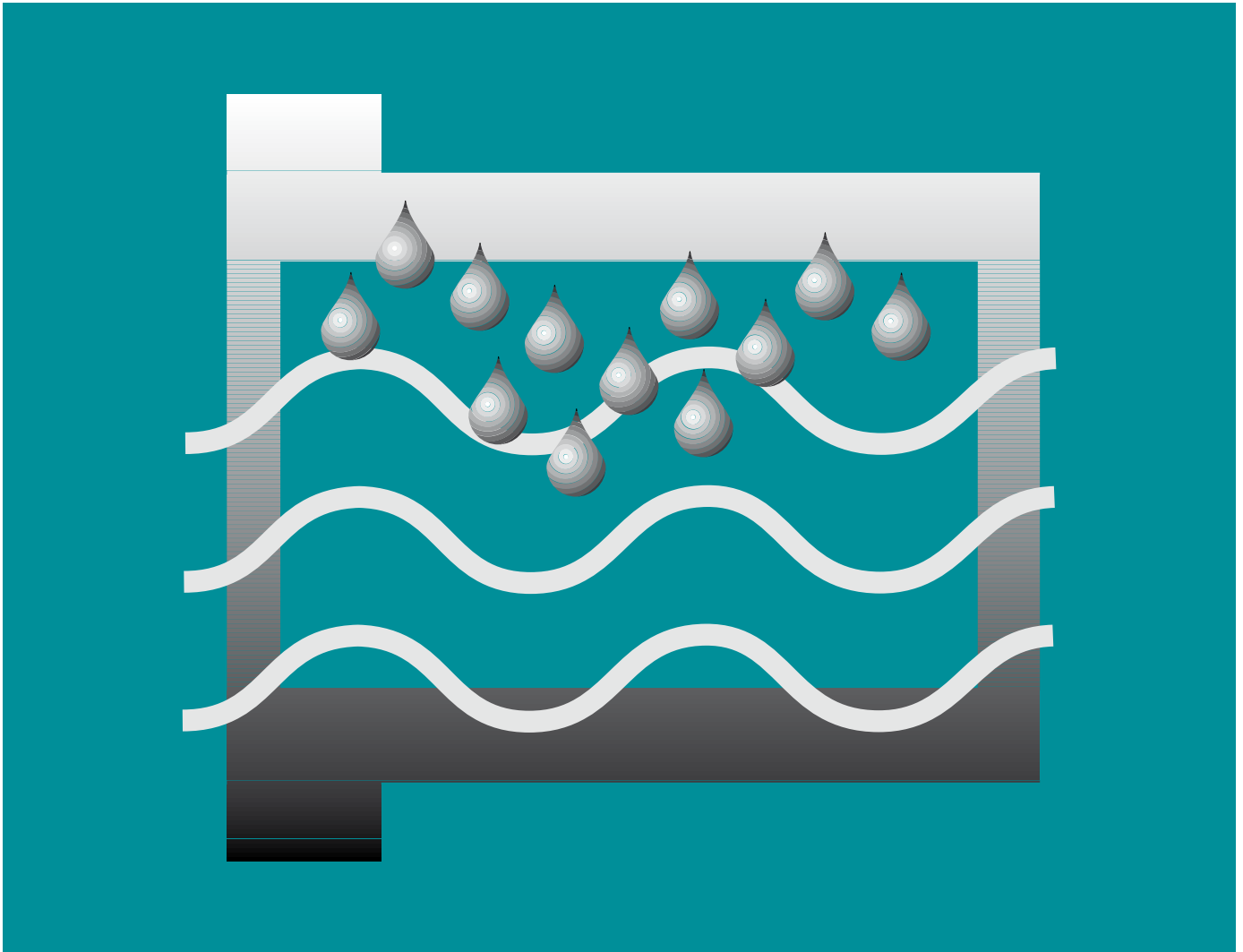
delivery available
time ex stock



prices price list online
www.igus.co.uk/en/h1



order part number
example H1FM-0608-06



iglidur® H370 – wear resistant under water



Standard range from stock

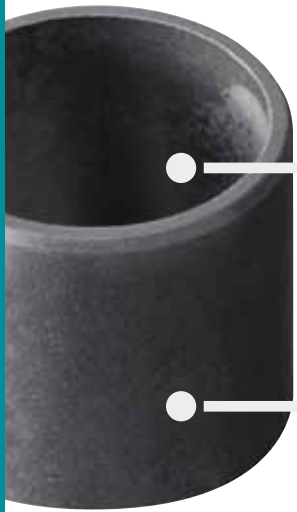
Wear-resistant – especially under water

High temperature resistance -40°C to $+200^{\circ}\text{C}$

High resistance to chemicals

iglidur® H370

Wear resistant under water. iglidur® H370 is the right solution for underwater applications. The bearings absorb extremely high loads, resist chemicals and can be used at temperatures up to +200 °C.



Wear-resistant –
especially under water

High temperature
resistance
–40 °C to +200 °C



High resistance to
chemicals



When to use it?

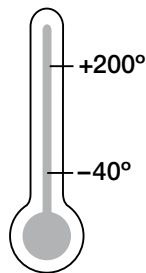
- For underwater use
- When it is dependent on high temperature resistance
- When high mechanical loading and wear resistance is required
- When good resistance to chemicals is required



When not to use it?

- When mechanical reaming of the wall surface is necessary
▶ **iglidur® M250, page 107**
- When high wear resistance in temperatures is required
▶ **iglidur® H1, page 337**
- For use in dirty surroundings
▶ **iglidur® Z, page 299**
- When a cost-efficient, large-volume solution is required
▶ **iglidur® H2, page 359**

Temperature



Product Range

2 types
Ø 3–75 mm
more dimensions
on request



iglidur® H370 | Application Examples

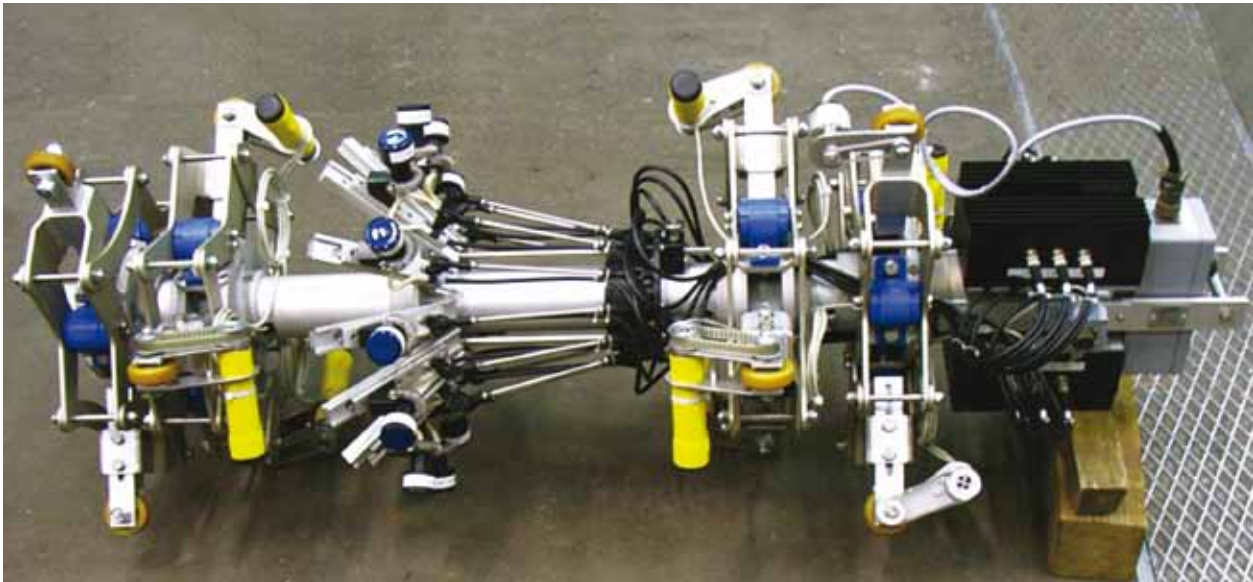


Typical sectors of industry and application areas

- Offshore ● Marine engineering
- Fluid technology ● Packaging
- Plant construction etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/oilplatform

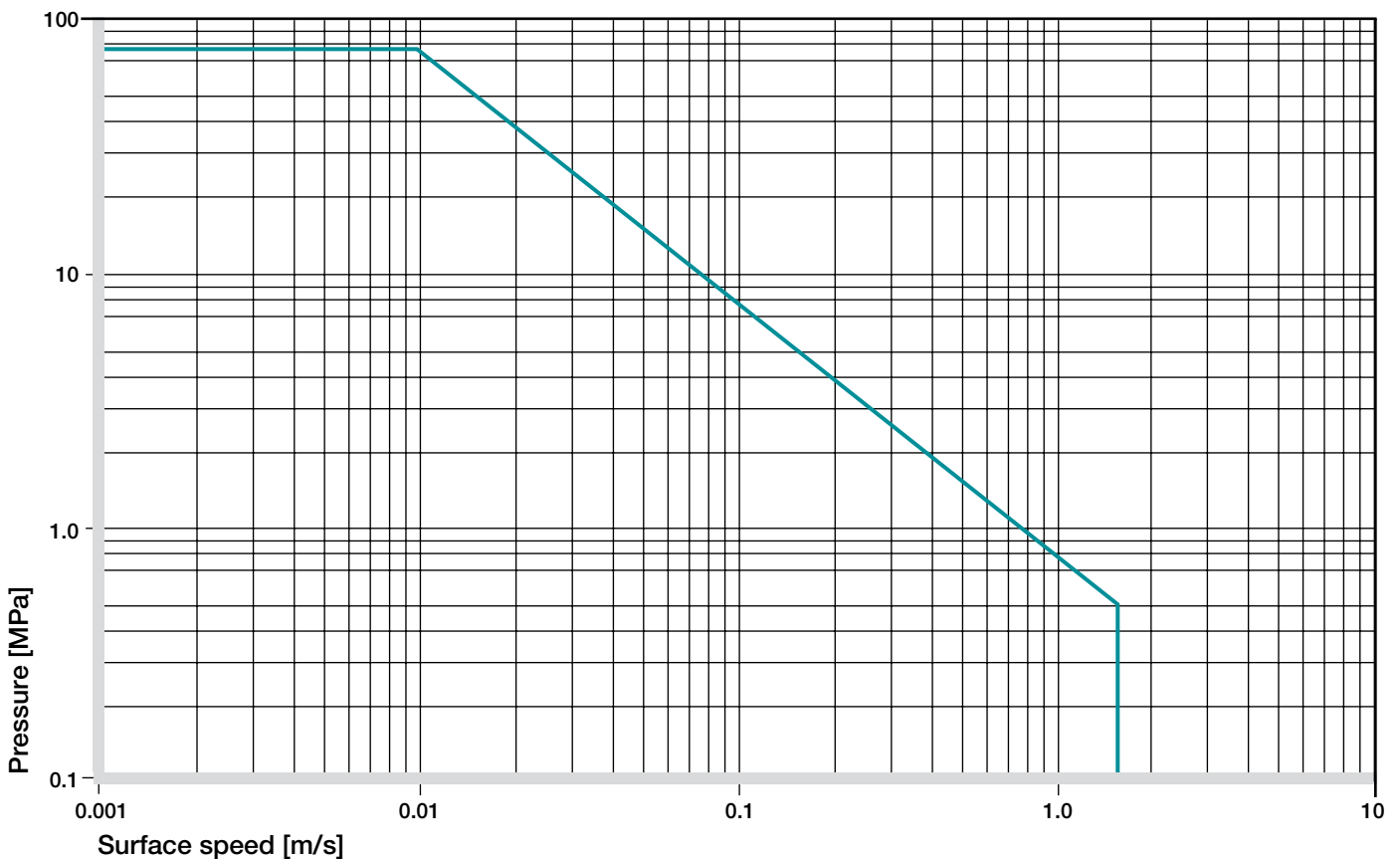


► www.igus.co.uk/ultrasonic-tests

Material data

General properties	Unit	iglidur® H370	Testing method
Density	g/cm ³	1.66	
Colour		grey	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.1	
Coefficient of sliding friction, dynamic against steel	μ	0.07–0.17	
pv value, max. (dry)	MPa · m/s	0.74	
Mechanical properties			
Modulus of elasticity	MPa	11,100	DIN 53457
Tensile strength at +20 °C	MPa	135	DIN 53452
Compressive strength	MPa	79	
Max. recommended surface pressure (+20 °C)	MPa	75	
Shore D hardness		82	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+200	
Max. short term application temperature	°C	+240	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.5	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	5	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	< 10 ⁵	DIN IEC 93
Surface resistance	Ω	< 10 ⁵	DIN 53482

Table 01: Material data

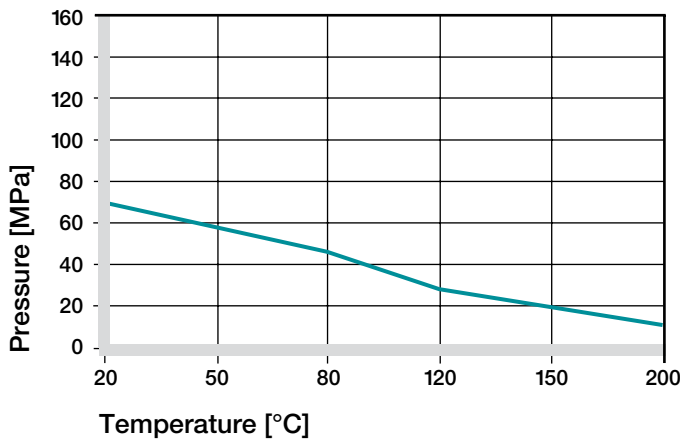


Graph 01: Permissible pv values for iglidur® H370 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® H370 | Technical Data

Mechanical Properties

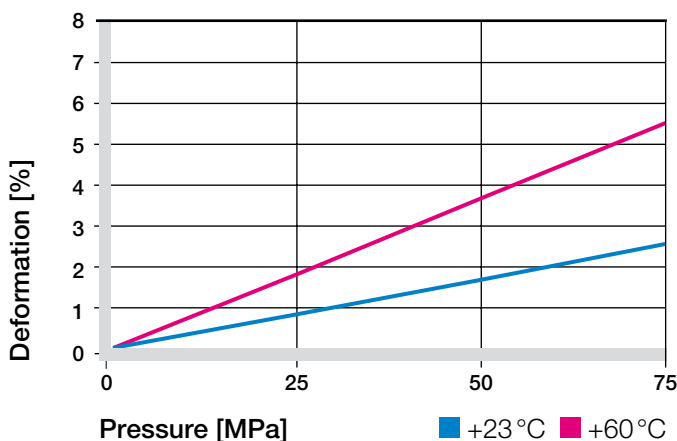
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® H370 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +200 °C the permissible surface pressure is almost 10 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (75 MPa at +20 °C)

iglidur® H370 is an advanced development of the iglidur® H series. The material is characterized by particularly low water absorption and clearly enhanced wear resistance. With regard to the mechanical and thermal characteristic values, iglidur® H370 shows the same features as iglidur® H. Graph 02 shows how iglidur® H370 elastically deforms under radial load. Under the maximum recommended surface pressure of 75 MPa, the deformation at room temperature amounts to about 2.5 %.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

The maximum permitted surface speed is dependent on whether the temperature in the bearing location rises strongly or not. iglidur® H370 is suitable for surface speeds up to 1 m/s (rotating) and 3 m/s (linear) respectively.

The maximum values stated in Table 02 are valid only with minimum pressure loads and are often not attained in practice.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1.2	0.8	4
Short term	1.5	1.1	5

Table 02: Maximum running speed

Temperatures

iglidur® H370 is an extremely temperature-resistant material. With a short-term permitted maximum temperature of +240 °C, the iglidur® H370 bearings can in otherwise unloaded condition be subjected for instance, to a paint drying process. With increasing temperatures, the compressive strength of iglidur® H370 bearings decreases. The ambient temperatures that are pre-valent in applications also have an effect on the bearing wear. The wear rises with increasing temperatures.

iglidur® H370 loses about 75 % of its compressive strength with a rise in temperature range, from room temperature to +150 °C. In contrast the increase in wear is hardly noticeable in the same temperature range.

► Application Temperatures, page 46

iglidur® H370	Application temperature
Minimum	-40 °C
Max. long term	+200 °C
Max. short term	+240 °C
Add. securing is required from	+100 °C

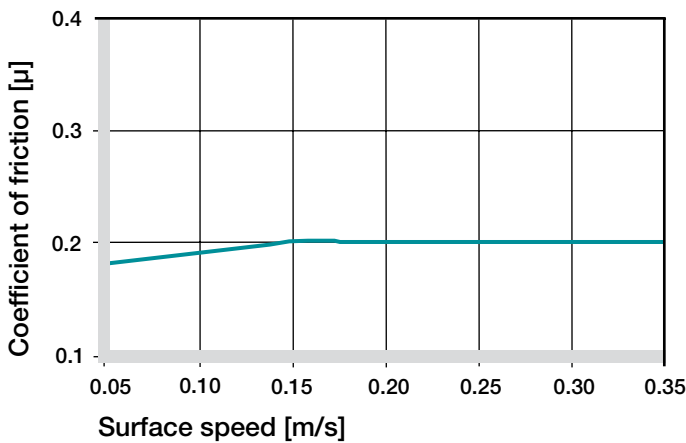
Table 03: Temperature limits

Friction and Wear

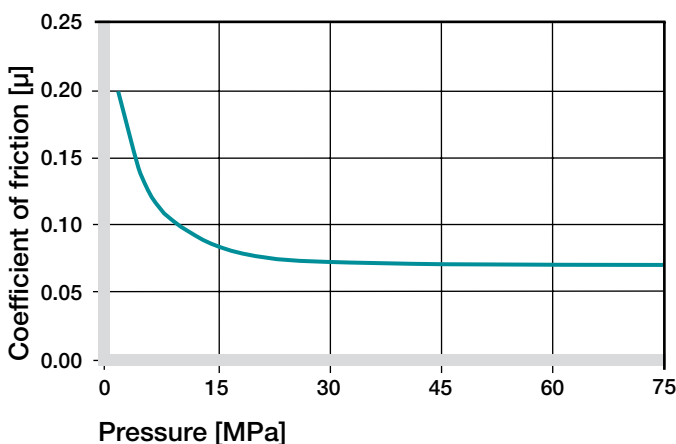
The coefficients of friction and wear in iglidur® H370 are more favorable than in iglidur® H. There is no better material than iglidur® H370 especially for underwater applications. The coefficient of friction alters only little, like the wear resistance with increasing load and surface speed. This connection illustrates the excellent suitability of iglidur® H370 bearings with high loads.

Friction and wear also depend to a high degree on the reverse partner. Very smooth shafts increase the coefficient of both friction and wear. The ideally suited is a smoothed surface with an average surface finish of $R_a = 0.2$ to $0.4 \mu\text{m}$.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

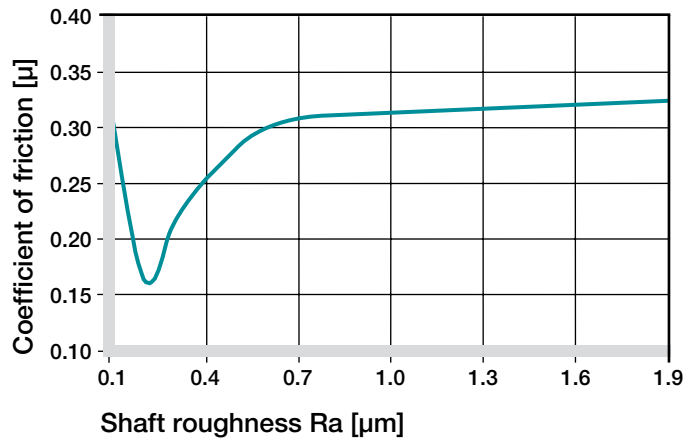
Shaft Materials

Graphs 06 to 09 show the test results of iglidur® H370 bearings running against various shaft materials.

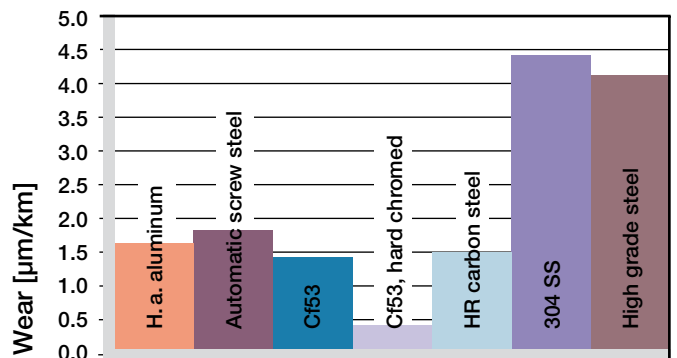
For loads up to 2 MPa, the hard-chromed shaft is the best counter partner for the iglidur® H370 bearings in rotating applications. The high coefficients of wear with V2A shafts are striking, which due to their extremely smooth surfaces are prone to the stick-slip effect. The St37 shaft shows better values than Cf53, despite same values in the lowest range, from 2 MPa.

On the other hand, the V2A shaft shows a clear advantage in pivoting movements. (Graph 08).

- ▶ Shaft Materials, **page 51**

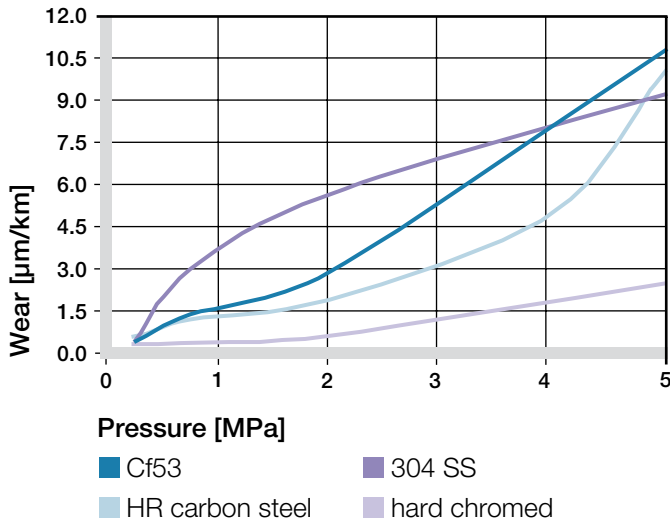


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

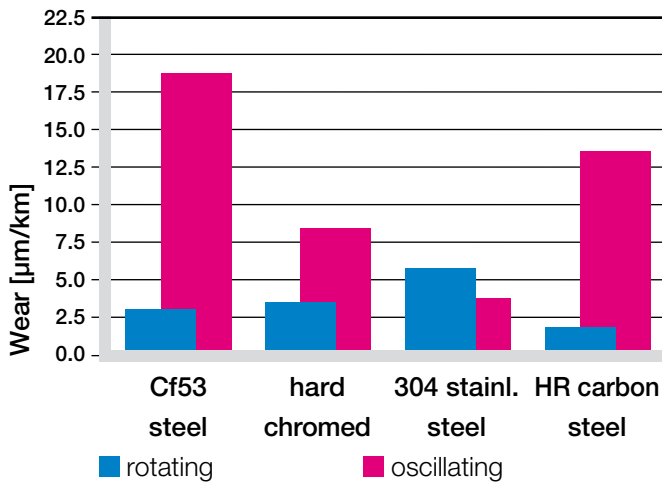


Graph 07: Wear, rotating with different shaft materials, pressure, $p = 1 \text{ MPa}$, $v = 0,3 \text{ m/s}$

iglidur® H370 | Technical Data



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur® H370	Dry	Greases	Oil	Water
C.o.f. μ	0.07–0.17	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® H370 bearings have a good resistance against chemicals. They are resistant to most lubricants. The iglidur® is not affected by most weak organic and inorganic acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	-
Diluted acids	-
Strong acids	-
Diluted alkalines	+ to 0
Strong alkalines	+ to 0

+ resistant 0 conditionally resistant - not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

iglidur® H370 withstands neutron and gamma particle radiation without detectable losses of its excellent mechanical properties. Plain bearings made from iglidur® H370 are resistant to radiation up to an intensity of $2 \cdot 10^2$ Gy.

UV Resistance

iglidur® H370 plain bearings are permanently resistant against UV radiation.

Vacuum

In a vacuum environment, moisture is released as a vapour. Due to its low moisture absorption, use in a vacuum is possible.

Electrical Properties

iglidur® H370 plain bearings are electrically conductive.

Volume resistance	< $10^5 \Omega\text{cm}$
Surface resistance	< $10^5 \Omega$

Moisture Absorption

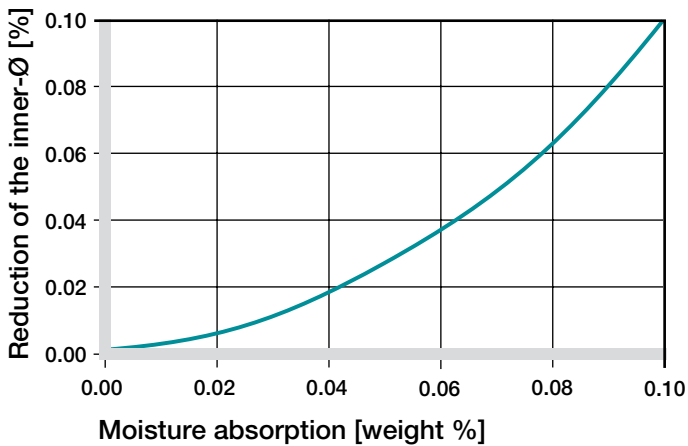
The moisture absorption of iglidur® H370 plain bearings is below 0.1 % in standard atmosphere. The saturation limit in water is also below 0.1 %.

For this reason, iglidur® H370 plain bearings are often used for underwater applications.

Maximum moisture absorption

At +23°C/50% r.h.	0.1 % weight
Max. moisture absorption	0.1 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® H370 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9).

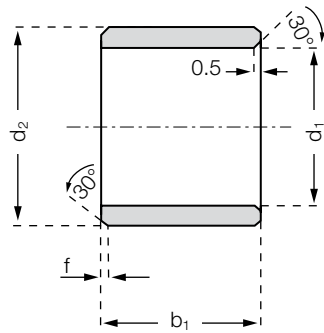
The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® H370 F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

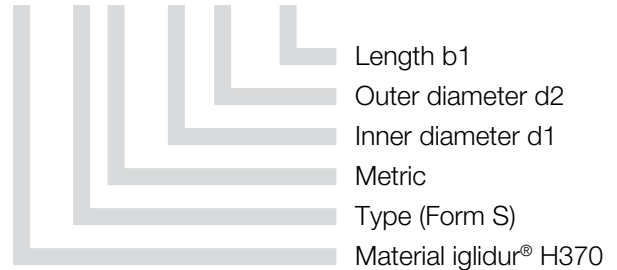
Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

H370SM-0304-03



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
H370SM-0304-03	3.0	+0.006 +0.046	4.5	3.0
H370SM-0405-04	4.0	+0.010 +0.058	5.5	4.0
H370SM-0405-12	4.0	+0.010 +0.058	5.5	12.0
H370SM-0507-05	5.0	+0.010 +0.058	7.0	5.0
H370SM-0608-06	6.0	+0.010 +0.058	8.0	6.0
H370SM-0810-08	8.0	+0.013 +0.071	10.0	8.0
H370SM-1012-10	10.0	+0.013 +0.071	12.0	10.0
H370SM-1214-10	12.0	+0.016 +0.086	14.0	10.0
H370SM-1214-15	12.0	+0.016 +0.086	14.0	15.0
H370SM-1517-15	15.0	+0.016 +0.086	17.0	15.0
H370SM-1618-15	16.0	+0.016 +0.086	18.0	15.0

Part number	d1	d1-Tolerance*	d2	b1 h13
H370SM-1618-20	16.0	+0.016 +0.086	18.0	20.0
H370SM-1820-15	18.0	+0.016 +0.086	20.0	15.0
H370SM-2023-20	20.0	+0.020 +0.104	23.0	20.0
H370SM-2528-20	25.0	+0.020 +0.104	28.0	20.0
H370SM-3034-30	30.0	+0.020 +0.104	34.0	30.0
H370SM-3539-40	35.0	+0.025 +0.125	39.0	40.0
H370SM-4044-50	40.0	+0.025 +0.125	44.0	50.0
H370SM-5055-40	50.0	+0.025 +0.125	55.0	40.0
H370SM-5560-26	55.0	+0.030 +0.150	60.0	26.0
H370SM-6065-60	60.0	+0.030 +0.150	65.0	60.0
H370SM-7580-60	75.0	+0.030 +0.150	80.0	60.0

Dimensions [Inch]

Part number	d1	d2	b1 h13	d1*		Housing Bore		Shaft Size	
				max.	min.	max.	min.	max.	min.
H370SI-0203-03	1/8	3/16	3/16	.1269	.1251	.1878	.1873	.1243	.1236
H370SI-0304-04	3/16	1/4	1/4	.1892	.1873	.2503	.2497	.1865	.1858
H370SI-0405-04	1/4	5/16	1/4	.2521	.2498	.3128	.3122	.2490	.2481
H370SI-0506-06	5/16	3/8	3/8	.3148	.3125	.3753	.3747	.3115	.3106
H370SI-0607-08	3/8	15/32	1/2	.3773	.3750	.4691	.4684	.3740	.3731
H370SI-0809-08	1/2	19/32	1/2	.5030	.5003	.5941	.5934	.4990	.4980
H370SI-1011-12	5/8	23/32	3/4	.6280	.6253	.7192	.7184	.6240	.6230
H370SI-1214-12	3/4	7/8	3/4	.7541	.7505	.8755	.8747	.7491	.7479
H370SI-1416-16	7/8	1	1	.8791	.8757	1.0005	.9997	.8741	.8729
H370SI-1618-16	1	1 1/8	1	1.0041	1.0007	1.1255	1.1247	.9991	.9979
H370SI-2022-20	1 1/4	1 13/32	1 1/4	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472

* after pressfit. Testing methods ► page 55



delivery available
time from stock

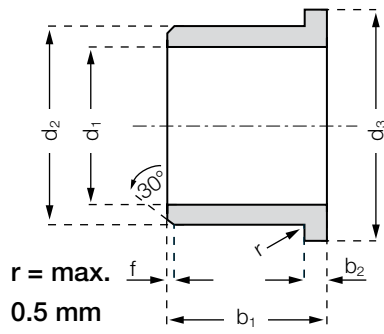


prices price list online
www.igus.co.uk/en/h370



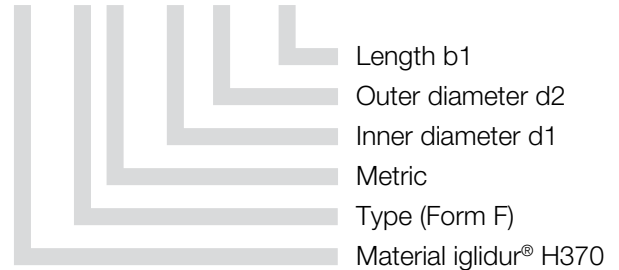
order part number
example H370SM-0304-03

Flange bearing



Order key

H370FM-0405-04



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part Number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0,14
H370FM-0405-04	4.0	+0.010 +0.058	5.5	9.5	4.0	0.75
H370FM-0507-05	5.0	+0.010 +0.058	7.0	11.0	5.0	1.0
H370FM-0608-06	6.0	+0.010 +0.058	8.0	12.0	6.0	1.0
H370FM-0810-06	8.0	+0.013 +0.071	10.0	15.0	6.0	1.0
H370FM-0810-15	8.0	+0.013 +0.071	10.0	15.0	15.0	1.0
H370FM-1012-10	10.0	+0.013 +0.071	12.0	18.0	10.0	1.0
H370FM-1012-20	10.0	+0.013 +0.071	12.0	18.0	20.0	1.0
H370FM-1012-145	10.0	+0.013 +0.071	12.0	18.0	14.5	1.0
H370FM-1214-07	12.0	+0.016 +0.086	14.0	20.0	7.0	1.0
H370FM-1214-12	12.0	+0.016 +0.086	14.0	20.0	12.0	1.0
H370FM-1214-15	12.0	+0.016 +0.086	14.0	20.0	15.0	1.0
H370FM-1416-12	14.0	+0.016 +0.086	16.0	22.0	12.0	1.0
H370FM-1517-17	15.0	+0.016 +0.086	17.0	23.0	17.0	1.0
H370FM-1618-10	16.0	+0.016 +0.086	18.0	24.0	10.0	1.0
H370FM-1618-17	16.0	+0.016 +0.086	18.0	24.0	17.0	1.0
H370FM-1820-12	18.0	+0.016 +0.086	20.0	26.0	12.0	1.0
H370FM-1820-17	18.0	+0.016 +0.086	20.0	26.0	17.0	1.0
H370FM-2023-16	20.0	+0.020 +0.104	23.0	30.0	16.0	1.5
H370FM-2023-21	20.0	+0.020 +0.104	23.0	30.0	21.5	1.5
H370FM-2023-30	20.0	+0.020 +0.104	23.0	30.0	30.0	1.5
H370FM-222532-215	22.0	+0.020 +0.104	25.0	32.0	21.5	1.5
H370FM-2528-30	25.0	+0.020 +0.104	28.0	35.0	30.0	1.5
H370FM-3034-40	30.0	+0.020 +0.104	34.0	42.0	40.0	2.0
H370FM-3539-26	35.0	+0.025 +0.125	39.0	47.0	26.0	2.0
H370FM-4044-40	40.0	+0.025 +0.125	44.0	52.0	40.0	2.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/h370



order part number
example H370FM-0405-04



Flange bearing

Dimensions [mm]

Part Number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0,14
H370FM-5055-50	50.0	+0.025 +0.125	55.0	63.0	50.0	2.0
H370FM-6065-50	60.0	+0.030 +0.150	65.0	73.0	50.0	2.0
H370FM-7075-50	70.0	+0.030 +0.150	75.0	83.0	50.0	2.0

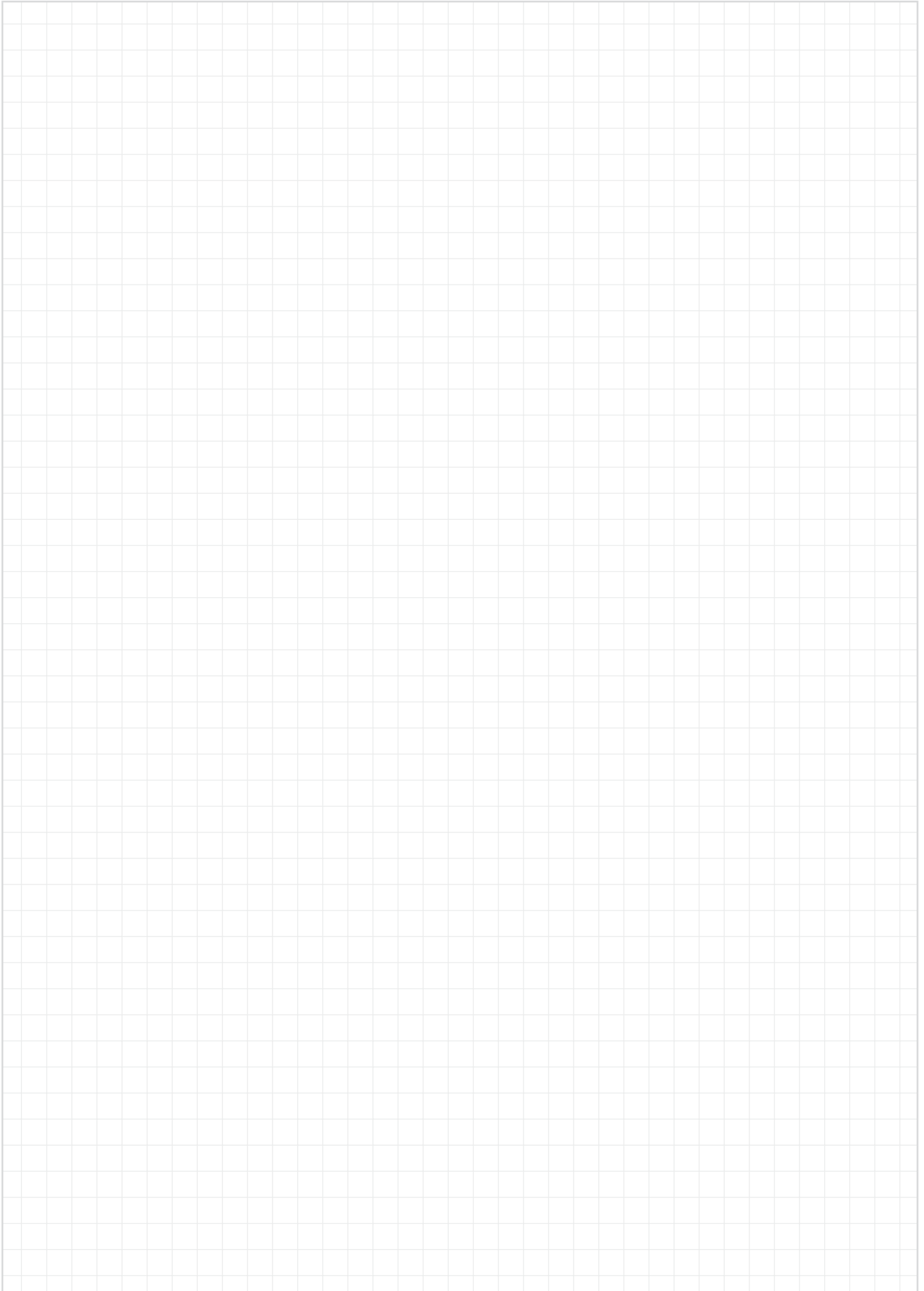
* after pressfit. Testing methods ► page 55

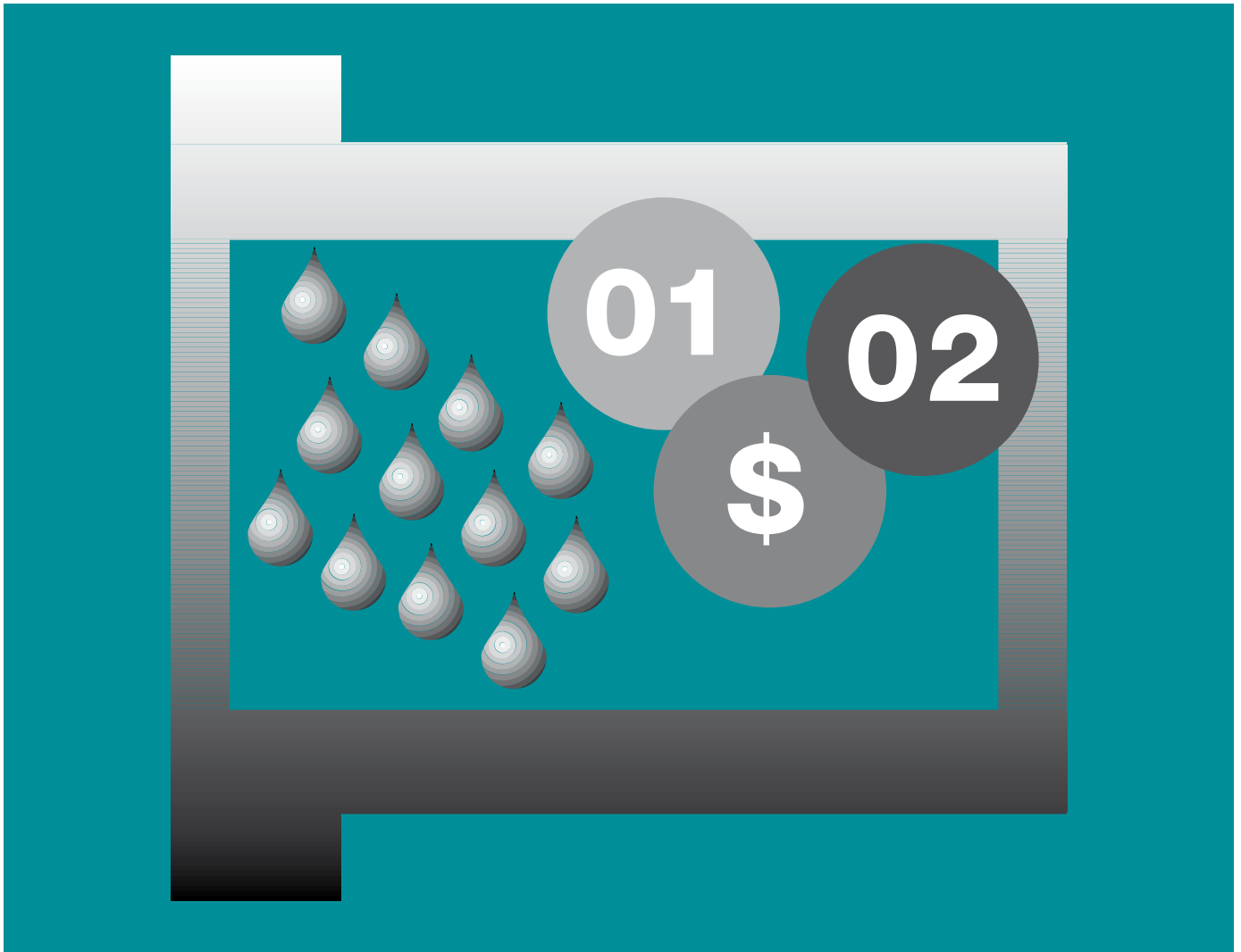
Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing Bore		Shaft Size	
			h13		-0,14	max.	min.	max.	min.	max.	min.
H370FI-0203-03	1/8	3/16	3/16	.312	.032	.1269	.1251	.1878	.1873	.1243	.1236
H370FI-0304-04	3/16	1/4	1/4	.375	.032	.1892	.1873	.2503	.2497	.1865	.1858
H370FI-0405-04	1/4	5/16	1/4	.500	.032	.2521	.2498	.3128	.3122	.2490	.2481
H370FI-0506-06	5/16	3/8	3/8	.562	.032	.3148	.3125	.3753	.3747	.3115	.3106
H370FI-0607-08	3/8	15/32	1/2	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
H370FI-0809-08	1/2	19/32	1/2	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
H370FI-1011-12	5/8	23/32	3/4	1.000	.046	.6280	.6253	.7192	.7184	.6240	.6230
H370FI-1214-12	3/4	7/8	3/4	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
H370FI-1416-16	7/8	1	1	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
H370FI-1618-16	1	1 1/8	1	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
H370FI-2022-20	1 1/4	1 13/32	1 1/4	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472

* after pressfit. Testing methods ► page 55

My Sketches





iglidur[®] H2 – low-cost high temperature material



Can be used underwater

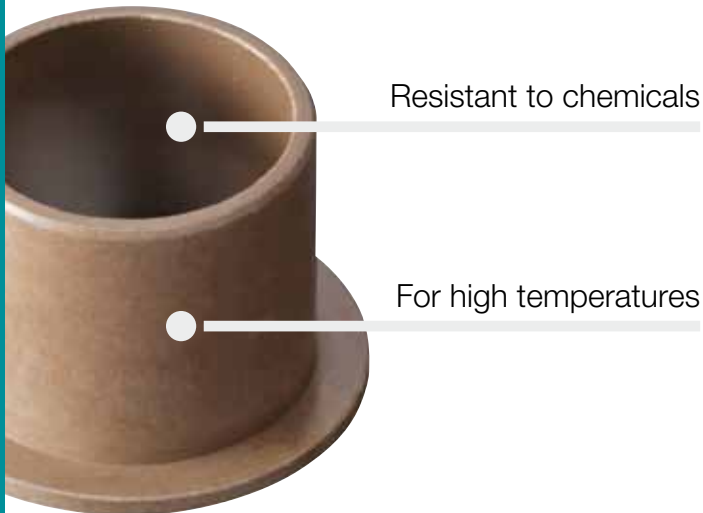
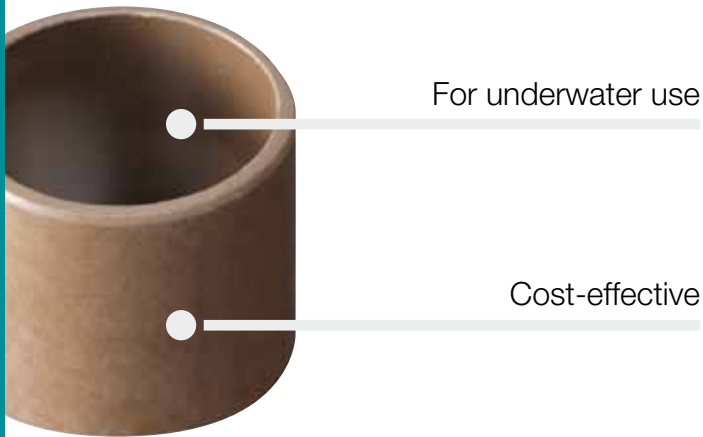
Cost-effective

Resistant to chemicals

For high temperatures

iglidur® H2

Low-cost high temperature material. For application with high temperature requirements. Can be conditionally used in dry operation; excellent properties with additional lubrication.



When to use it?

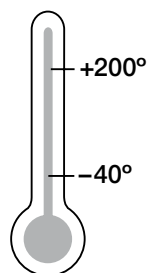
- For underwater use
- When a cost-effective bearing for high temperatures is desired
- For applications with fuels, oils etc.
- Resistant to chemicals



When not to use it?

- When the highest wear resistance is required
 - ▶ iglidur® H1, page 337
 - ▶ iglidur® H4, page 451
 - ▶ iglidur® W300, page 131
- When vibration dampening is necessary
 - ▶ iglidur® B, page 485
 - ▶ iglidur® M250, page 107
- When neither increased temperatures nor media contact occur
 - ▶ iglidur® GLW, page 197

Temperature



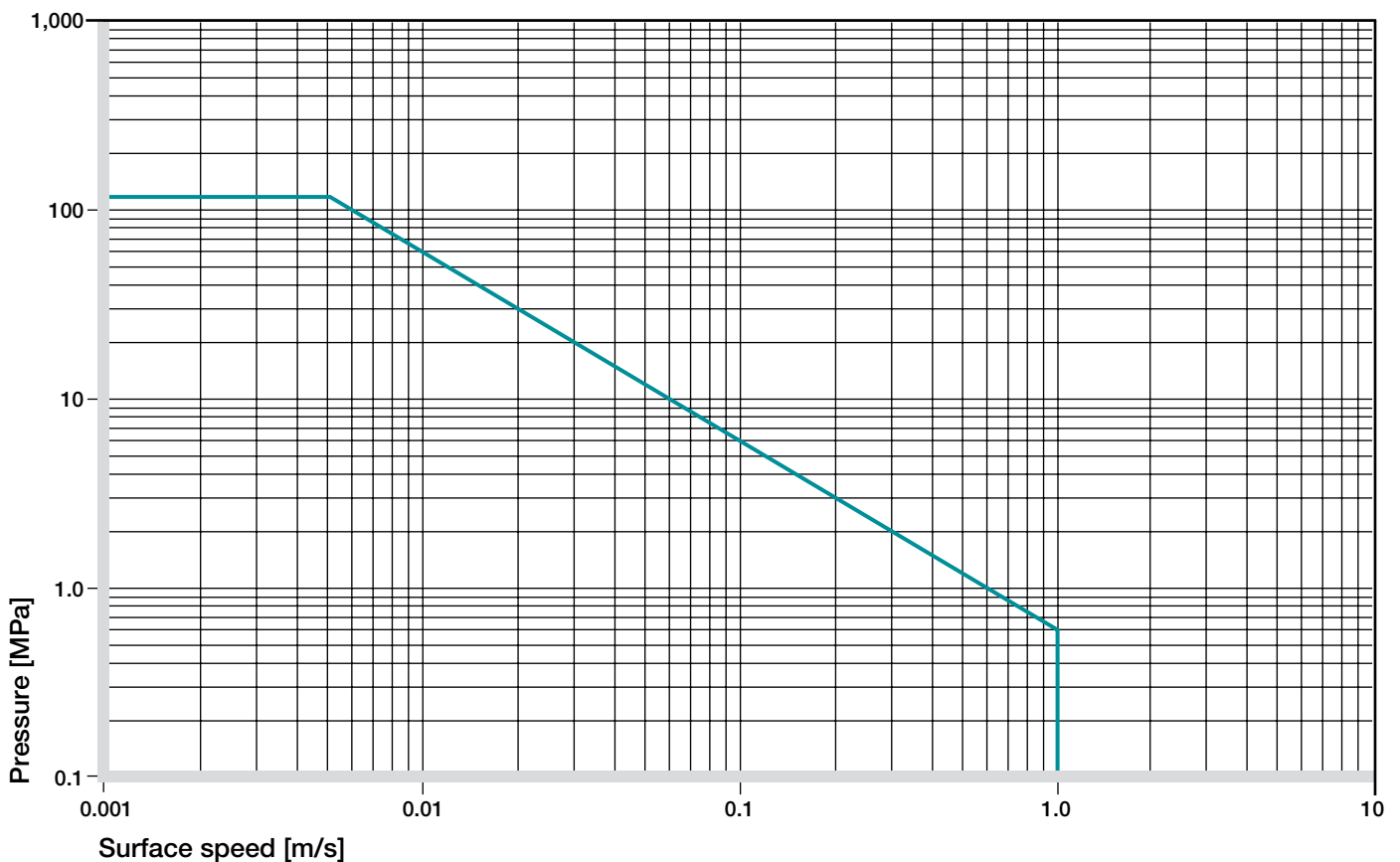
Product range

on request



Material data				
General properties		Unit	iglidur® H2	Testing method
Density		g/cm ³	1.69	
Colour			brown	
Max. moisture absorption at +23°C/50% r.h.		% weight	0.1	DIN 53495
Max. moisture absorption		% weight	0.2	
Coefficient of sliding friction, dynamic against steel		μ	0.07–0.3	
pv value, max. (dry)		MPa · m/s	0.58	
Mechanical properties				
Modulus of elasticity		MPa	10,300	DIN 53457
Tensile strength at +20°C		MPa	210	DIN 53452
Compressive strength		MPa	109	
Max. recommended surface pressure (+20°C)		MPa	110	
Shore D hardness			88	DIN 53505
Physical and thermal properties				
Max. long term application temperature		°C	+200	
Max. short term application temperature		°C	+240	
Min. application temperature		°C	-40	
Thermal conductivity		W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23°C)		K ⁻¹ · 10 ⁻⁵	4	DIN 53752
Electrical properties				
Specific volume resistance		Ωcm	> 10 ¹⁵	DIN IEC 93
Surface resistance		Ω	> 10 ¹⁴	DIN 53482

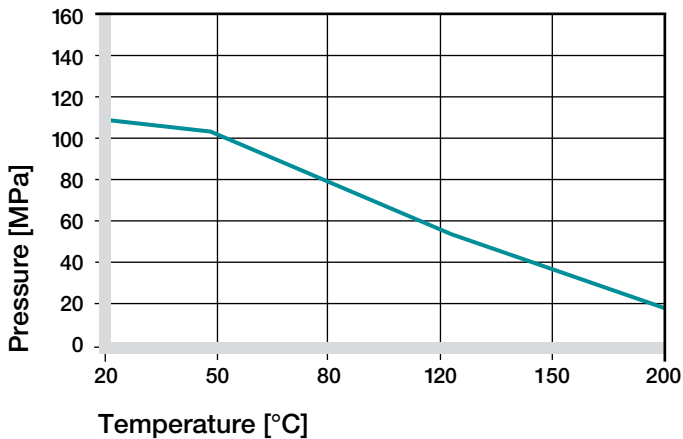
Table 01: Material data



Graph 01: Permissible pv values for iglidur® H2 with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® H2 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +200 °C the permissible surface pressure is almost 20 MPa.



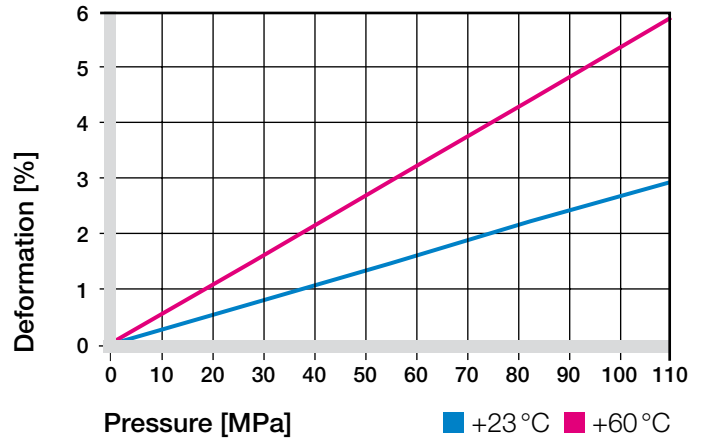
Graph 02: Recommended maximum surface pressure as a function of temperature (110 MPa at +20 °C)

In applications with the iglidur® H2 bearings, economical aspects are in focus. It is the first time that it is possible to offer such a high-performance bearing for large volume applications with these technical advantages at such a low price: Temperatures up to +200 °C, permitted surface pressure till 110 N/mm², and excellent chemical resistance.

A mixture of solid lubricants lowers the coefficient of friction and supports the wear resistance. The iglidur® H2 bearings are self-lubricating and suitable for all motions.

Graph 03 shows the elastic deformation of iglidur® H2 during radial loading. At the recommended maximum surface pressure of 110 MPa the deformation is less than 3%. The values for tensile and compressive strength are higher than those of iglidur® H at room temperature.

► Surface Pressure, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

In the development of iglidur® H2, cost aspects and mechanical stability were in focus. The permitted surface speeds of this bearing are rather low, which primarily permits an application with slow movements or in intermittent service.

► Surface Speed, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	0.9	0.6	2.5
Short term	1	0.7	3

Table 02: Maximum running speed

Temperatures

iglidur® H2 is an extremely temperature-resistant material. The short-term permitted maximum temperature is +240 °C and this enables the iglidur® H2 bearings to be subjected, for instance to a paint drying process without further load. With increasing temperatures, the compressive strength of iglidur® H2 bearings however decreases more strongly than in iglidur® H.

The temperatures prevailing in the bearing system also have an influence on the bearing wear. The wear rises with increasing temperatures.

► Application Temperatures, [page 46](#)

iglidur® H2 | Technical Data

iglidur® H2	Application temperature
Minimum	-40 °C
Max. long term	+200 °C
Max. short term	+240 °C
Add. securing is required from	+ 110 °C

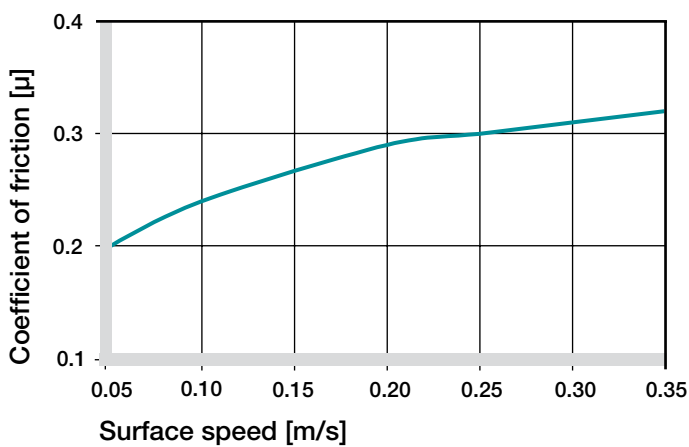
Table 03: Temperature limits

Friction and Wear

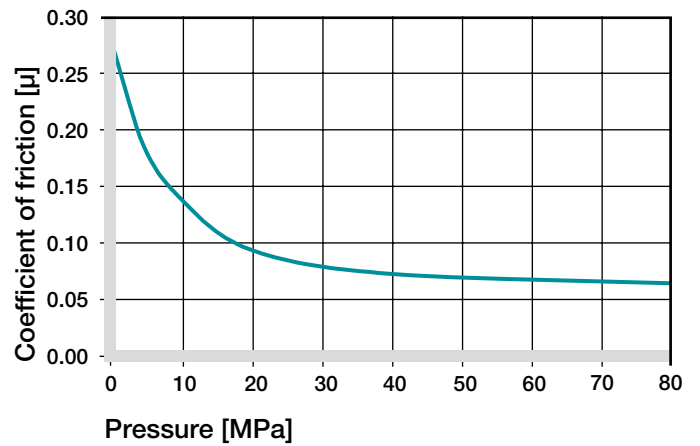
The coefficients of friction of iglidur® H2 plain bearings change with different surface speeds, loads and roughness, as indicated in the graphs 04-06. Paired with hardened steel shafts, the friction of the iglidur® H2 bearing reduces sharply and in the high load range attains (> 30 MPa) values of 0.07.

The hardness and brittleness of the material are the reason for the sensitivity of the iglidur® H2 bearing with coarse shafts; smooth shafts (Ra = 0.1) in contrast do not increase the friction of the systems.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa



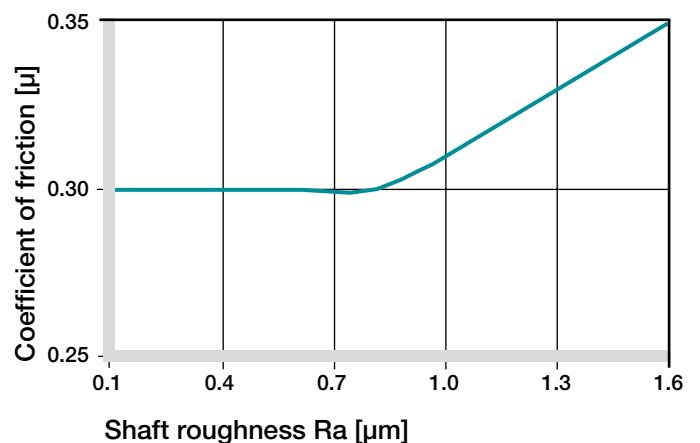
Graph 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

Shaft Materials

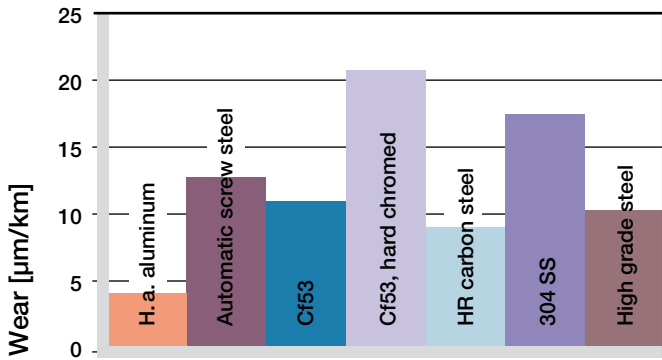
Regarding the wear resistance of combinations with iglidur® H2, it must be indicated once again that this bearing was developed for statically high mechanical stability. The wear resistance however does not attain, with none of the bearing-shaft combinations, the values of iglidur® H370 with the corresponding shaft.

When the iglidur® H2 bearings are used, they should not be combined with hard-chromed shafts. Shafts made of Cf53 and V2A are essentially better, as is found in Graphs 08 and 09.

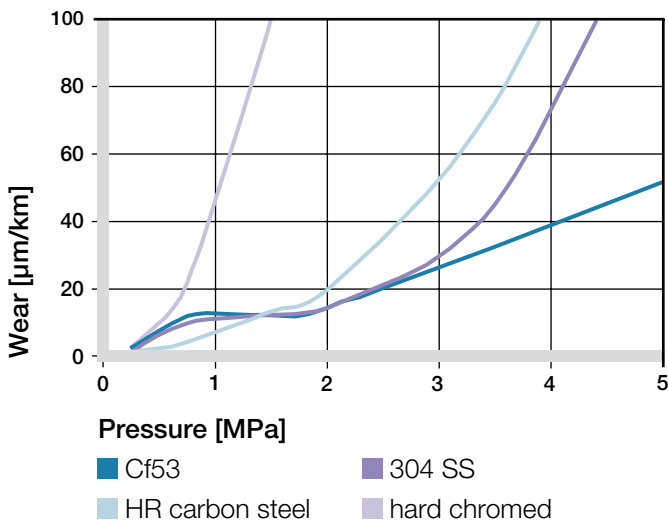
- ▶ Shaft Materials, **page 51**



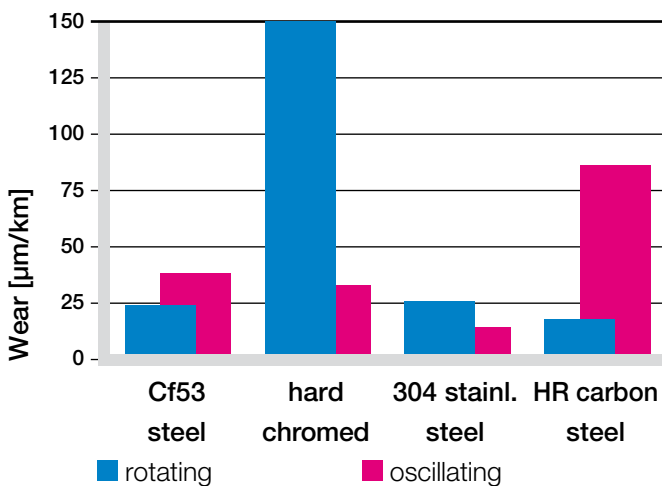
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, $p = 2 \text{ MPa}$

iglidur® H2	Greases	Fett	Oil	Water
C. o. f. μ	0.07–0.30	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ($R_a = 1 \text{ }\mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® H2 bearings have a good resistance against chemicals. They are resistant to most lubricants.

The iglidur® H2 is not affected by most weak organic and inorganic acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+ to 0
Strong acids	+ to –
Diluted alkalines	+
Strong alkalines	+

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [$+20 \text{ }^\circ\text{C}$]

Table 05: Chemical resistance

Radiation Resistance

iglidur® H2 withstands neutron and gamma particle radiation without detectable losses of its excellent mechanical properties. Plain bearings made of iglidur® H2 are resistant to radiation up to an intensity of $2 \cdot 10^2 \text{ Gy}$.

UV Resistance

iglidur® H2 plain bearings change under the influence of UV radiation and other weathering effects. The surface becomes rougher and the compressive strength decreases. The use of iglidur® H2 in applications that are permanently exposed to weathering should be checked.

Vacuum

In a vacuum environment, small moisture components are released as vapour. It is possible to use iglidur® H2 in a vacuum.

iglidur® H2 | Technical Data

Electrical Properties

iglidur® H2 plain bearings are electrically insulating.

Volume resistance	> 10 ¹⁵ Ωcm
Surface resistance	> 10 ¹⁴ Ω

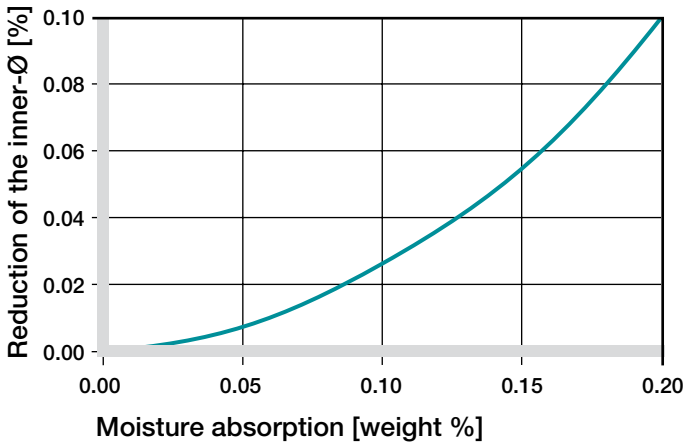
Moisture Absorption

The moisture absorption of iglidur® H2 bearings is approximately 0.1 % in standard climatic conditions. The saturation limit in water is 0.3 %. iglidur® H2 is an ideal material for wet environments.

Maximal Moisture Absorption

At +23 °C/50 % r.h.	0.1 % weight
Max. moisture absorption	0.2 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® H2 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size retainer, the inner diameter is adjusted to meet our specified tolerances.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® H2 F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

Plain bearings made of iglidur® H2 are manufactured to special order. Please request iglidur® H2 bearings as an alternative to iglidur® H and iglidur® H370 bearings in high volume applications.



iglidur® A180

FDA-general purpose
waterproof material

Standard range from stock ► from page 371



iglidur® A200

FDA-compliant and vibration-
dampening, absorbs moisture

Standard range from stock ► from page 381



iglidur® A350 **NEW!***

FDA-compliant and wear-
resistant at high temperatures

Standard range from stock ► from page 397



iglidur® A500

FDA-material for high
temperatures and high load

Standard range from stock ► from page 407



iglidur® A290

the robust general purpose
material

Standard range from stock ► from page 417



iglidur® T220



















suitable for the tobacco
industry

* in this catalog On request ► from page 427

iglidur® Specialists | Selection According to Main Criteria

iglidur®
polymer
bearings

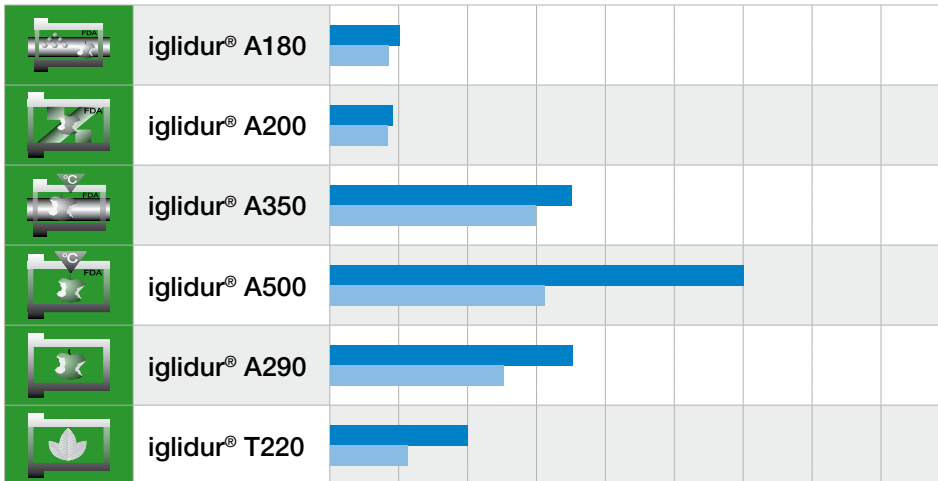
iglidur®-
Specialists –
Contact with
Food

						
	iglidur® A180	iglidur® A200	iglidur® A350	iglidur® A500	iglidur® A290	iglidur® T220
 Long life dry running	●		●			
 For high loads				●	●	
 For high temperatures			●	●		
 Low friction/high speed	●		●			
 Dirt resistant		●				●
 Chemicals resistant				●		
 Low water absorption	●		●	●		
 Food-suitable	●	●	●	●	●	
 Vibration-dampening		●				
 Edge pressure	●	●	●	●		●
 For under water use			●	●		
 Cost-effective	●				●	
from page	371	381	397	407	417	427

iglidur® Specialists | Selection According to Main Criteria

Load [MPa]

0 20 40 60 80 100 120 140 160

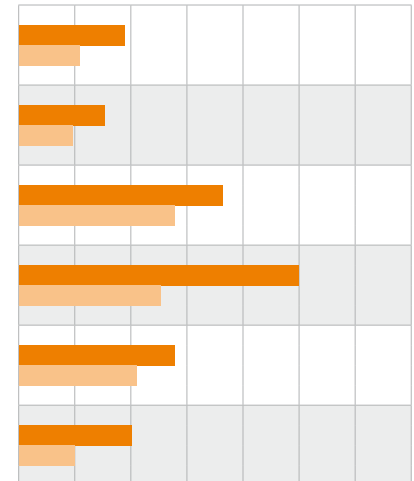


Maximum permissible radial load of iglidur® bearings at

- +20 °C
- +120 °C

Temperature [°C]

0 50 100 150 200 250 300

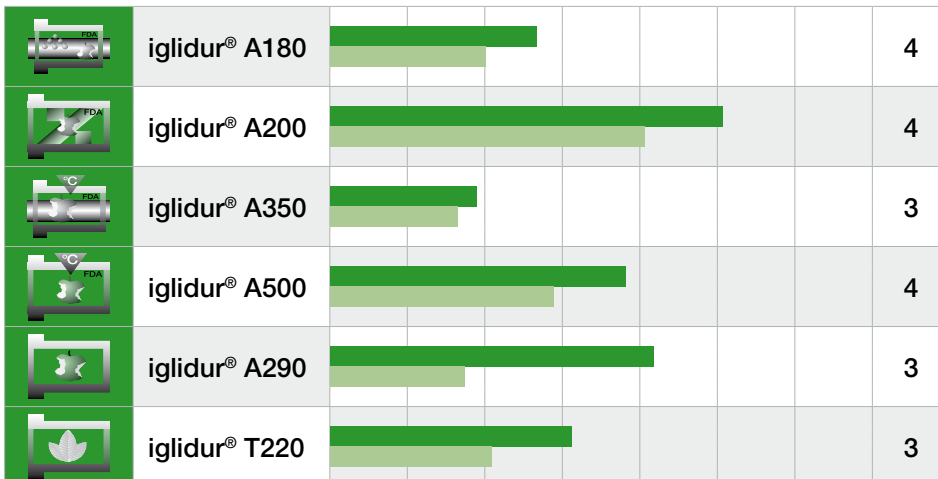


Important temperatur limits of iglidur® bearings

- Maximum permissible application temperature, continous
- Temperature where bearings need to be secured against radial or axial movement in the housing

Coefficient of Friction [μ]

0 0.1 0.2 0.3 0.4 0.5 0.6 Shaft



Coefficients of friction of iglidur® bearings sliding against steel, p = 1.2 MPa, v = 0.3 m/s

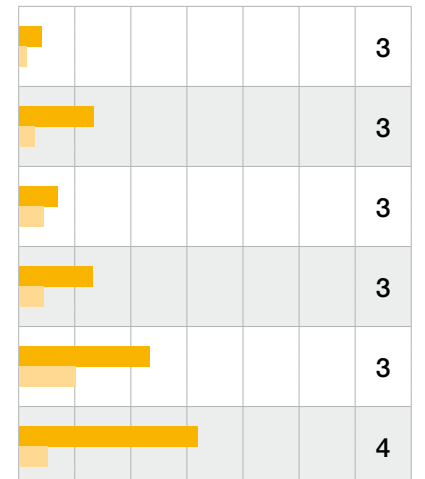
- Average coefficient of all the seven sliding combinations tested
- Coefficient of friction of best combination

Shaft material:

- 1 = Cf53
- 2 = hard chromed
- 3 = Aluminum, hc
- 4 = Automatic screw steel
- 5 = HR carbon steel
- 6 = 304 SS
- 7 = High grade steel

Wear [μm/km]

0 5 10 15 20 25 Shaft



Wear of iglidur® bearings sliding against steel, p = 1 MPa

- Average wear of all the seven sliding combination tested
- Wear of best combination

Material data							
Allgemeine Eigenschaften	Unit	iglidur® A180	iglidur® A200	iglidur® A350	iglidur® A500	iglidur® A290	iglidur® T220
Density	g/cm ³	1.46	1.14	1.42	1.28	1.41	1.28
Colour		white	white	blue	brown	white	white
Max. moisture absorption at +23 °C/50% r.h.	% weight	0.2	1.5	0.9	0.3	1.7	0.3
Max. moisture absorption	% weight	1.3	7.6	1.9	0.5	7.3	0.5
Coefficient of sliding friction, dynamic against steel	μ	0.05–0.23	0.10–0.40	0.10–0.20	0.26–0.41	0.13–0.40	0.20–0.32
pv value, max. (dry)	MPa · m/s	0.31	0.09	0.40	0.28	0.23	0.28
Mechanical properties							
Modulus of elasticity	MPa	2,300	2,500	2,000	3,600	8,800	1,800
Tensile strength at +20 °C	MPa	88	116	110	140	250	65
Compressive strength	MPa	78	54	78	118	91	55
Max. recommended surface pressure (+20 °C)	MPa	28	18	60	120	70	40
Shore D hardness		76	81	76	83	88	76
Physical and thermal properties							
Max. long term application temperature	°C	+90	+80	+180	+250	+140	+100
Max. short term application temperature	°C	+110	+170	+210	+300	+180	+160
Min. application temperature	°C	-50	-40	-100	-100	-40	-40
Thermal conductivity	W/m · K	0.25	0.24	0.24	0.24	0.24	0.24
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	11	10	8	9	7	11
Electrical properties							
Specific volume resistance	Ωcm	> 10 ¹²	> 10 ¹³	> 10 ¹¹	> 10 ¹⁴	> 10 ¹¹	> 10 ¹⁰
Surface resistance	Ω	> 10 ¹¹	> 10 ¹²	> 10 ¹⁰	> 10 ¹³	> 10 ¹¹	> 10 ¹⁰

Material resistance (at +20 °C)							
Chemical resistance	iglidur® A180	iglidur® A200	iglidur® A350	iglidur® A500	iglidur® A290	iglidur® T220	
Alcohol	+	+ bis 0	+	+	+ to 0	+	
Hydrocarbons	+	+	+ to 0	+	+	-	
Greases, oils without additives	+	+	+	+	+	+	
Fuels	+	+	+	+	+	+	
Diluted acids	0 to -	0 to -	+	+	0 to -	0	
Strong acids	-	-	+	+	-	-	
Diluted alkalines	+	+	+	+	+	-	
Strong alkalines	+ to 0	0	+	+	+ to 0	-	
Radiation resistance [Gy] to	3 · 10 ²	1 · 10 ⁴	2 · 10 ²	2 · 10 ⁵	3 · 10 ²	3 · 10 ²	

+ resistant 0 conditionally resistant - not resistant



Typical sectors of industry and application areas

- Food industry
- Beverage technology
- Medical etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



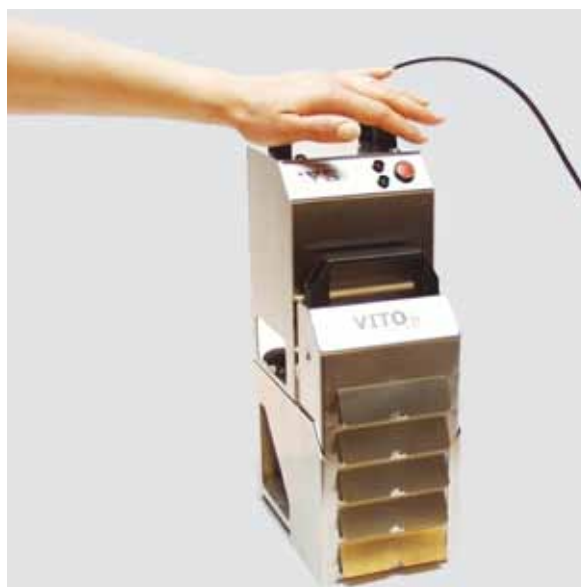
► www.igus.co.uk/kitchen



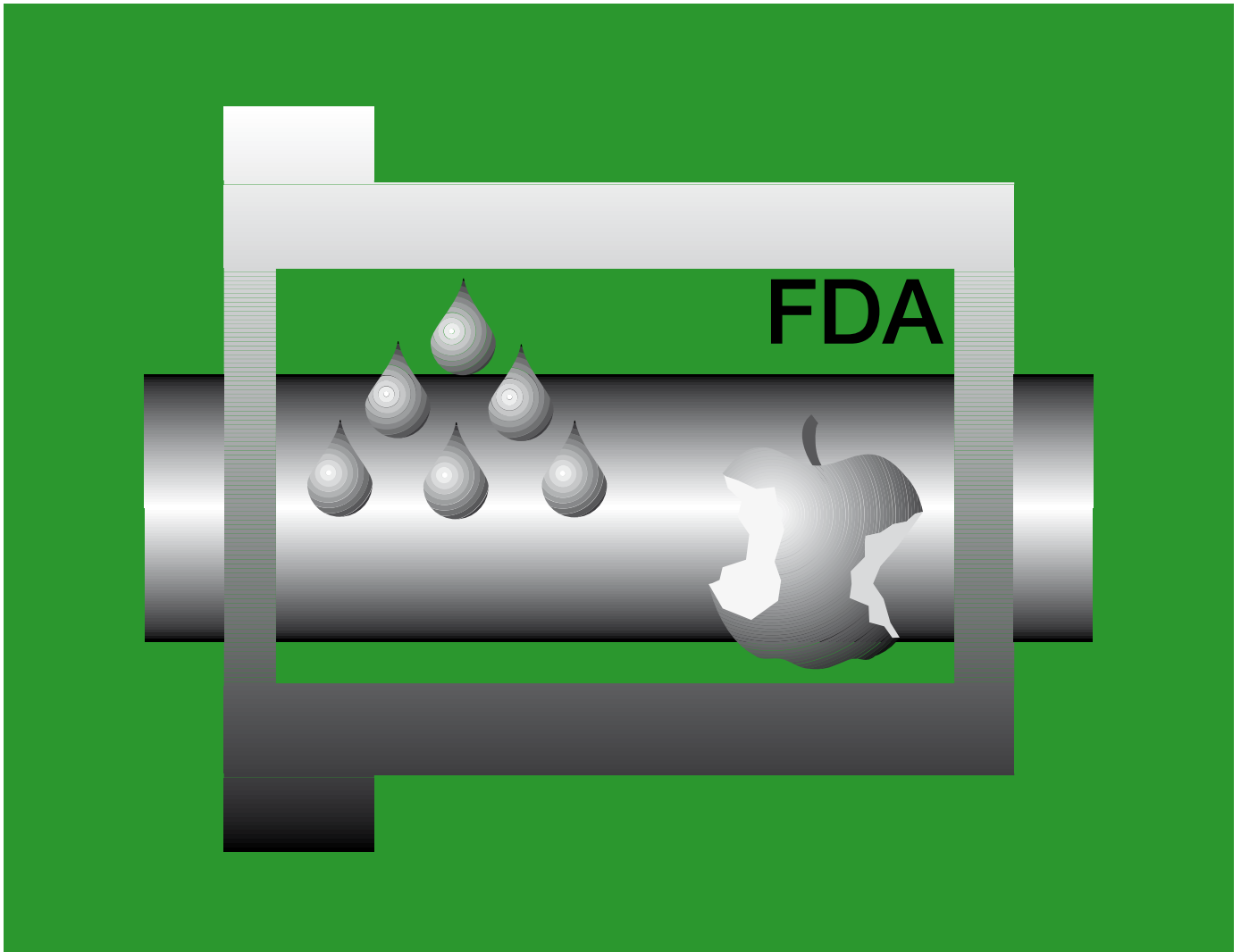
► www.igus.co.uk/kitchen



► www.igus.co.uk/milking-arm



► www.igus.co.uk/filtration-plant



iglidur® A180 – FDA-general purpose waterproof material



Standard range from stock

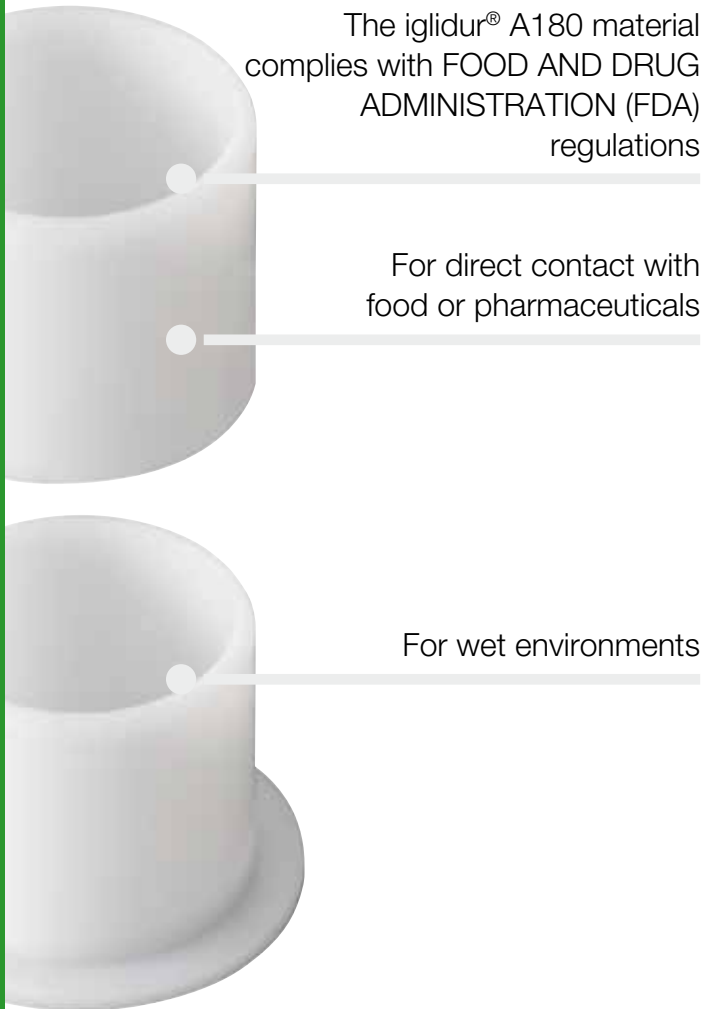
The iglidur® A180 material complies with FOOD AND DRUG ADMINISTRATION (FDA) regulations

For direct contact with food or pharmaceuticals

For wet environments

iglidur® A180

FDA-general purpose waterproof material. FDA compliant material for applications with low to medium loads in immediate environs of (or contact with) food or drugs, as well as humidity.



When to use it?

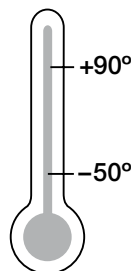
- If the bearings have direct contact with food
- If FDA-compliance is required
- If quiet operation is important
- If low water absorption is needed



When not to use?

- When the maximum abrasion resistance is necessary
 - ▶ **iglidur® J, page 89**
- When temperatures are continuously higher than +80 °C
 - ▶ **iglidur® A290, page 417**
 - ▶ **iglidur® A500, page 407**
- When a cost-effective universal bearing is required
 - ▶ **iglidur® G, page 61**
 - ▶ **iglidur® P, page 185**

Temperature



Product Range

2 types
Ø 6–30 mm
more dimensions
on request

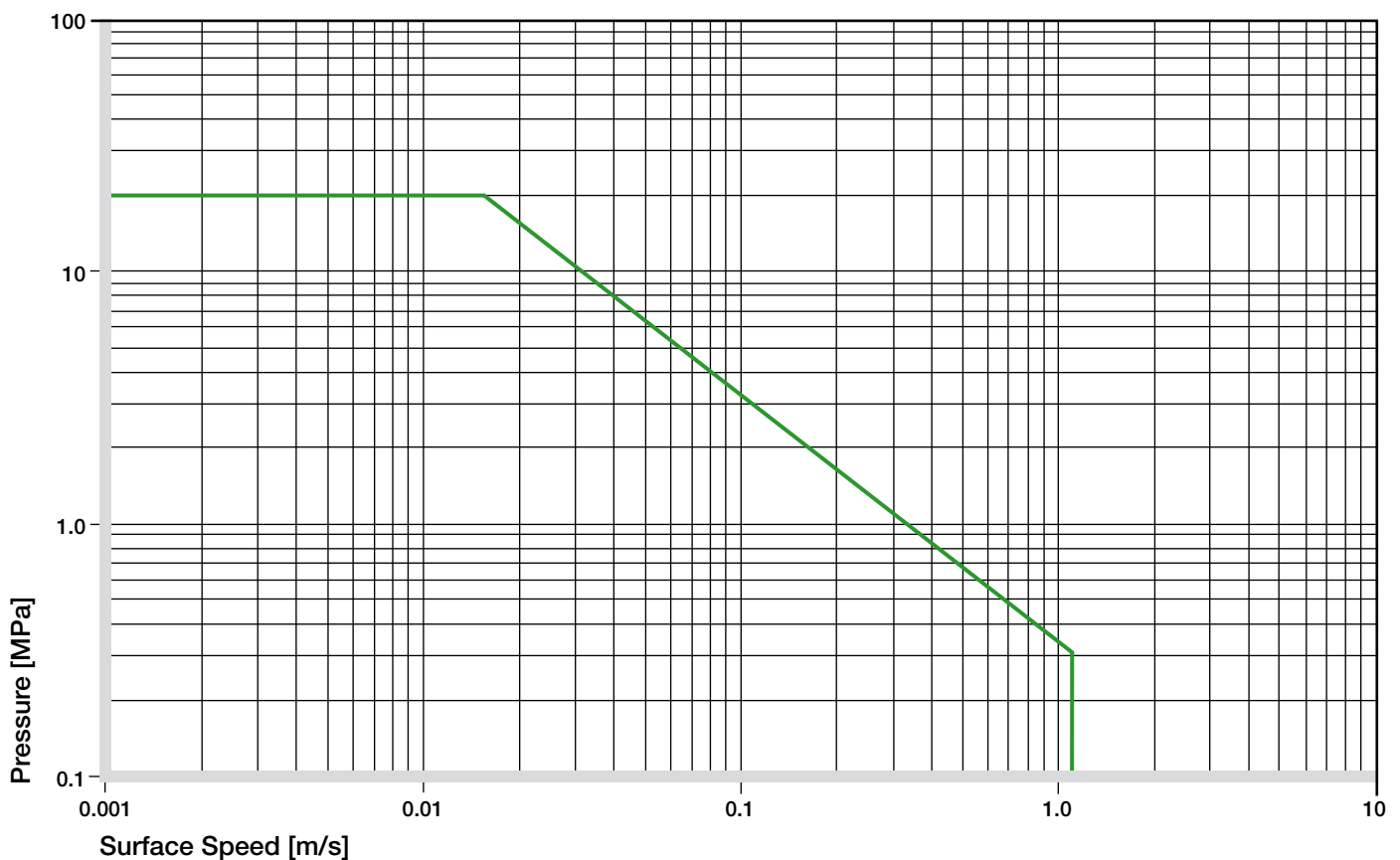


products of iglidur® A180 comply with the requirements of the FDA for repeated contact with food



Material data			
General properties	Unit	iglidur® A180	Testing Method
Density	g/cm ³	1.46	
Colour		white	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.2	DIN 53495
Max. moisture absorption	% weight	1.3	
Coefficient of sliding friction, dynamic against steel	μ	0.05–0.23	
pv value, max. (dry)	MPa · m/s	0.31	
Mechanical properties			
Modulus of elasticity	MPa	2,300	DIN 53457
Tensile strength at +20°C	MPa	88	DIN 53452
Compressive strength	MPa	78	
Max. recommended surface pressure (+20°C)	MPa	28	
Shore D hardness		76	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+90	
Max. short term application temperature	°C	+110	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0.25	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	11	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹²	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

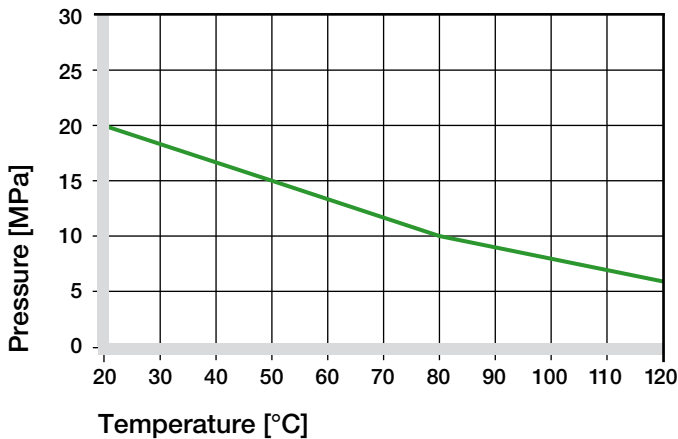
Table 01: Material Data



Graph 01: Permissible pv values for iglidur® A180 with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

Mechanical Properties

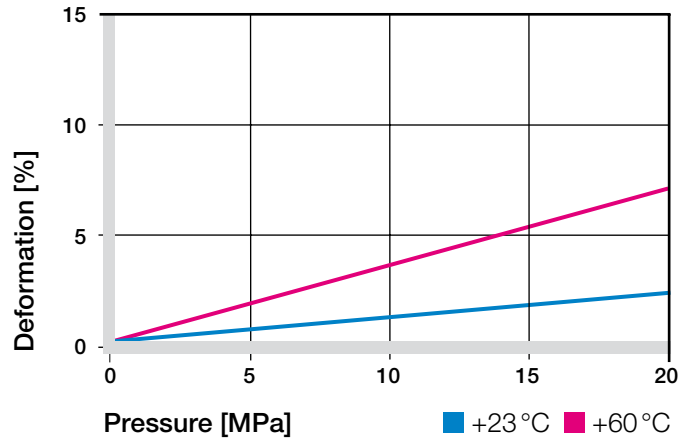
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® A180 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 6 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (20 MPa at +20 °C)

Bearings made of iglidur® A180 are suitable for application in direct contact with foodstuffs. Hence they are the ideal solution for bearing positions on machines for the food and packaging industries, the medical equipment manufacturing, for small equipment for households, etc. The iglidur® A180 distinguishes itself also in wet cleaning or where process-dependent contact with wet media is the business of the day by its extremely low humidity absorption. Graph 03 shows the elastic deformation of iglidur® A180 during radial loading. At the recommended maximum surface pressure of 20 MPa the deformation is less than 2.5%. Plastic deformation is minimal up to this radial load. However, it is also a result of the service time.

► Surface Pressure, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® A180 is developed for low surface speeds. Maximum speeds up to 0.8 m/s (rotating) and 3.5 m/s (linear) respectively are permitted for continuous application in dry operation.

These given values (table 02) indicate the limits at which an increase up to the continuous permissible temperature occurs. In practice these limit values are not always reached due to interactions.

► Surface Speed, [page 45](#)

► pv value and lubrication, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	0.8	0.6	3.5
Short term	1.2	1	5

Table 02: Maximum running speed

Temperatures

The short-term permitted maximum temperature is +110 °C. With increasing temperatures, the compressive strength of iglidur® A180 bearings decreases. Graph 02 clarifies this connection. The temperatures prevailing in the bearing system also have an influence on the bearing wear.

► Application Temperatures, [page 46](#)

iglidur® A180	Application Temperature
Minimum	-50 °C
Max. long term	+90 °C
Max. short term	+110 °C
Add. securing is required from	+60 °C

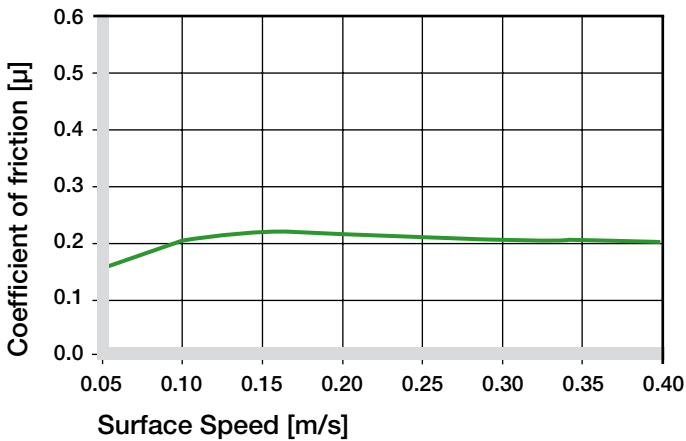
Table 03: Temperature limits

iglidur® A180 | Technical Data

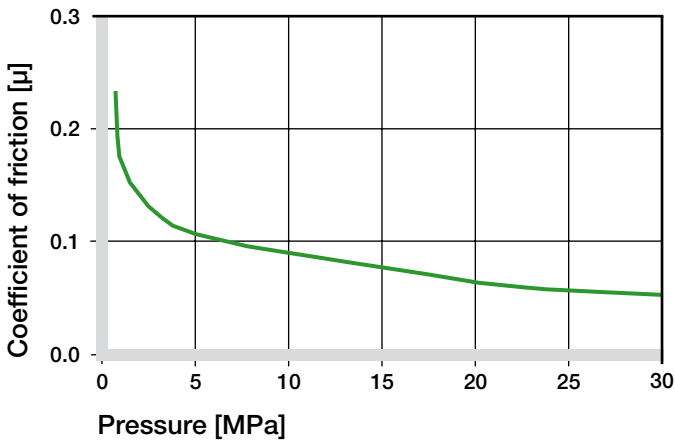
Friction and Wear

Coefficient of friction and wear resistance alter with the application parameters. In the iglidur® A180 bearings, the alteration of the friction coefficient μ dependent on surface speed and the shaft's surface finish is only negligently pronounced. With increasing load, the coefficient of friction however sinks markedly. The coefficient of friction perceptibly reduces straightaway in the load range up to 5 MPa.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75$ MPa



Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01$ m/s

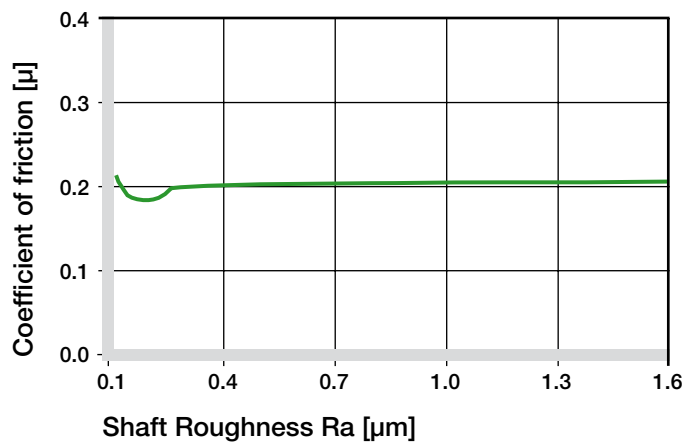
Shaft Materials

Graphs 06 to 09 show the test results of iglidur® A180 bearings running against various shaft materials.

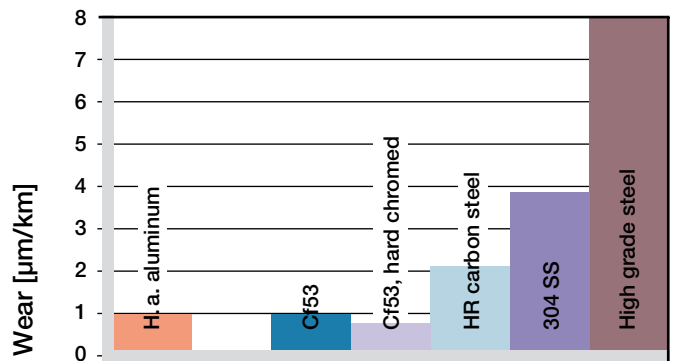
The combination “iglidur® A180/hard-anodized aluminum” clearly stands out. It attains good to excellent wear rates also with other shafts.

With Cf53 shafts, the higher wear in pivoting applications is exemplary compared to rotating applications. Graph 08 clearly shows, in the example of the V2A shafts, the direct increase in wear with rising load with “soft” shafts. The increase is hardly noticeable with hard shafts.

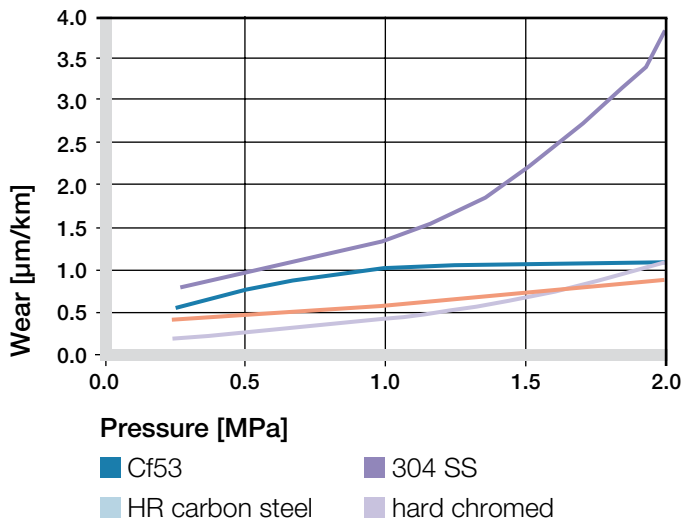
- ▶ Shaft Materials, **page 51**



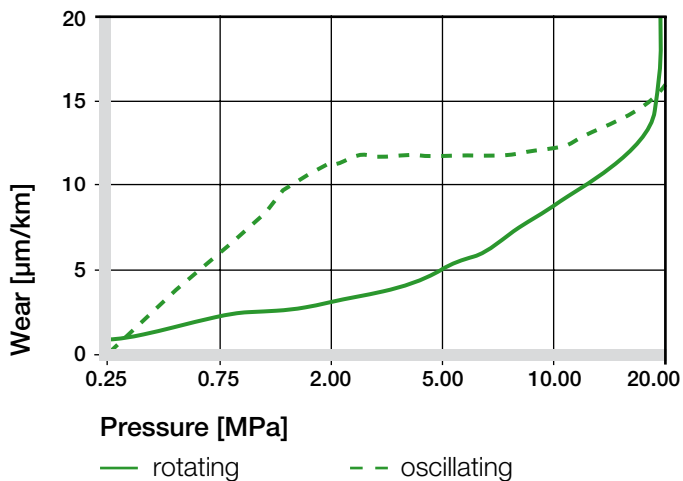
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure $p = 2$ MPa, $v = 0.3$ m/s



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® A180	Dry	Greases	Oil	Water
C.o.f. µ	0.05–0.23	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A180 bearings can be used under various environmental conditions and in contact with numerous chemicals. Table 05 gives an overview of the chemical resistance of iglidur® A180 bearings at room temperature.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	+ to 0

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® A180 are resistant to radiation up to an intensity of $3 \cdot 10^2$ Gy. Higher radiation levels attack the material and can cause the loss of essential mechanical properties.

UV Resistance

iglidur® A180 bearings are resistant to UV radiation, but the tribological properties deteriorate with continuous exposure.

Vacuum

When used in a vacuum environment, the iglidur® A180 plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

iglidur® A180 plain bearings are electrically insulating.	
Volume resistance	> 10^{12} Ωcm
Surface resistance	> 10^{11} Ω

iglidur® A180 | Technical Data

Moisture Absorption

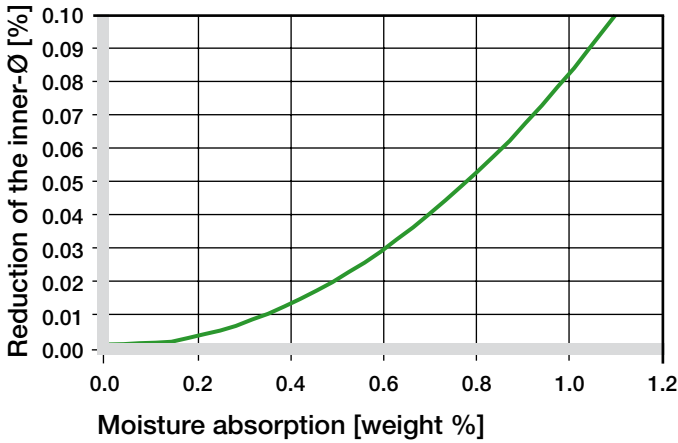
The moisture absorption of iglidur® A180 plain bearings is approximately 0.2 % in standard atmosphere. The saturation limit submerged in water is 5 %. This must be taken into account for these types of applications.

Maximum moisture absorption

At +23 °C/50 % r.h. 0.2 % weight

Max. moisture absorption 1.3 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

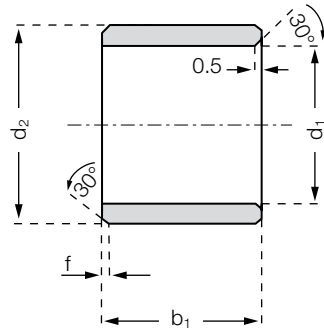
iglidur® A180 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® A180 E10 [mm]	Housing H7 [mm]
to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

A180SM-0608-10



Length b1

Outer diameter d2

Inner diameter d1

Metric

Type (Form S)

Material iglidur® A180

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
A180SM-0608-10	6	+0.020 +0.068	8	10
A180SM-0810-10	8	+0.025 +0.083	10	10
A180SM-1012-10	10	+0.025 +0.083	12	10
A180SM-1214-15	12	+0.032 +0.102	14	15
A180SM-1618-15	16	+0.032 +0.102	18	15
A180SM-2023-20	20	+0.040 +0.124	23	20
A180SM-2528-30	25	+0.040 +0.124	28	30
A180SM-3034-20	30	+0.040 +0.124	34	20

* after pressfit. Testing methods ► page 55



delivery available
time from stock



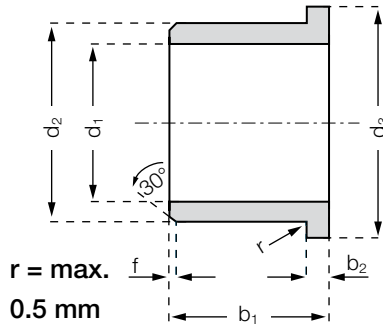
prices price list online
www.igus.co.uk/en/a180



Order Part Number
example A180SM-0608-10

iglidur® A180 | Product Range

Flange bearing



Order key

A180FM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® A180

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3	b1 h13	b2
A180FM-0608-06	6	+0.020 +0.068	8	12	6	1
A180FM-0810-10	8	+0.025 +0.083	10	15	10	1
A180FM-1012-10	10	+0.025 +0.083	12	18	10	1
A180FM-1214-15	12	+0.032 +0.102	14	20	15	1
A180FM-1618-17	16	+0.032 +0.102	18	24	17	1
A180FM-2023-21	20	+0.040 +0.124	23	30	21.5	1.5
A180FM-2528-21	25	+0.040 +0.124	28	35	21.5	1.5
A180FM-3034-26	30	+0.040 +0.124	34	42	26	2

* after pressfit. Testing methods ► page 55



delivery available
time from stock

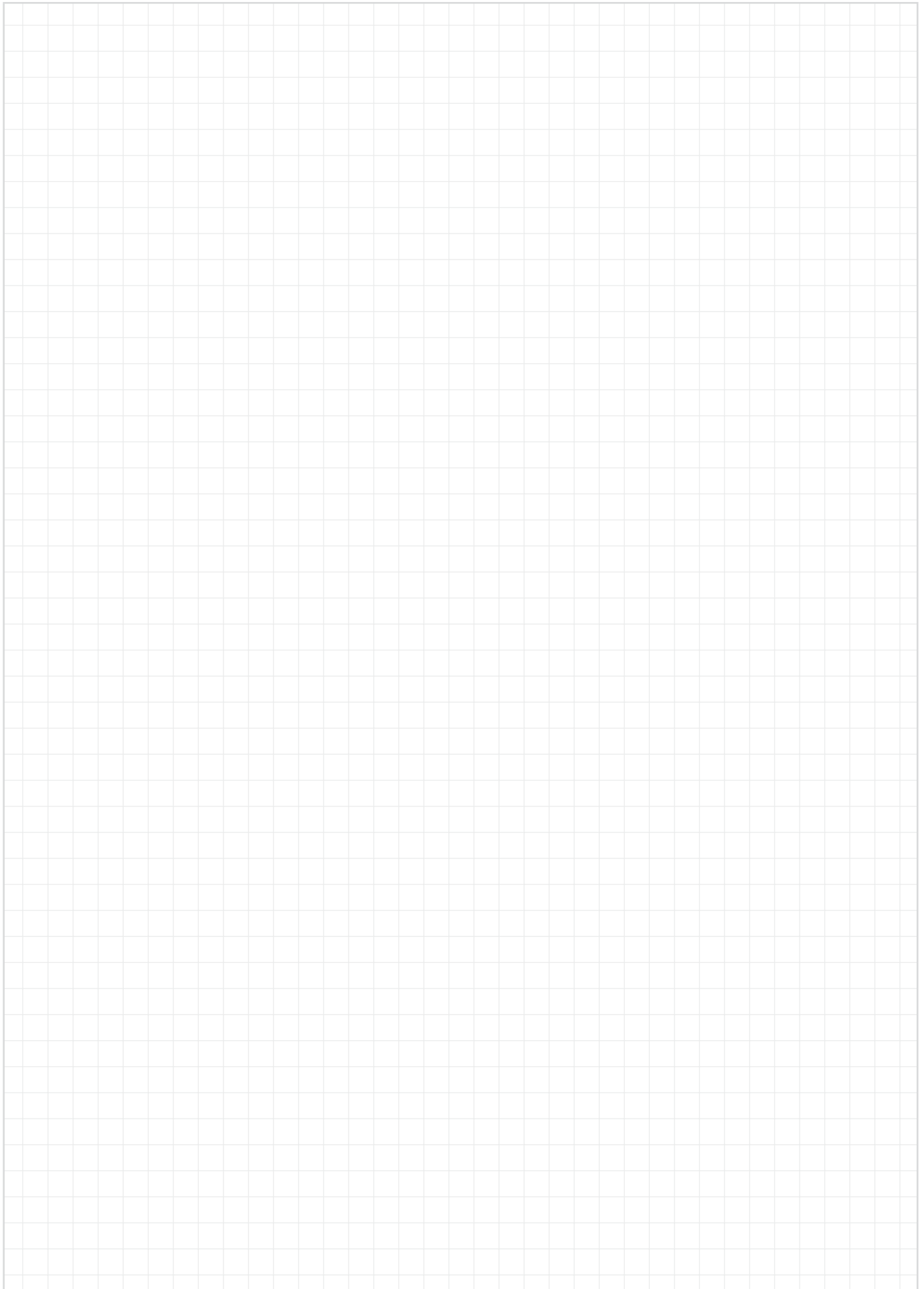


prices price list online
www.igus.co.uk/en/a180



Order Part Number
example A180FM-0608-06

My Sketches





iglidur® A200 – FDA-compliant and vibration-dampening, absorbs moisture



Standard range from stock

iglidur® A200 material complies with Food and Drug Administration (FDA) regulations

For direct contact with food or pharmaceuticals

For low speeds

iglidur® A200

FDA-compliant and vibration-dampening, absorbs moisture. FDA compliant material for applications with low to medium loads in immediate environs of (or contact) with food or drugs.



iglidur® A200 material complies with FOOD AND DRUG ADMINISTRATION (FDA) regulations

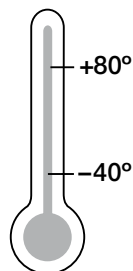


For direct contact with food or pharmaceuticals



For low speeds

Temperature



When to use it?

- Suitable for direct contact with food
- When quiet operation is important
- When dirt needs to become embedded
- If FDA compliance is necessary



When not to use it?

- When the maximum abrasion resistance is necessary
 - ▶ **iglidur® W300, page 131**
- When temperatures are continuously higher than +80 °C
 - ▶ **iglidur® A290, page 417**
 - ▶ **iglidur® A500, page 407**
- When a cost-effective universal bearing is required
 - ▶ **iglidur® G, page 61**
- For operations in wet environments
 - ▶ **iglidur® A180, page 371**

Product range

3 types
Ø 1–32 mm
more dimensions
on request

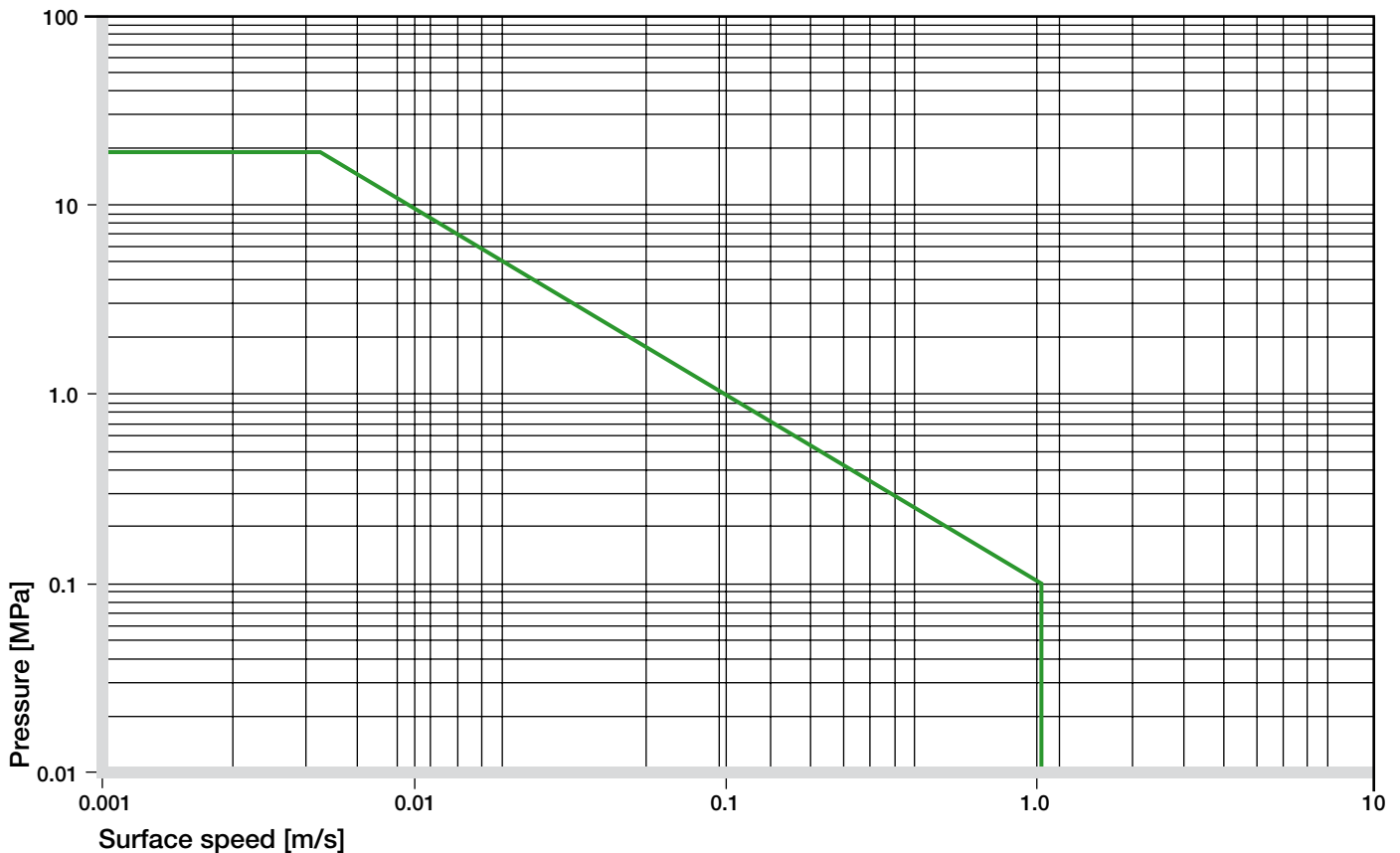


Products of iglidur® A200 comply with the requirements of the FDA for repeated contact with food



Material data			
General properties	Unit	iglidur® A200	Testing method
Density	g/cm ³	1.14	
Colour		white	
Max. moisture absorption at +23°C/50% r.h.	% weight	1.5	DIN 53495
Max. moisture absorption	% weight	7.6	
Coefficient of sliding friction, dynamic against steel	μ	0.10–0.40	
pv value, max. (dry)	MPa · m/s	0.09	
Mechanical properties			
Modulus of elasticity	MPa	2,500	DIN 53457
Tensile strength at +20°C	MPa	116	DIN 53452
Compressive strength	MPa	54	
Max. recommended surface pressure (+20°C)	MPa	18	
Shore D hardness		81	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+80	
Max. short term application temperature	°C	+170	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0,24	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	10	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹³	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

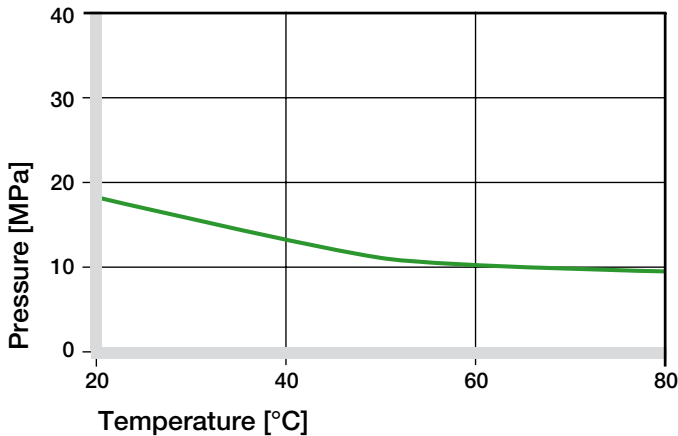
Table 01: Material data



Graph 01: Permissible pv values for iglidur® A200 with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® A200 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +40 °C the permissible surface pressure is almost 5 MPa.



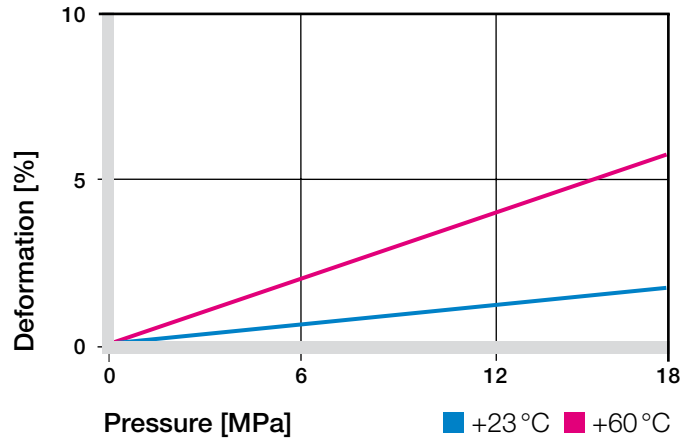
Graph 02: Recommended maximum surface pressure as a function of temperature (18 MPa at +20 °C)

Bearings made of iglidur® A200 are suitable for application in direct contact with foodstuffs. Hence they are the ideal solution for bearing positions in machines for the food industry, medical equipment manufacturing, for small equipment for households, etc. As the admixture of lubricants should be foregone in favor of food compatibility, the thermoplastic composition of iglidur® A200 is particularly adjusted for abrasion resistance. In addition the iglidur® A200 is characterized by its capacity to embed dirt and by its quiet operating behavior.

The good wear properties, dirt resistance and the possibility for dry operation allow to replace elaborately sealed, lubricated bearings for little costs.

Graph 03 shows the elastic deformation of iglidur® A200 during radial loading. At the recommended maximum surface pressure of 18 MPa the deformation is less than 2%. A plastic deformation can be neglected up to this value. It is nonetheless depending on the duration of the applied force.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® A200 was developed for low surface speeds. With regard to running dry in continuous use, a maximum of 0.8 m/s (rotating) or 2 m/s (linear) is possible.

These given values indicate the limits at which an increase up to the continuous permissible temperature occurs. This increase is a result of friction. In practice, these limit values are not often reached, due to varying application conditions.

► Surface Speed, page 45

► pv value, page 45

m/s	Rotating	Oscillating	Linear
Continuous	0.8	0.6	2
Short term	1.5	1.1	3

Table 02: Maximum running speed

Temperatures

The maximum permissible short term temperature +170 °C. With increasing temperatures, the compressive strength of iglidur® A200 plain bearings decreases. Graph 02 shows this relationship. The ambient temperatures prevalent in the bearing system also have an effect on the bearing wear.

► Application Temperatures, page 46

iglidur® A200	Application temperature
Minimum	-40 °C
Max. long term	+80 °C
Max. short term	+170 °C
Add. securing is required from	+50 °C

Table 03: Temperature limits

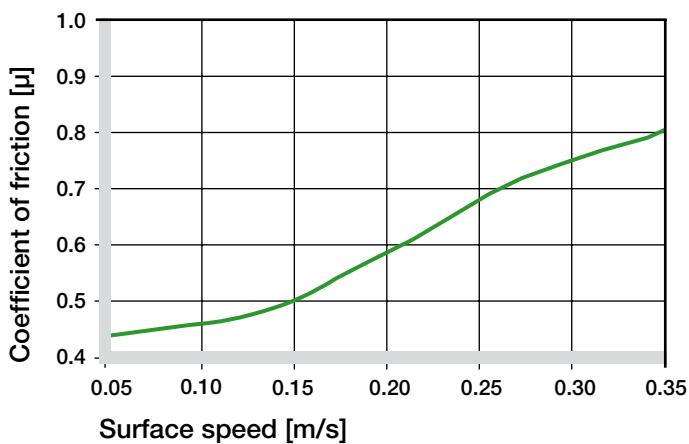
iglidur® A200 | Technical Data

Friction and Wear

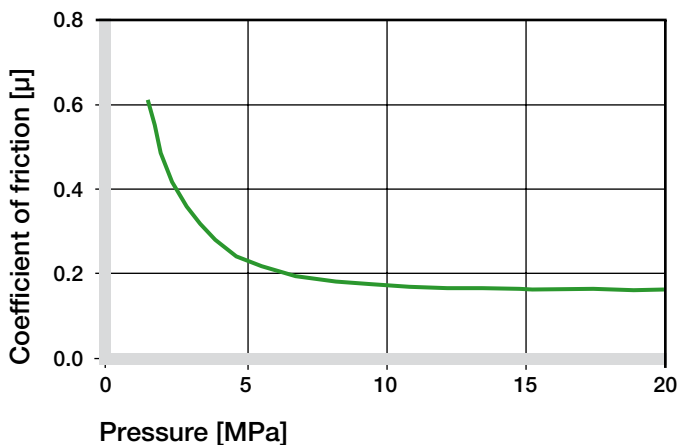
Just as the wear resistance, the coefficient of friction also changes with the load. For iglidur® A200 plain bearings, the coefficient of friction μ decreases slightly with increasing load. Friction and wear also depend to a high degree on the reverse partner. The shaft can be a decisive factor for an ideal pairing of the bearing system. Thus extremely smooth shafts enhance not only the coefficient of friction, but also the bearing wear. The most suited are smoothed surfaces with an average surface finish of $R_a = 0.4$ to $0.6 \mu\text{m}$.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



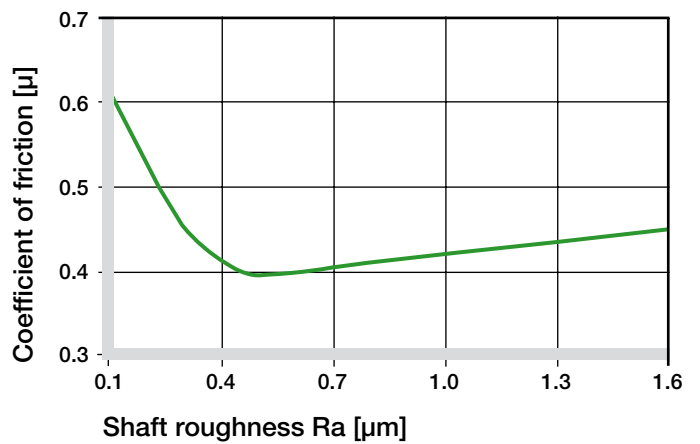
Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

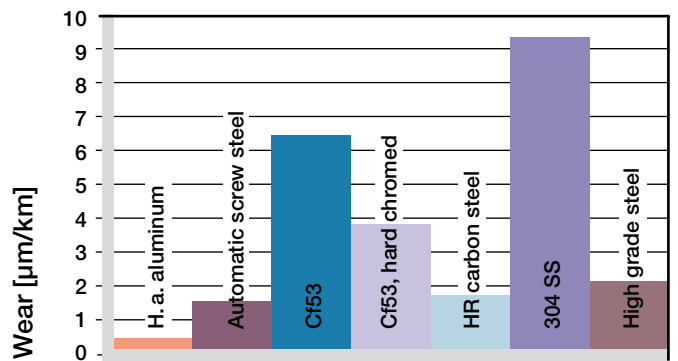
Graphs 06 to 09 show the test results of iglidur® A200 bearings running against various shaft materials.

The combination “iglidur® A200/hard-chromed shaft” clearly stands out. Up to a range of about 2.5 MPa , the wear of this combination remains largely independent of load. In pivoting applications below a load $p = 2 \text{ MPa}$, the wear of iglidur® A200 bearings is higher than in rotating applications with equal load. Here the St37 shaft is a positive exception with its much less coefficient of wear.

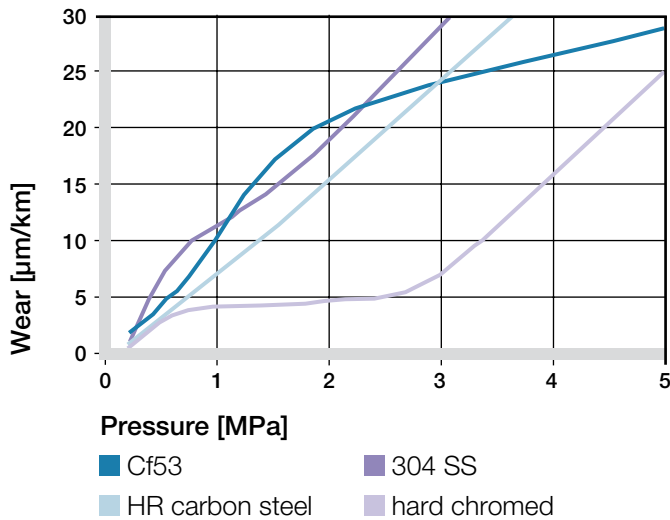
► Shaft Materials, **page 51**



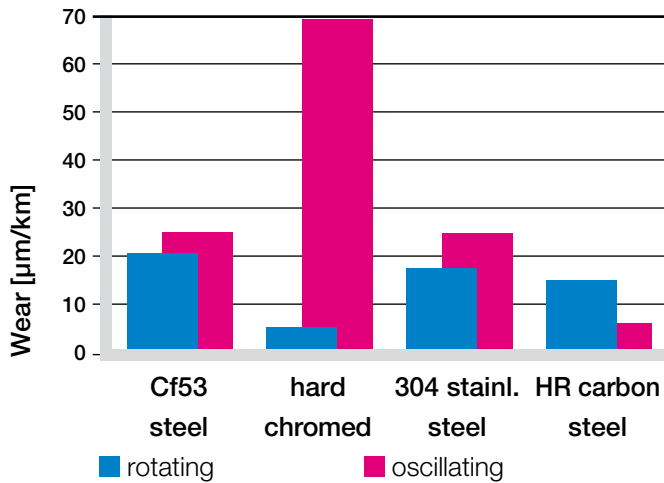
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur® A200	Dry	Greases	Oil	Water
C. o. f. μ	0.1–0.4	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 μ m, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A200 plain bearings have strong resistance to chemicals. They are also resistant to most lubricants.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	0

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® A200 are resistant to radiation up to an intensity of $1 \cdot 10^4$ Gy. Higher radiation levels attack the material and can cause the loss of essential mechanical properties.

UV Resistance

iglidur® A200 plain bearings are resistant to UV radiation.

Vacuum

In a vacuum environment, iglidur® A200 plain bearings have restricted use.

Electrical Properties

iglidur® A200 plain bearings are electrically insulating.	
Volume resistance	$> 10^{13} \Omega\text{cm}$
Surface resistance	$> 10^{11} \Omega$

iglidur® A200 | Technical Data

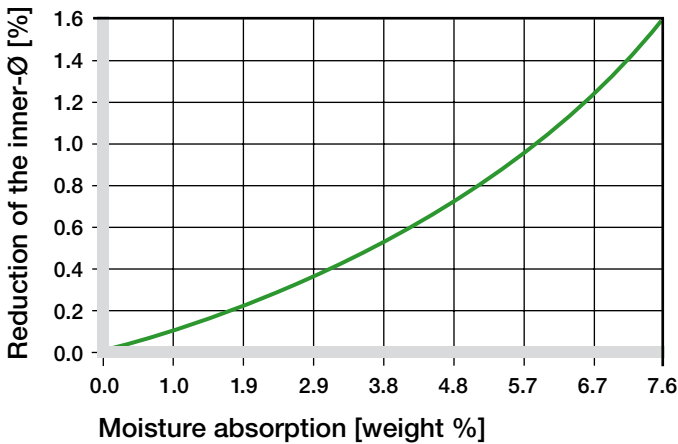
Moisture Absorption

The moisture absorption of iglidur® A200 plain bearings is approximately 1.5 % in standard atmosphere. The saturation limit submerged in water is 7.6 %. This must be taken into account for these types of applications.

Maximum moisture absorption

At +23 °C/50 % r.h.	1.5 % weight
Max. moisture absorption	7.6 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® A200 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9).

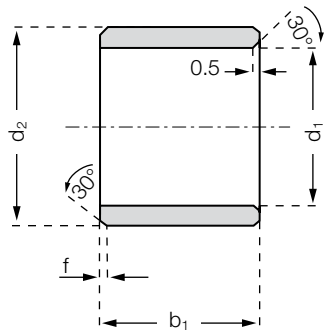
The bearings are designed for pressfit into a housing machined to a H7 tolerance. After the installation in a housing bore with the tolerance H7, the inner diameter of the bearing automatically adjusts to the D11 tolerance.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® A200 D11 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.020 +0.080	0 +0.010
> 3 to 6	0-0.030	+0.030 +0.105	0 +0.012
> 6 to 10	0-0.036	+0.040 +0.130	0 +0.015
> 10 to 18	0-0.043	+0.050 +0.160	0 +0.018
> 18 to 30	0-0.052	+0.065 +0.195	0 +0.021
> 30 to 50	0-0.062	+0.080 +0.240	0 +0.025

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

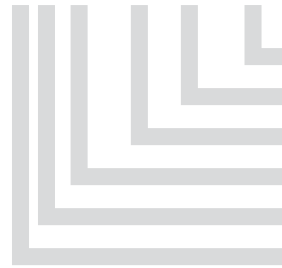
Part number	d1	d1-Tolerance*	d2	b1 h13
ASM-0103-02	1.0	+0.020 +0.080	3.0	2.0
ASM-0104-02	1.5	+0.020 +0.080	4.0	2.0
ASM-0205-02	2.0	+0.020 +0.080	5.0	2.0
ASM-0205-03	2.0	+0.020 +0.080	5.0	3.0
ASM-0206-03	2.5	+0.020 +0.080	6.0	3.0
ASM-0305-03	3.0	+0.020 +0.080	5.0	3.0
ASM-0305-04	3.0	+0.020 +0.080	5.0	4.0
ASM-0306-03	3.0	+0.020 +0.080	6.0	3.0
ASM-0306-04	3.0	+0.020 +0.080	6.0	4.0
ASM-0407-03	4.0	+0.030 +0.105	7.0	3.0
ASM-0407-04	4.0	+0.030 +0.105	7.0	4.0
ASM-0407-06	4.0	+0.030 +0.105	7.0	6.0
ASM-0408-06	4.0	+0.030 +0.105	8.0	6.0
ASM-0508-04	5.0	+0.030 +0.105	8.0	4.0
ASM-0508-05	5.0	+0.030 +0.105	8.0	5.0
ASM-0508-08	5.0	+0.030 +0.105	8.0	8.0
ASM-0509-05	5.0	+0.030 +0.105	9.0	5.0
ASM-0509-08	5.0	+0.030 +0.105	9.0	8.0
ASM-0608-10	6.0	+0.030 +0.105	8.0	10.0
ASM-0609-06	6.0	+0.030 +0.105	9.0	6.0
ASM-0610-04	6.0	+0.030 +0.105	10.0	4.0
ASM-0610-06	6.0	+0.030 +0.105	10.0	6.0
ASM-0610-10	6.0	+0.030 +0.105	10.0	10.0
ASM-0612-06	6.0	+0.030 +0.105	12.0	6.0
ASM-0612-10	6.0	+0.030 +0.105	12.0	10.0

* after pressfit. Testing methods ► page 55



Order key

ASM-0103-02



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® A200

Part number	d1	d1-Tolerance*	d2	b1 h13
ASM-0710-05	7.0	+0.040 +0.130	10.0	5.0
ASM-0710-08	7.0	+0.040 +0.130	10.0	8.0
ASM-0810-06	8.0	+0.040 +0.130	10.0	6.0
ASM-0810-08	8.0	+0.040 +0.130	10.0	8.0
ASM-0810-10	8.0	+0.040 +0.130	10.0	10.0
ASM-0811-08	8.0	+0.040 +0.130	11.0	8.0
ASM-0811-12	8.0	+0.040 +0.130	11.0	12.0
ASM-0812-06	8.0	+0.040 +0.130	12.0	6.0
ASM-0812-08	8.0	+0.040 +0.130	12.0	8.0
ASM-0812-10	8.0	+0.040 +0.130	12.0	10.0
ASM-0812-12	8.0	+0.040 +0.130	12.0	12.0
ASM-0814-06	8.0	+0.040 +0.130	14.0	6.0
ASM-0814-10	8.0	+0.040 +0.130	14.0	10.0
ASM-0912-14	9.0	+0.040 +0.130	12.0	14.0
ASM-1012-10	10.0	+0.040 +0.130	12.0	10.0
ASM-1014-06	10.0	+0.040 +0.130	14.0	6.0
ASM-1014-08	10.0	+0.040 +0.130	14.0	8.0
ASM-1014-10	10.0	+0.040 +0.130	14.0	10.0
ASM-1014-16	10.0	+0.040 +0.130	14.0	16.0
ASM-1016-06	10.0	+0.040 +0.130	16.0	6.0
ASM-1016-10	10.0	+0.040 +0.130	16.0	10.0
ASM-1016-16	10.0	+0.040 +0.130	16.0	16.0
ASM-1214-20	12.0	+0.050 +0.160	14.0	20.0
ASM-1216-15	12.0	+0.050 +0.160	16.0	15.0
ASM-1216-20	12.0	+0.050 +0.160	16.0	20.0



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order part number
example ASM-0103-02



Sleeve bearing

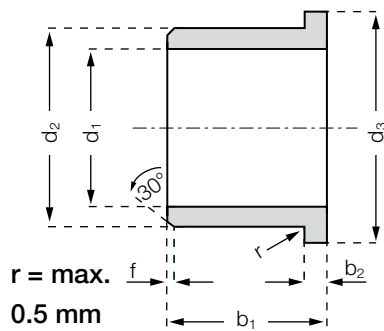
Dimensions [mm]

Part number	d1	d1-Tolerance*		d2	b1 h13
ASM-1218-08	12.0	+0.050	+0.160	18.0	8.0
ASM-1218-10	12.0	+0.050	+0.160	18.0	10.0
ASM-1218-15	12.0	+0.050	+0.160	18.0	15.0
ASM-1218-20	12.0	+0.050	+0.160	18.0	20.0
ASM-1416-10	14.0	+0.050	+0.160	16.0	10.0
ASM-1416-15	14.0	+0.050	+0.160	16.0	15.0
ASM-1416-20	14.0	+0.050	+0.160	16.0	20.0
ASM-1420-10	14.0	+0.050	+0.160	20.0	10.0
ASM-1420-15	14.0	+0.050	+0.160	20.0	15.0
ASM-1420-20	14.0	+0.050	+0.160	20.0	20.0
ASM-1517-10	15.0	+0.050	+0.160	17.0	10.0
ASM-1517-15	15.0	+0.050	+0.160	17.0	15.0
ASM-1521-10	15.0	+0.050	+0.160	21.0	10.0
ASM-1521-15	15.0	+0.050	+0.160	21.0	15.0
ASM-1521-20	15.0	+0.050	+0.160	21.0	20.0
ASM-1618-12	16.0	+0.050	+0.160	18.0	12.0
ASM-1618-20	16.0	+0.050	+0.160	18.0	20.0
ASM-1620-20	16.0	+0.050	+0.160	20.0	20.0
ASM-1620-25	16.0	+0.050	+0.160	20.0	25.0
ASM-1622-12	16.0	+0.050	+0.160	22.0	12.0
ASM-1622-15	16.0	+0.050	+0.160	22.0	15.0
ASM-1622-16	16.0	+0.050	+0.160	22.0	16.0
ASM-1622-20	16.0	+0.050	+0.160	22.0	20.0
ASM-1622-25	16.0	+0.050	+0.160	22.0	25.0
ASM-1824-12	18.0	+0.050	+0.160	24.0	12.0
ASM-1824-20	18.0	+0.050	+0.160	24.0	20.0
ASM-1824-30	18.0	+0.050	+0.160	24.0	30.0
ASM-2023-15	20.0	+0.065	+0.195	23.0	15.0
ASM-2023-20	20.0	+0.065	+0.195	23.0	20.0
ASM-2025-20	20.0	+0.065	+0.195	25.0	20.0
ASM-2025-15	20.0	+0.065	+0.195	25.0	15.0
ASM-2025-30	20.0	+0.065	+0.195	25.0	30.0
ASM-2026-15	20.0	+0.065	+0.195	26.0	15.0

Part number	d1	d1-Tolerance*		d2	b1 h13
ASM-2026-20	20.0	+0.065	+0.195	26.0	20.0
ASM-2026-30	20.0	+0.065	+0.195	26.0	30.0
ASM-2226-15	22.0	+0.065	+0.195	26.0	15.0
ASM-2228-10	22.0	+0.065	+0.195	28.0	10.0
ASM-2228-15	22.0	+0.065	+0.195	28.0	15.0
ASM-2228-20	22.0	+0.065	+0.195	28.0	20.0
ASM-2228-30	22.0	+0.065	+0.195	28.0	30.0
ASM-2430-15	24.0	+0.065	+0.195	30.0	15.0
ASM-2430-20	24.0	+0.065	+0.195	30.0	20.0
ASM-2430-30	24.0	+0.065	+0.195	30.0	30.0
ASM-2528-12	25.0	+0.065	+0.195	28.0	12.0
ASM-2528-20	25.0	+0.065	+0.195	28.0	20.0
ASM-2530-20	25.0	+0.065	+0.195	30.0	20.0
ASM-2530-30	25.0	+0.065	+0.195	30.0	30.0
ASM-2530-40	25.0	+0.065	+0.195	30.0	40.0
ASM-2532-20	25.0	+0.065	+0.195	32.0	20.0
ASM-2532-30	25.0	+0.065	+0.195	32.0	30.0
ASM-2532-40	25.0	+0.065	+0.195	32.0	40.0
ASM-2630-20	26.0	+0.065	+0.195	30.0	20.0
ASM-2632-30	26.0	+0.065	+0.195	32.0	30.0
ASM-2734-20	27.0	+0.065	+0.195	34.0	20.0
ASM-2734-30	27.0	+0.065	+0.195	34.0	30.0
ASM-2734-40	27.0	+0.065	+0.195	34.0	40.0
ASM-2833-20	28.0	+0.065	+0.195	33.0	20.0
ASM-2836-20	28.0	+0.065	+0.195	36.0	20.0
ASM-2836-30	28.0	+0.065	+0.195	36.0	30.0
ASM-2836-40	28.0	+0.065	+0.195	36.0	40.0
ASM-3038-20	30.0	+0.065	+0.195	38.0	20.0
ASM-3038-30	30.0	+0.065	+0.195	38.0	30.0
ASM-3038-40	30.0	+0.065	+0.195	38.0	40.0
ASM-3240-20	32.0	+0.080	+0.240	40.0	20.0
ASM-3240-30	32.0	+0.080	+0.240	40.0	30.0
ASM-3240-40	32.0	+0.080	+0.240	40.0	40.0

* after pressfit. Testing methods ► page 55

Flange bearing



Order key

AFM-0103-02



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® A200

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
AFM-0103-02	1.0	+0.020 +0.080	3.0	5.0	2.0	1.0
AFM-0104-02	1.5	+0.020 +0.080	4.0	6.0	2.0	1.0
AFM-0205-03	2.0	+0.020 +0.080	5.0	8.0	3.0	1.5
AFM-0206-03	2.5	+0.020 +0.080	6.0	9.0	3.0	1.5
AFM-0306-04	3.0	+0.020 +0.080	6.0	9.0	4.0	1.5
AFM-0408-04	4.0	+0.030 +0.105	8.0	12.0	4.0	2.0
AFM-0408-06	4.0	+0.030 +0.105	8.0	12.0	6.0	2.0
AFM-0507-05	5.0	+0.030 +0.105	7.0	11.0	5.0	1.0
AFM-0509-05	5.0	+0.030 +0.105	9.0	13.0	5.0	2.0
AFM-0509-06	5.0	+0.030 +0.105	9.0	13.0	6.0	2.0
AFM-0509-08	5.0	+0.030 +0.105	9.0	13.0	8.0	2.0
AFM-0610-04	6.0	+0.030 +0.105	10.0	14.0	4.0	2.0
AFM-0610-06	6.0	+0.030 +0.105	10.0	14.0	6.0	2.0
AFM-0610-10	6.0	+0.030 +0.105	10.0	14.0	10.0	2.0
AFM-0612-06	6.0	+0.030 +0.105	12.0	14.0	6.0	3.0
AFM-0612-10	6.0	+0.030 +0.105	12.0	14.0	10.0	3.0
AFM-0711-08	7.0	+0.040 +0.130	11.0	15.0	8.0	2.0
AFM-0811-08	8.0	+0.040 +0.130	11.0	13.0	8.0	2.0
AFM-0812-06	8.0	+0.040 +0.130	12.0	16.0	6.0	2.0
AFM-0812-08	8.0	+0.040 +0.130	12.0	16.0	8.0	2.0
AFM-0812-12	8.0	+0.040 +0.130	12.0	16.0	12.0	2.0
AFM-0812-22	8.0	+0.040 +0.130	12.0	16.0	22.0	2.0
AFM-0814-06	8.0	+0.040 +0.130	14.0	18.0	6.0	3.0
AFM-0814-10	8.0	+0.040 +0.130	14.0	18.0	10.0	3.0
AFM-0914-06	9.0	+0.040 +0.130	14.0	19.0	6.0	2.0

* after pressfit. Testing methods ► page 55



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order part number
example AFM-0103-02



Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
AFM-0914-10	9.0	+0.040 +0.130	14.0	19.0	10.0	2.0
AFM-0914-14	9.0	+0.040 +0.130	14.0	19.0	14.0	2.0
AFM-1016-06	10.0	+0.040 +0.130	16.0	22.0	6.0	3.0
AFM-1016-08	10.0	+0.040 +0.130	16.0	22.0	8.0	3.0
AFM-1016-10	10.0	+0.040 +0.130	16.0	22.0	10.0	3.0
AFM-1016-16	10.0	+0.040 +0.130	16.0	22.0	16.0	3.0
AFM-101620-10	10.0	+0.040 +0.130	16.0	20.0	10.0	3.0
AFM-1214-12	12.0	+0.050 +0.160	14.0	20.0	12.0	3.0
AFM-1218-08	12.0	+0.050 +0.160	18.0	24.0	8.0	1.0
AFM-1218-10	12.0	+0.050 +0.160	18.0	22.0	10.0	3.0
AFM-1218-12	12.0	+0.050 +0.160	18.0	24.0	12.0	3.0
AFM-1218-15	12.0	+0.050 +0.160	18.0	22.0	15.0	3.0
AFM-1218-20	12.0	+0.050 +0.160	18.0	22.0	20.0	3.0
AFM-1420-10	14.0	+0.050 +0.160	20.0	25.0	10.0	3.0
AFM-1420-15	14.0	+0.050 +0.160	20.0	25.0	15.0	3.0
AFM-1420-20	14.0	+0.050 +0.160	20.0	25.0	20.0	3.0
AFM-1521-10	15.0	+0.050 +0.160	21.0	27.0	10.0	3.0
AFM-1521-15	15.0	+0.050 +0.160	21.0	27.0	15.0	3.0
AFM-1521-20	15.0	+0.050 +0.160	21.0	27.0	20.0	3.0
AFM-1521-25	15.0	+0.050 +0.160	21.0	27.0	25.0	3.0
AFM-1622-12	16.0	+0.050 +0.160	22.0	28.0	12.0	3.0
AFM-1622-15	16.0	+0.050 +0.160	22.0	28.0	15.0	3.0
AFM-1622-20	16.0	+0.050 +0.160	22.0	28.0	20.0	3.0
AFM-1622-25	16.0	+0.050 +0.160	22.0	28.0	25.0	3.0
AFM-1824-12	18.0	+0.050 +0.160	24.0	30.0	12.0	3.0
AFM-1824-18	18.0	+0.050 +0.160	24.0	30.0	18.0	3.0
AFM-1824-20	18.0	+0.050 +0.160	24.0	30.0	20.0	3.0
AFM-1824-30	18.0	+0.050 +0.160	24.0	30.0	30.0	3.0
AFM-2026-15	20.0	+0.065 +0.195	26.0	32.0	15.0	3.0
AFM-2026-20	20.0	+0.065 +0.195	26.0	32.0	20.0	3.0
AFM-2026-30	20.0	+0.065 +0.195	26.0	32.0	30.0	3.0
AFM-2228-15	22.0	+0.065 +0.195	28.0	34.0	15.0	3.0
AFM-2228-20	22.0	+0.065 +0.195	28.0	34.0	20.0	3.0
AFM-2228-30	22.0	+0.065 +0.195	28.0	34.0	30.0	3.0
AFM-2430-15	24.0	+0.065 +0.195	30.0	36.0	15.0	3.0
AFM-2430-20	24.0	+0.065 +0.195	30.0	36.0	20.0	3.0
AFM-2430-30	24.0	+0.065 +0.195	30.0	36.0	30.0	3.0
AFM-2532-20	25.0	+0.065 +0.195	32.0	38.0	20.0	4.0
AFM-2532-30	25.0	+0.065 +0.195	32.0	38.0	30.0	4.0
AFM-2532-40	25.0	+0.065 +0.195	32.0	38.0	40.0	4.0
AFM-2734-20	27.0	+0.065 +0.195	34.0	40.0	20.0	4.0
AFM-2734-30	27.0	+0.065 +0.195	34.0	40.0	30.0	4.0

* after pressfit. Testing methods ► page 55



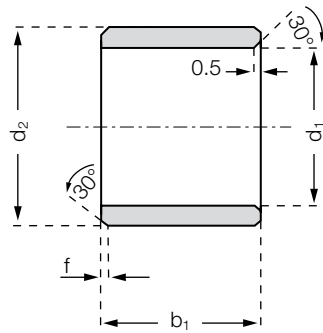
Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
AFM-2734-40	27.0	+0.065 +0.195	34.0	40.0	40.0	4.0
AFM-2836-20	28.0	+0.065 +0.195	36.0	42.0	20.0	4.0
AFM-2836-30	28.0	+0.065 +0.195	36.0	42.0	30.0	4.0
AFM-2836-40	28.0	+0.065 +0.195	36.0	42.0	40.0	4.0
AFM-3038-20	30.0	+0.065 +0.195	38.0	44.0	20.0	4.0
AFM-3038-30	30.0	+0.065 +0.195	38.0	44.0	30.0	4.0
AFM-3038-40	30.0	+0.065 +0.195	38.0	44.0	40.0	4.0
AFM-3240-20	32.0	+0.080 +0.240	40.0	46.0	20.0	4.0
AFM-3240-30	32.0	+0.080 +0.240	40.0	46.0	30.0	4.0
AFM-3240-40	32.0	+0.080 +0.240	40.0	46.0	40.0	4.0

* after pressfit. Testing methods ► page 55

Sleeve bearing



Order key

ASI-0204-04



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® A200

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [Inch]:	Ø 0.040–0.236	Ø 0.236–0.472	Ø 0.472–1.18	Ø > 1.18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
ASI-0204-04	1/8	1/4	1/4	.1280	.1262	.2515	.2510	.1250	.1241
ASI-0305-04	3/16	5/16	1/4	.1905	.1887	.3140	.3135	.1875	.1866
ASI-0406-04	1/4	3/8	1/4	.2539	.2516	.3765	.3760	.2500	.2491
ASI-0406-06	1/4	3/8	3/8	.2539	.2516	.3765	.3760	.2500	.2491
ASI-0406-08	1/4	3/8	1/2	.2539	.2516	.3765	.3760	.2500	.2491
ASI-0507-08	5/16	15/32	1/2	.3164	.3141	.4390	.4385	.3125	.3116
ASI-0608-04	3/8	1/2	1/4	.3789	.3766	.5015	.5010	.3750	.3741
ASI-0608-08	3/8	1/2	1/2	.3789	.3766	.5015	.5010	.3750	.3741
ASI-0810-08	1/2	5/8	1/2	.5047	.5020	.6260	.6250	.5000	.4990
ASI-0810-12	1/2	5/8	3/4	.5047	.5020	.6260	.6250	.5000	.4990
ASI-1013-05	5/8	13/16	5/16	.6297	.6270	.8135	.8125	.6250	.6240
ASI-1013-12	5/8	13/16	3/4	.6297	.6270	.8135	.8125	.6250	.6240
ASI-1216-12	3/4	1	3/4	.7559	.7525	1.0010	1.0000	.7500	.7490
ASI-1216-16	3/4	1	1	.7559	.7525	1.0010	1.0000	.7500	.7490
ASI-1418-16	7/8	11/8	1	.8809	.8775	1.1260	1.1250	.8750	.8740
ASI-1620-12	1	19/32	3/4	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
ASI-1620-16	1	19/32	1	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
ASI-2024-16	1 1/4	117/32	1	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
ASI-2428-24	1 1/2	13/4	11/2	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990

* after pressfit. Testing methods ► page 55



delivery available
time from stock

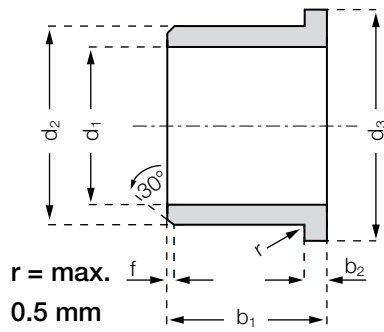


prices price list online
www.igus.co.uk/en/a200



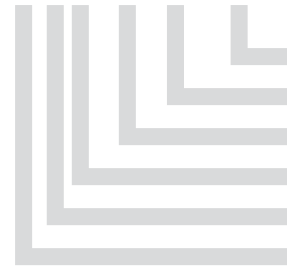
order part number
example ASI-0204-04

Flange bearing



Order key

AFI-0204-04



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form F)
- Material iglidur® A200

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [Inch]:	Ø 0.040–0.236	Ø 0.236–0.472	Ø 0.472–1.18	Ø > 1.18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
AFI-0204-04	1/8	1/4	1/4	.360	.047	.1280	.1262	.2515	.2510	.1250	.1241
AFI-0305-04	3/16	5/16	1/4	.370	.047	.1905	.1887	.3140	.3135	.1875	.1866
AFI-0406-04	1/4	3/8	1/4	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491
AFI-0406-06	1/4	3/8	3/8	.560	.047	.2539	.2516	.3765	.3760	.2500	.2491
AFI-0507-08	5/16	15/32	1/2	.560	.062	.3164	.3141	.4390	.4385	.3125	.3116
AFI-0608-04	3/8	1/2	1/4	.625	.062	.3164	.3141	.4390	.4385	.3125	.3116
AFI-0608-08	3/8	1/2	1/2	.625	.062	.3789	.3766	.5015	.5010	.3750	.3741
AFI-0810-08	1/2	5/8	1/2	.875	.062	.5047	.5020	.6257	.6250	.5000	.4983
AFI-0810-12	1/2	5/8	3/4	.875	.062	.5047	.5020	.6257	.6250	.5000	.4983
AFI-1013-16	5/8	13/16	1	1.063	.156	.6297	.6270	.8135	.8125	.6250	.6240
AFI-1216-12	3/4	1	3/4	1.250	.156	.7559	.7525	1.0010	1.0000	.7500	.7490
AFI-1216-16	3/4	1	1	1.250	.156	.7559	.7525	1.0010	1.0000	.7500	.7490
AFI-1418-24	7/8	11/8	11/2	1.375	.156	.8809	.8775	1.1260	1.1250	.8750	.8740
AFI-1620-16	1	19/32	1	1.500	.188	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
AFI-1620-24	1	19/32	11/2	1.500	.188	1.0059	1.0025	1.2510	1.2500	1.0000	.9990
AFI-2024-16	11/4	117/32	1	1.750	.200	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
AFI-2024-24	11/4	117/32	11/2	1.750	.200	1.2600	1.2531	1.5005	1.4995	1.2500	1.2490
AFI-2428-16	11/2	13/4	1	2.000	.125	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990
AFI-2428-24	11/2	13/4	11/2	2.000	.125	1.5100	1.5032	1.7505	1.7495	1.5000	1.4990
AFI-2832-16	13/4	2	1	2.250	.125	1.7560	1.7532	2.0005	1.9995	1.7500	1.7490

* after pressfit. Testing methods ► page 55



delivery available
time from stock



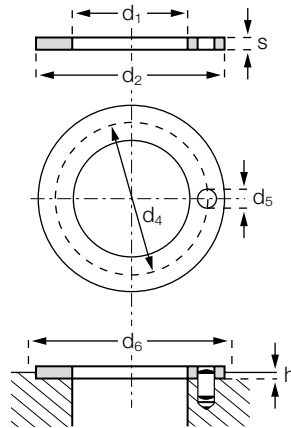
prices price list online
www.igus.co.uk/en/a200



order part number
example AFI-0204-04

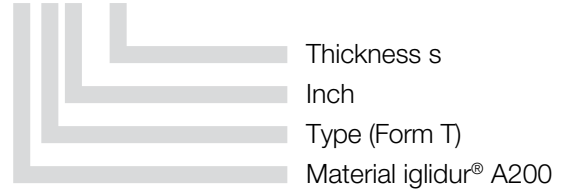
iglidur® A200 | Product Range | Inch

Thrust washer



Order key

ATI-04



Dimensions according to ISO 3547-1 and special dimensions

Dimensions [Inch]

Part number	d1 (nominal)	d1*		d2		s
		max.	min.	max.	min.	
ATI-04	1/4	.2610	.2551	.6201	.6094	.0902
ATI-06	3/8	.3943	.3813	.7500	.7370	.0902
ATI-08	1/2	.5102	.5031	.8201	.8071	.0902
ATI-12	3/4	.7673	.7598	1.0654	1.0500	.0941
ATI-16	1	1.0268	1.0197	1.5000	1.4843	.1252

* after pressfit. Testing methods ► page 55



delivery available
time from stock

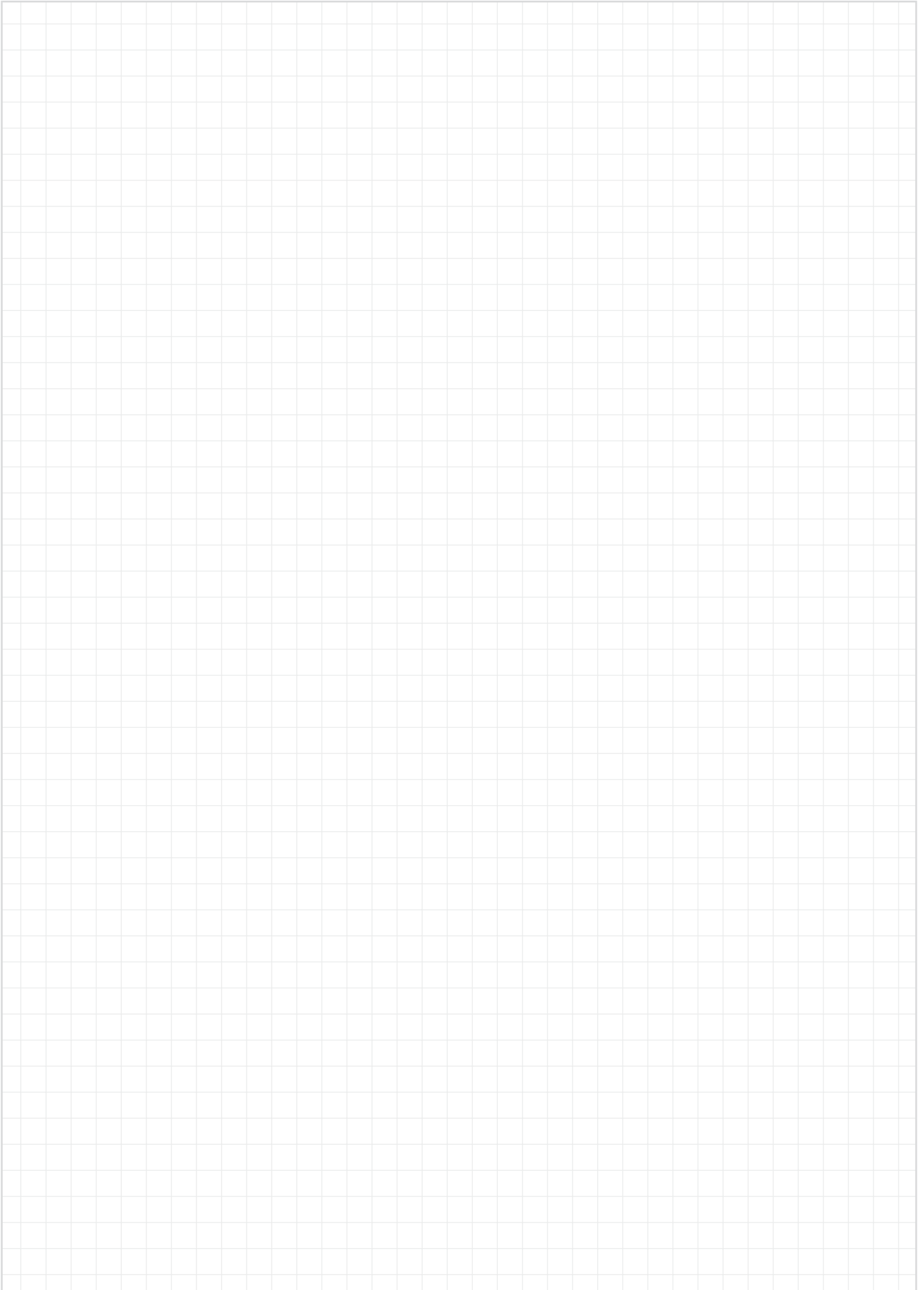


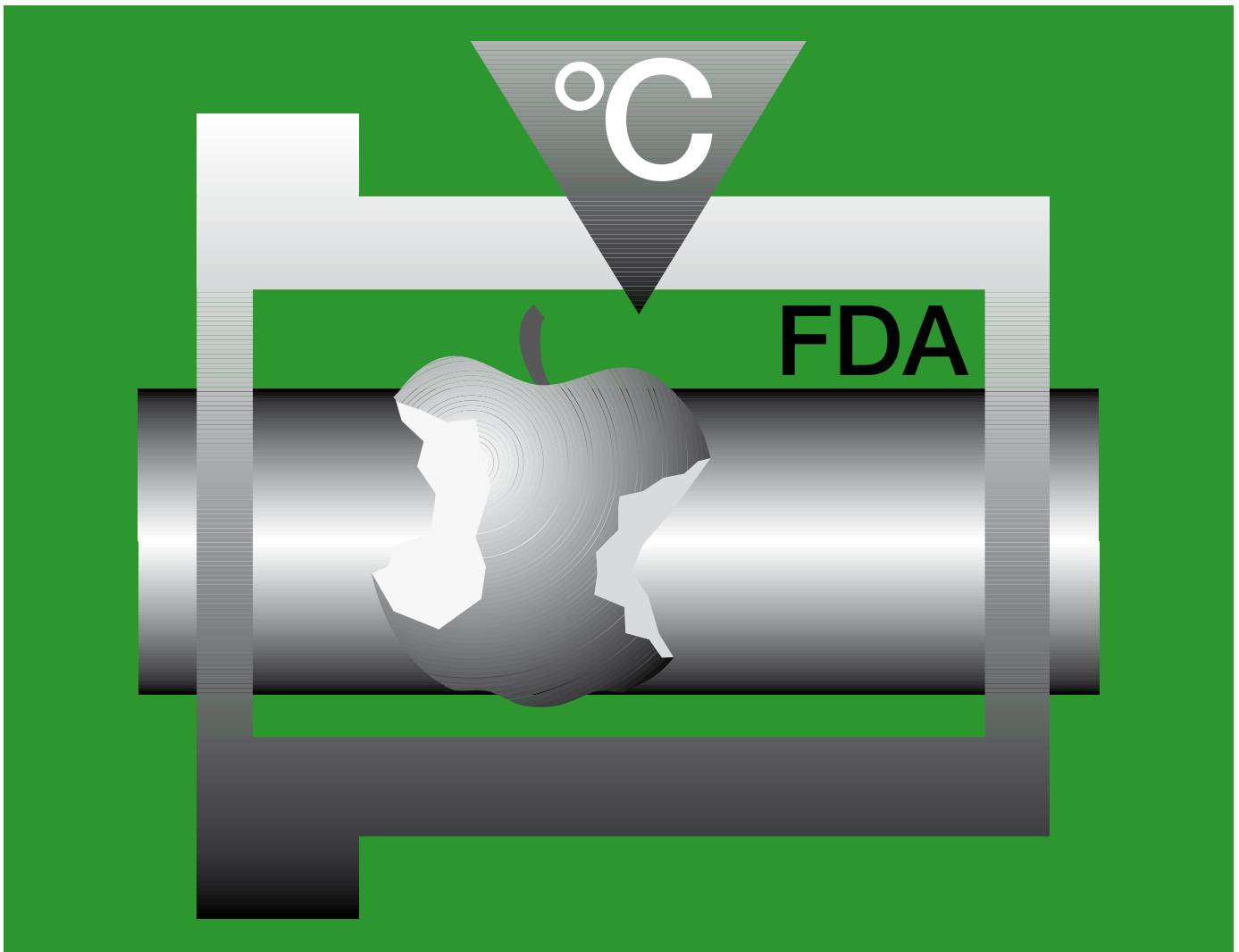
prices price list online
www.igus.co.uk/en/a200



order part number
example ATI-04

My Sketches





iglidur® A350 – FDA-compliant and wear-resistant at high temperatures



Standard range from stock

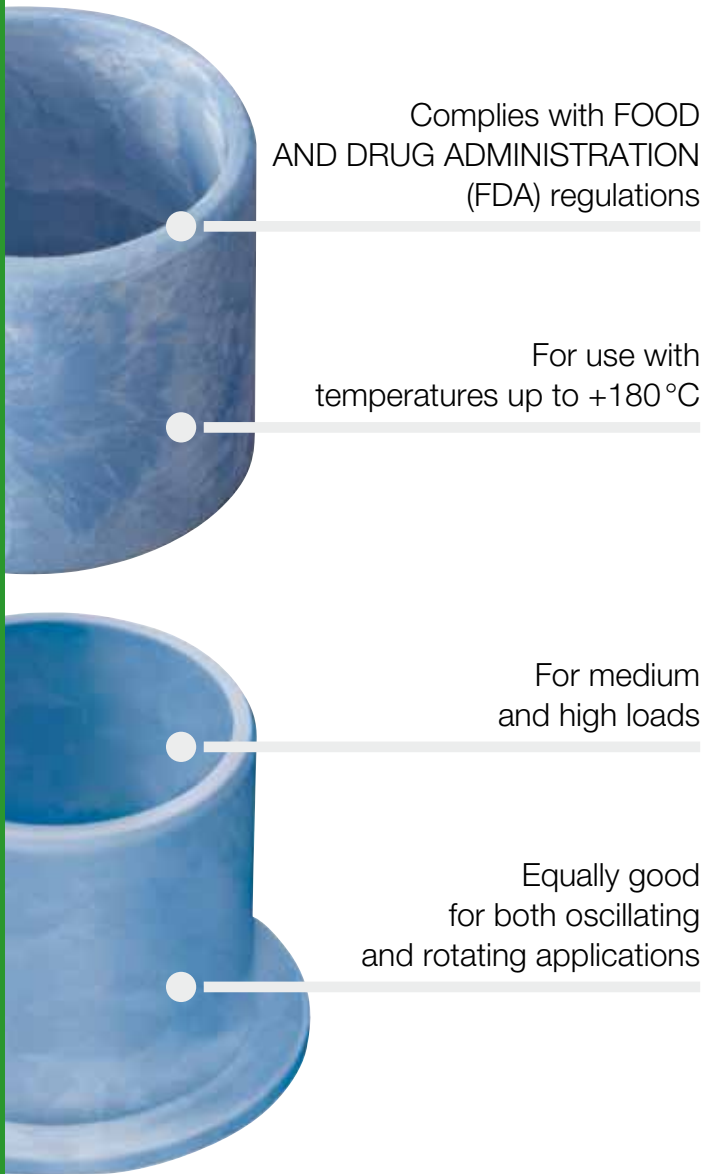
The iglidur® A350 material complies with FOOD AND DRUG ADMINISTRATION (FDA) regulations

For use with temperatures up to +180 °C

For medium and high loads

Equally good for both oscillating and rotating applications

FDA-compliant and wear-resistant at high temperatures. A very universal bearing for use in the area of food and pharmaceutical industries. Composition of FDA-conform materials allows the use in areas where due to the contact with food other bearings cannot be used. With good tribological and mechanical properties, iglidur® A350 bearings are real allround talents for food machinery.



Complies with FOOD AND DRUG ADMINISTRATION (FDA) regulations

For use with temperatures up to +180 °C

For medium and high loads

Equally good for both oscillating and rotating applications



When to use it?

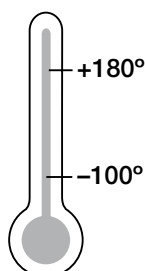
- If FDA-compliance is required
- If wear-resistance and FDA-conformance is necessary at high loads
- If the bearing is use in acid environment



When not to use?

- When temperatures are continuously greater than +80 °C
▶ **iglidur® A500, page 407**
- When the maximum abrasion resistance is necessary
▶ **iglidur® J, page 89**
- When a low-priced FDA bearing is sought
▶ **iglidur® A200, page 381**
▶ **iglidur® A180, page 371**
- For high speeds
▶ **iglidur® J, page 89**

Temperature



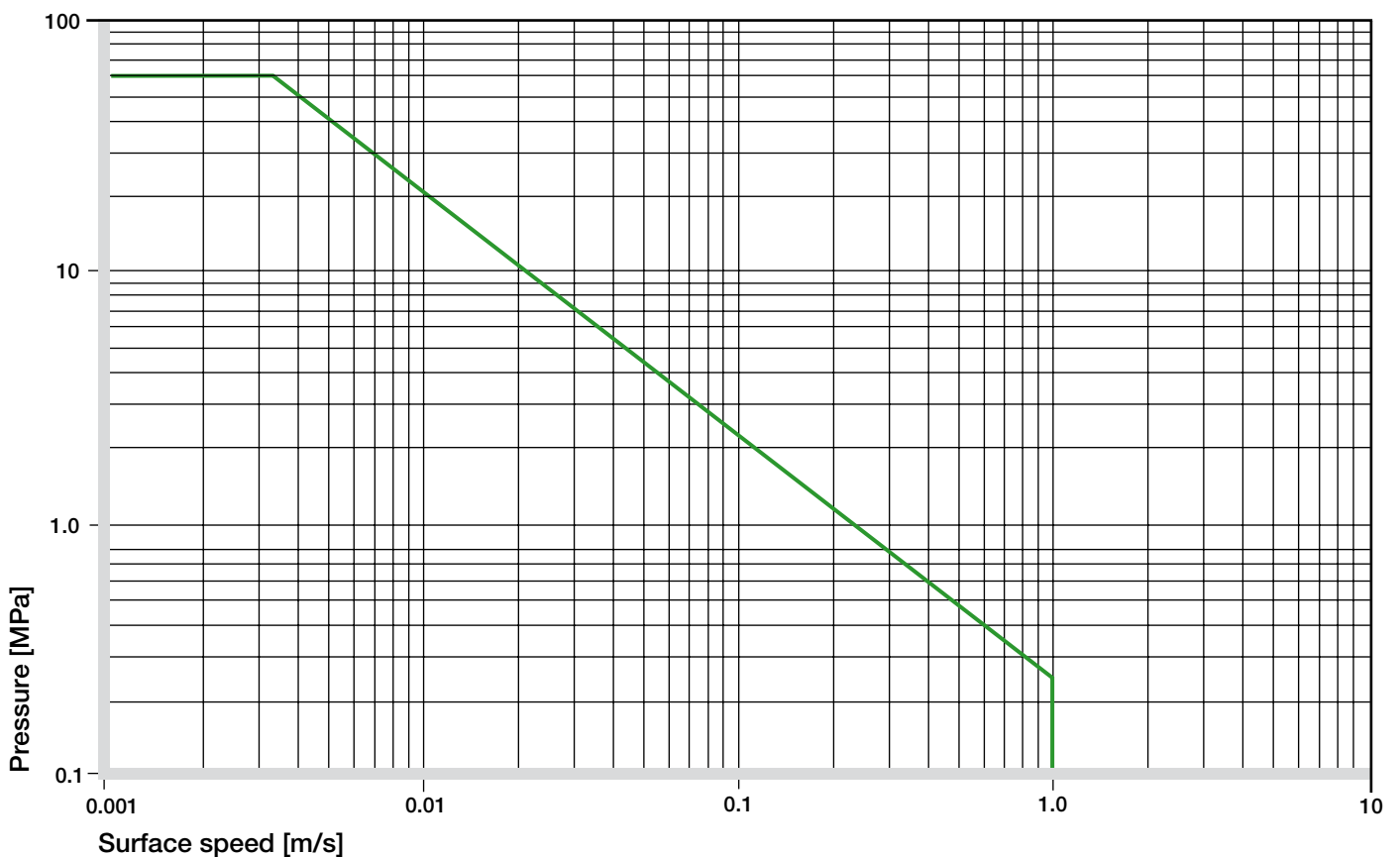
Product range

2 types
Ø 6–20 mm
more dimensions
on request



Material data			
General properties	Unit	iglidur® A350	Testing method
Density	g/cm ³	1.42	
Colour		blue	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.6	DIN 53495
Max. moisture absorption	% weight	1.9	
Coefficient of sliding friction, dynamic against steel	μ	0.1–0.2	
pv value, max. (dry)	MPa · m/s	0.4	
Mechanical properties			
Modulus of elasticity	MPa	2,000	DIN 53457
Tensile strength at +20°C	MPa	110	DIN 53452
Compressive strength	MPa	78	
Max. recommended surface pressure (+20°C)	MPa	60	
Shore D hardness		76	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+180	
Max. short term application temperature	°C	+210	
Min. application temperature	°C	-100	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	8	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹¹	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

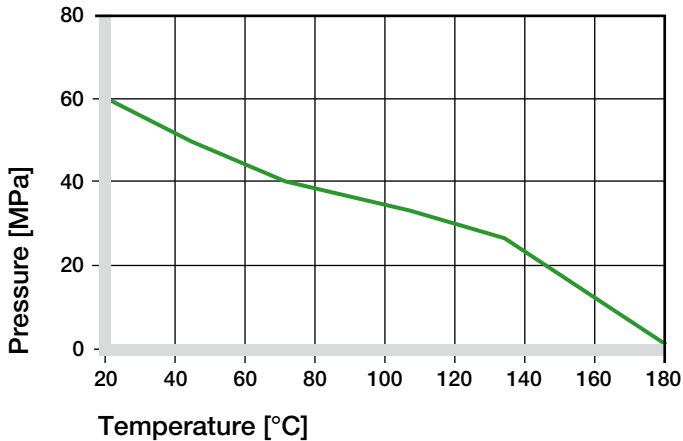
Table 01: Material data



Graph 01: Permissible pv values for iglidur® A350 with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

Mechanical Properties

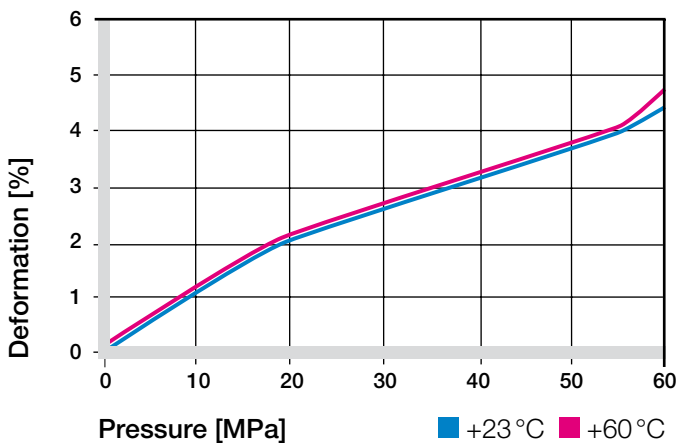
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® A350 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +150 °C the permissible surface pressure is almost 25 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (60 MPa at +20 °C)

iglidur® A350 bearings are made for practically all loads in food and packaging machinery. Even high loads, often seen in lifting equipment, are taken easily and the bearings work flawlessly without any external lubrication. Graph 03 shows the elastic deformation of iglidur® A358 during radial loading. At the recommended maximum surface pressure of 60 MPa the deformation is less than 5%.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® A350 bearings are suitable for low to medium speeds in both rotating and oscillating applications. Even linear movements can often be realised with iglidur® A350. With high sliding speeds, iglidur® J or iglidur® L250 can be interesting alternatives because the wear rate of these materials is better.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.8	2.5
Short term	1.2	0.9	3

Table 02: Maximum running speed

Temperatures

Its temperature resistance makes iglidur® A350 an ideal material for bearing in the area of foodstuffs. Typically, temperatures range up to +130 °C, which corresponds perfectly with the applicable temperature range for iglidur® A350. Short-term temperatures up to +210 °C are possible. Please note that at temperatures over +140 °C, the pressfit forces of the bearings may decrease and an additional axial security device is recommended.

The wear-rate of iglidur® A350 bearings rises only little with higher temperatures. Tests have shown good wear results at +100 °C on all tested shaft materials.

► Application Temperatures, page 46

iglidur® A350	Application temperature
Minimum	-100 °C
Max. long term	+180 °C
Max. short term	+210 °C
Add. securing is required from	+140 °C

Table 03: Temperature limits

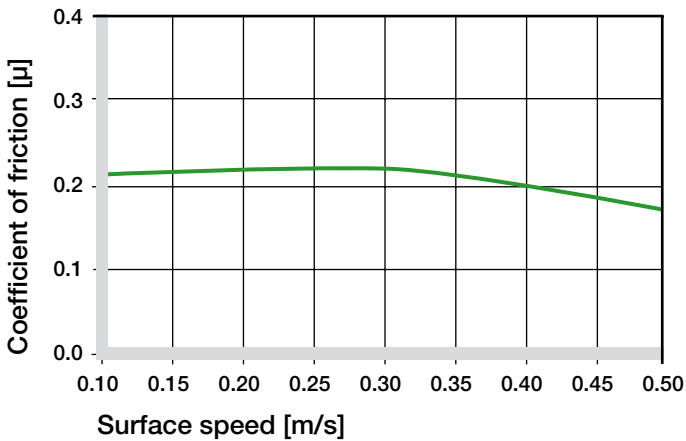
iglidur® A350 | Technical Data

Friction and Wear

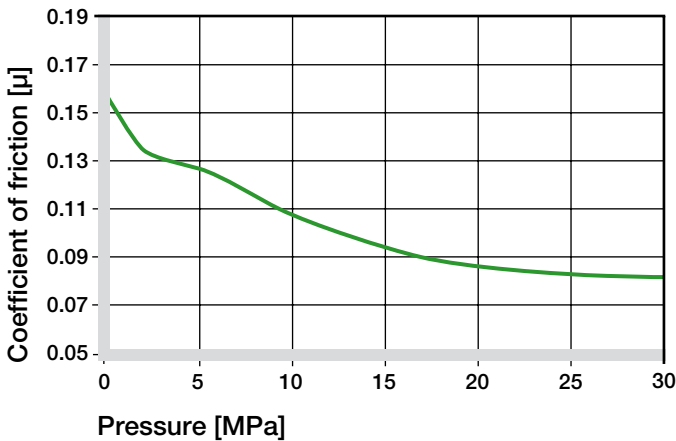
The coefficient of friction of iglidur® A350 on a steel shaft are in the mid range. They decrease at higher temperatures, which in dry operation is somewhat unusual. Graph. 04 shows this phenomenon graphically.

All wear results of iglidur® A350 bearings show good results on a low level. Of all iglidur® materials for food contact, they are often the best choice.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 1 \text{ MPa}$



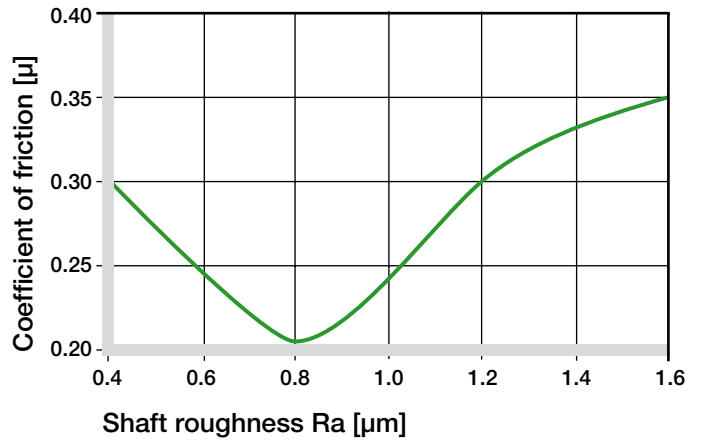
Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

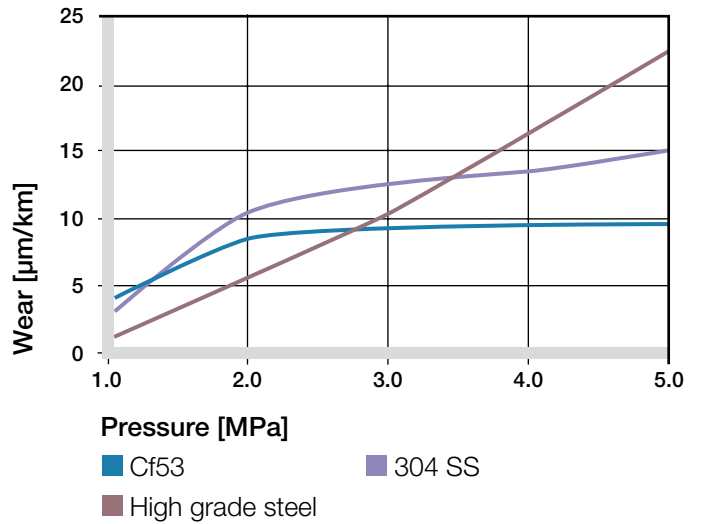
The corrosion-resistant steels are rather considered a natural choice for use in the food industry.

The trials were therefore carried out especially on such materials. It has been shown that there is no clear favorite and A2, X90 and hard chrome plated steel are all suitable. Hard-anodized aluminum is also well suited for both linear and rotating movements.

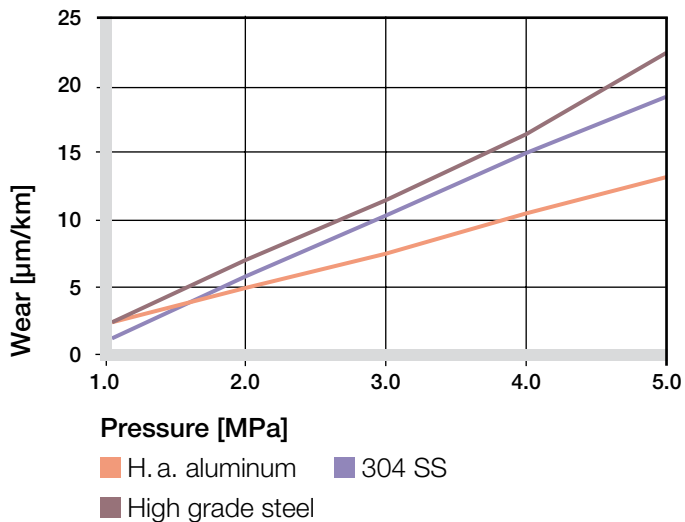
- ▶ Shaft Materials, **page 51**



Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 08: Wear with different shaft materials in oscillating operation, as a function of the pressure

iglidur® A350	Dry	Greases	Oil	Water
C. o. f. μ	0.1–0.2	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A350 plain bearings are resistant to diluted acids and alkalis, alcohols and detergents. They are also resistant to most lubricants. The iglidur® A350 plain bearings are resistant to common cleaning agents in the food industry. iglidur® A350 is affected by esters, ketones, chlorinated hydrocarbons, aromatics and highly polar solvents.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+ to 0
Greases, oils without additives	+
Fuels	+
Diluted acids	+
Strong acids	+
Diluted alkalines	+
starke Basen	+

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made of iglidur® A350 are resistant to radiation up to an intensity of $2 \cdot 10^2$ Gy.

UV Resistance

iglidur® A350 bearings are resistant to UV radiation.

Vacuum

When used in a vacuum environment, the iglidur® A350 plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

iglidur® A350 plain bearings are electrically insulating.

Volume resistance	> 10^{11} Ω cm
Surface resistance	> 10^{11} Ω

iglidur® A350 | Technical Data

Moisture Absorption

The moisture absorption of iglidur® A350 is low and can be disregarded when using standard bearings.

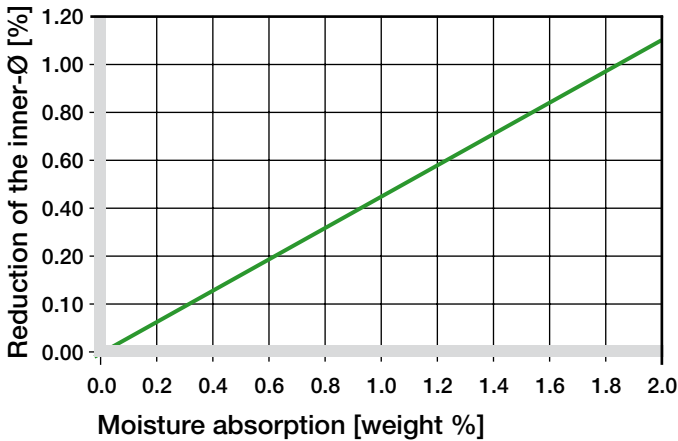
Even at full saturation the iglidur® A350 does not absorb more than 1.9% of water.

Maximum moisture absorption

At +23 °C/50% r.h. 0.6% weight

Max. moisture absorption 1.9% weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

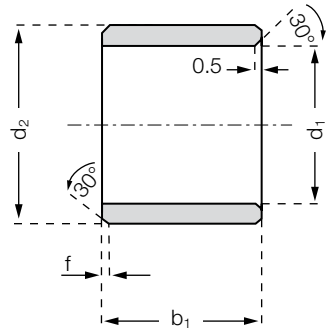
iglidur® A350 plain bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter adjusts to meet the specified tolerances.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® A350 F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

A350SM-0608-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® A350

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1
A350SM-0608-06	6	+0.010 +0.058	8	6
A350SM-0810-10	8	+0.013 +0.071	10	10
A350SM-1012-10	10	+0.013 +0.071	12	10
A350SM-1214-12	12	+0.016 +0.068	14	12
A350SM-1618-15	16	+0.016 +0.068	18	15
A350SM-2023-20	20	+0.020 +0.104	23	20

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/a350



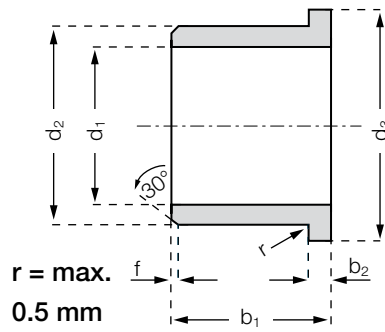
order part number
example A350SM-0608-06

NEW in this catalog!

iglidur® A350 | Product Range

iglidur®
A350

Flange bearing



Order key

A350FM-0608-06



Length b1
Outer diameter d2
Inner diameter d1
Metric
Type (Form F)
Material iglidur® A350

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3	b1	b2
A350FM-0608-06	6	+0.010 +0.058	8	12	6	1
A350FM-0810-10	8	+0.013 +0.071	10	15	10	1
A350FM-1012-10	10	+0.013 +0.071	12	18	10	1
A350FM-1214-12	12	+0.016 +0.068	14	20	12	1
A350FM-1618-17	16	+0.016 +0.068	18	24	17	1
A350FM-2023-21	20	+0.020 +0.104	23	30	21,5	1,5

* after pressfit. Testing methods ► page 55



delivery available
time from stock

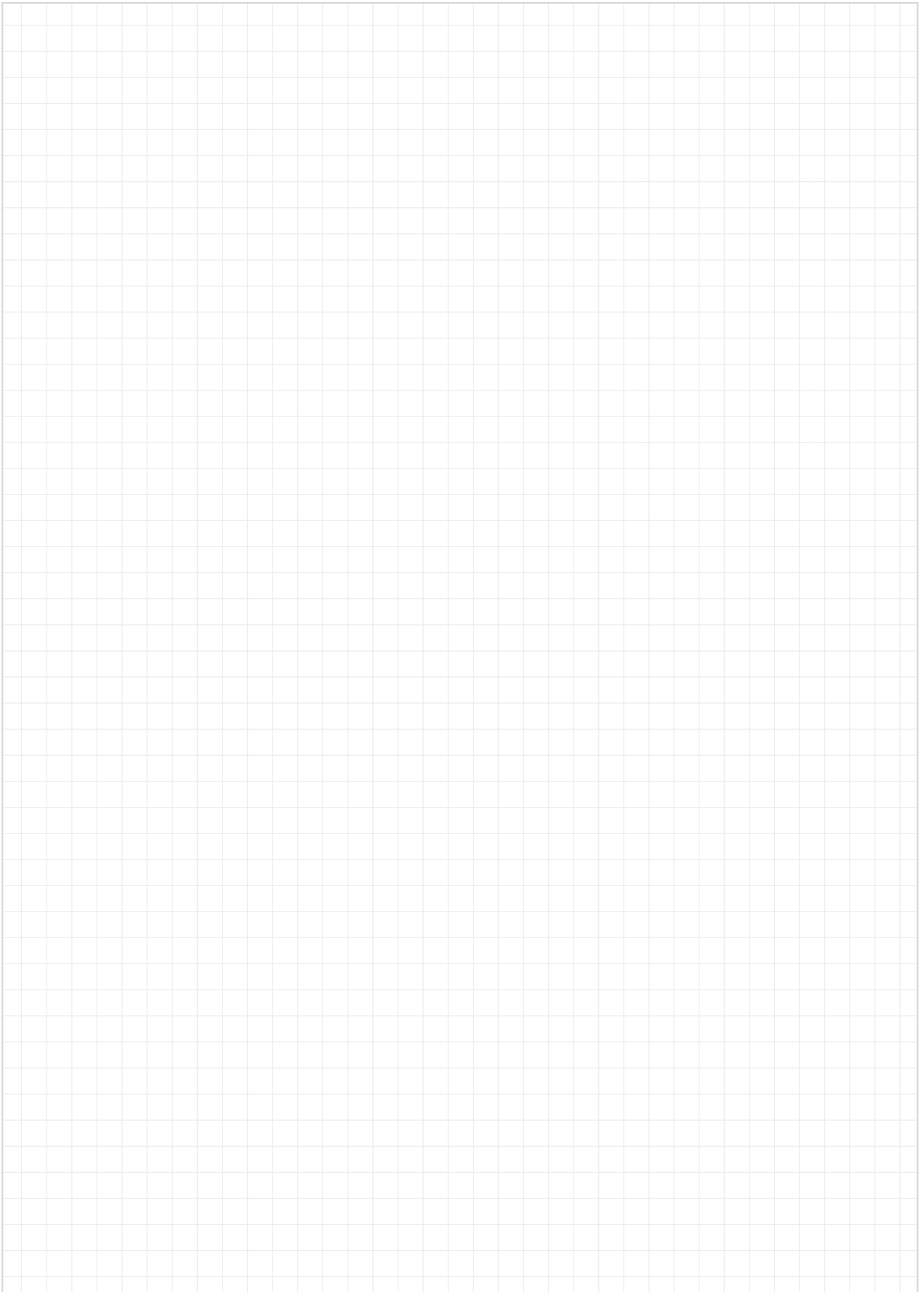


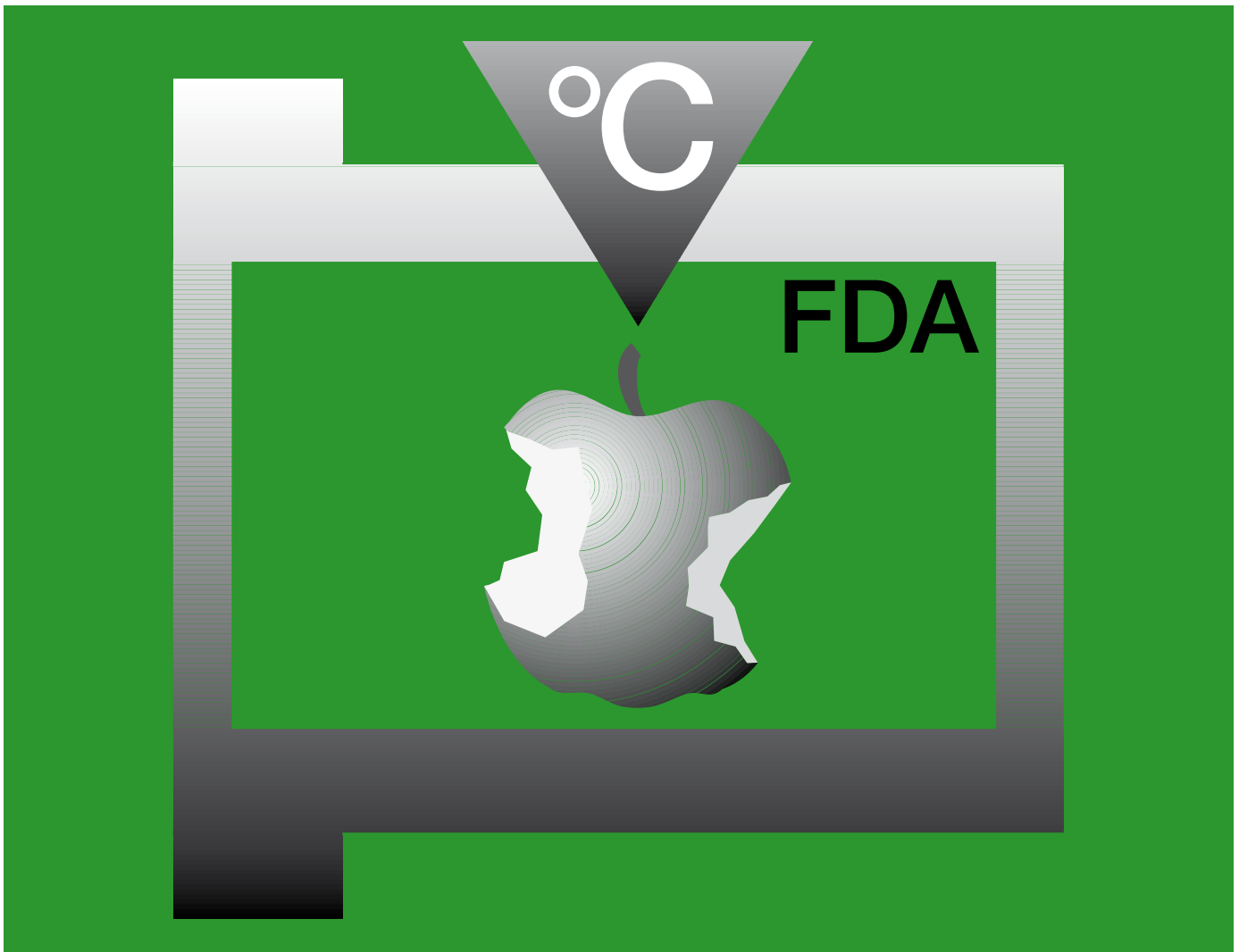
prices price list online
www.igus.co.uk/en/a350



order part number
example A350FM-0608-06

My Sketches





iglidur® A500 – FDA-material for high temperatures and high load



Standard range from stock

Lubrication- and maintenance-free

Complies with FDA regulations

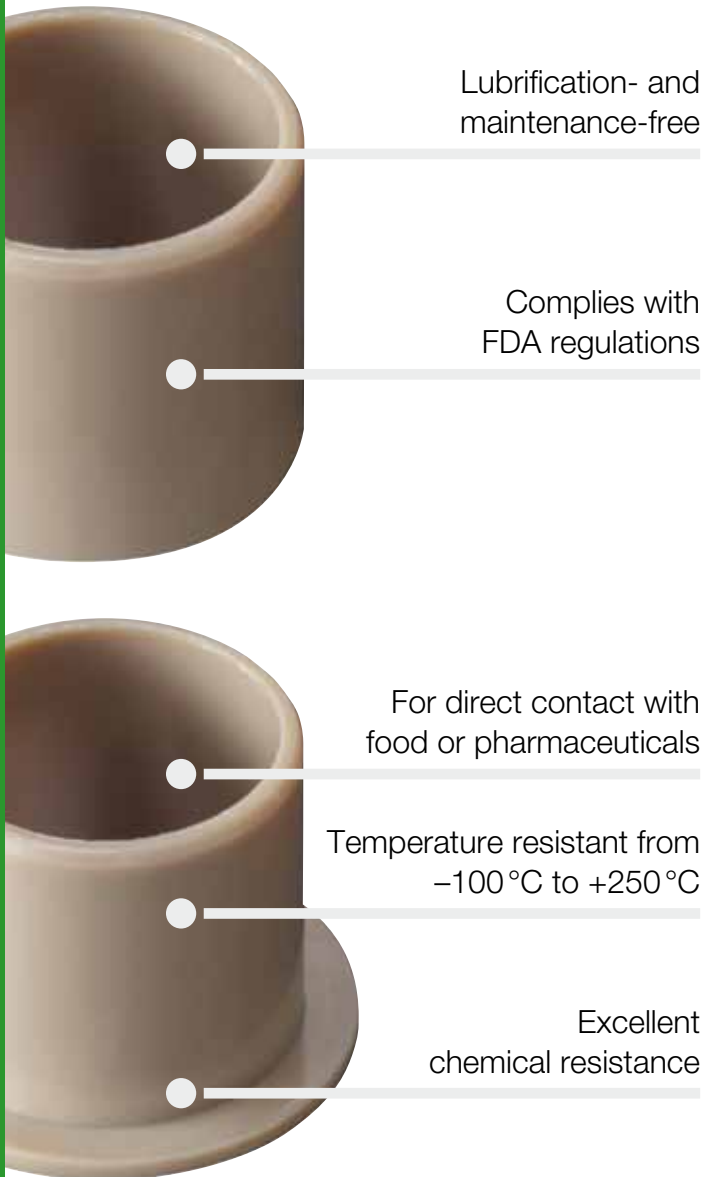
For direct contact with food or pharmaceuticals

Temperature resistant from -100°C to $+250^{\circ}\text{C}$

High chemical-resistance

iglidur® A500

FDA-material for high temperatures and high load. Polymer bearings made from iglidur® A500 can be exposed to extremely high temperatures and consist of materials suitable for direct contact with food (FDA-conformity).



When to use it?

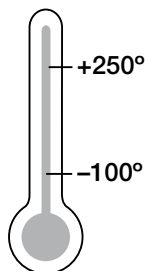
- When FDA compliance is required
- When a high chemical resistance is required
- Good abrasion resistance
- Temperature resistant from -100 °C to +250 °C



When not to use it?

- When the highest wear resistance is required
 - ▶ iglidur® X, page 153
 - ▶ iglidur® Z, page 299
- If no resistance to temperature or chemicals is required
 - ▶ iglidur® A180, page 371
 - ▶ iglidur® A200, page 381
- When a cost-effective universal bearing is required
 - ▶ iglidur® G, page 61
 - ▶ iglidur® P, page 185

Temperature



Product range

2 types
 Ø 4–50 mm
 more dimensions
 on request

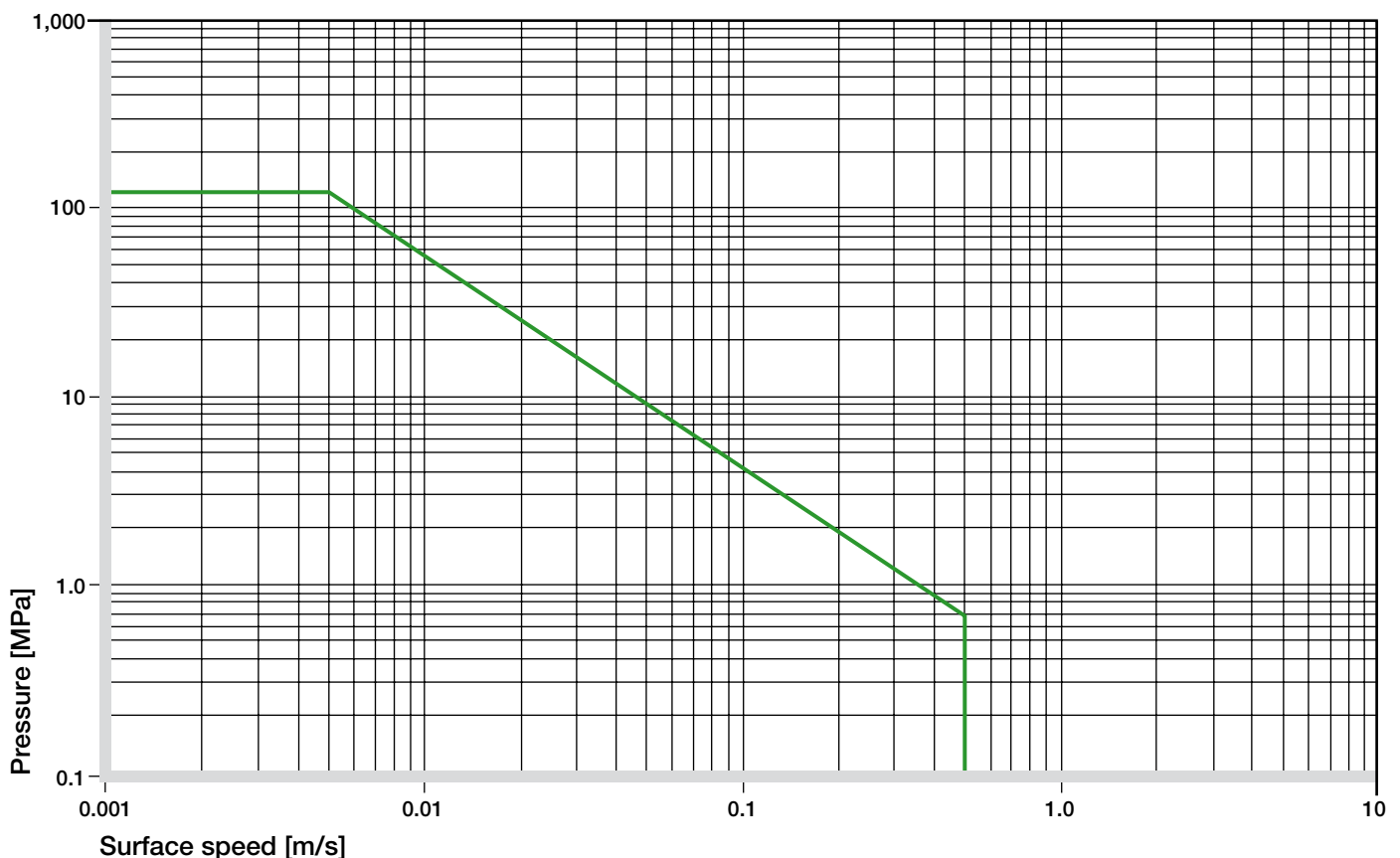


The material iglidur® A500 complies with the requirements of the FDA for repeated contact with food.



Material data			
General properties	Unit	iglidur® A500	Testing method
Density	g/cm ³	1.28	
Colour		brown	
Max. moisture absorption at +23°C/50% r.h.	% weight	0.3	DIN 53495
Max. moisture absorption	% weight	0.5	
Coefficient of sliding friction, dynamic against steel	μ	0.26–0.41	
pv value, max. (dry)	MPa · m/s	0.28	
Mechanical properties			
Modulus of elasticity	MPa	3,600	DIN 53457
Tensile strength at +20°C	MPa	140	DIN 53452
Compressive strength	MPa	118	
Max. recommended surface pressure (+20°C)	MPa	120	
Shore D hardness		83	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+250	
Max. short term application temperature	°C	+300	
Min. application temperature	°C	-100	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23°C)	K ⁻¹ · 10 ⁻⁵	9	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹⁴	DIN IEC 93
Surface resistance	Ω	> 10 ¹³	DIN 53482

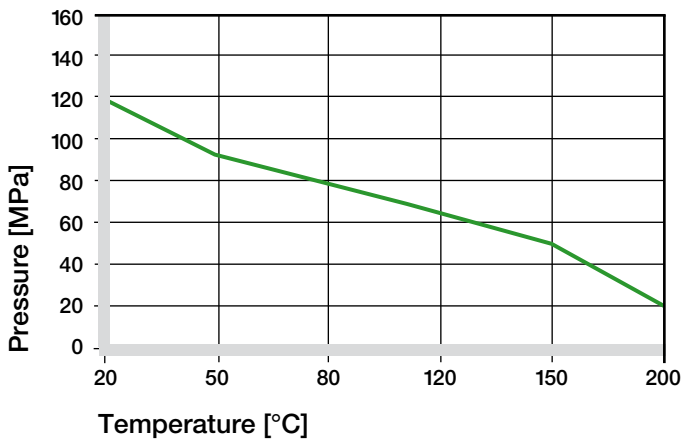
Table 01: Material data



Graph 01: Permissible pv values for iglidur® A500 with a wall thickness of 1 mm dry running against a steel shaft at +20°C, mounted in a steel housing

Mechanical Properties

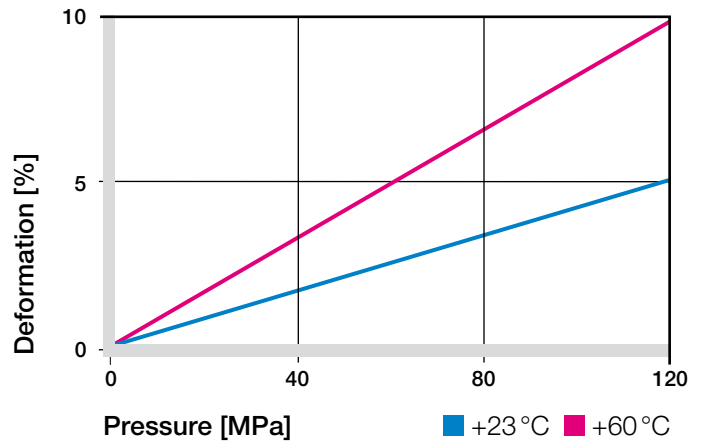
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® A500 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +200 °C the permissible surface pressure is almost 20 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (120 MPa at +20 °C)

Bearings made of iglidur® A500 can be used at high temperatures and are permitted for use in direct contact with foodstuffs (FDA compatible). They exhibit an exceptionally good chemical resistance and are suitable for heavy-duty use in machinery for the food industry. Though iglidur® A500 is an extremely soft material, it simultaneously possesses an excellent compressive strength even at high temperatures. Graph 03 shows the maximum recommended surface pressure of the bearing dependent on the temperature. This combination of high stability and high flexibility acts very positively during vibrations and edge loads. As the wear of the bearing rapidly escalates from pressures of 10 to 20 MPa, we recommend a particularly accurate testing of the application above these limits.

► Surface Pressure, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® A500 also permits high surface speeds due to the high temperature resistance. The coefficient of friction rises however by these high rotatory speeds leading to a higher heating up of the bearing. Tests show that bearings made of iglidur® A500 are more wear resistant in pivoting motions, and the permitted pv values are also higher in the pivoting application.

► Surface Speed, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	0.6	0.4	1
Short term	1	0.7	2

Table 02: Maximum running speed

Temperatures

The short-term permitted maximum application temperature is +300 °C. With increasing temperatures, the compressive strength of iglidur® A500 bearings decreases. Graph 02 clarifies this connection. The temperatures prevailing in the bearing system also have an influence on the bearing wear.

► Application Temperatures, [page 46](#)

iglidur® A500	Application temperature
Minimum	-100 °C
Max. long term	+250 °C
Max. short term	+300 °C
Add. securing is required from	+130 °C

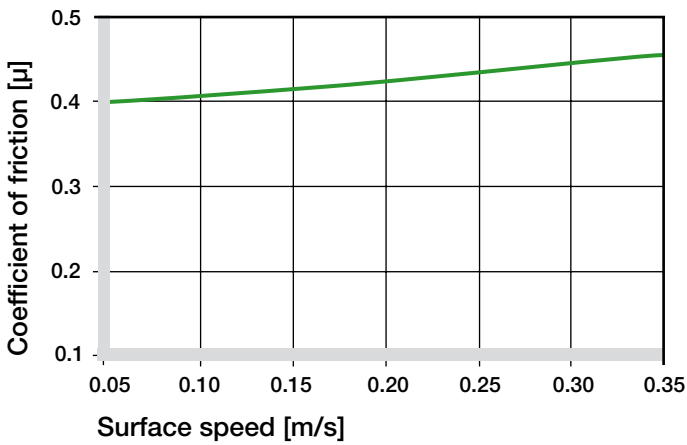
Table 03: Temperature limits

iglidur® A500 | Technical Data

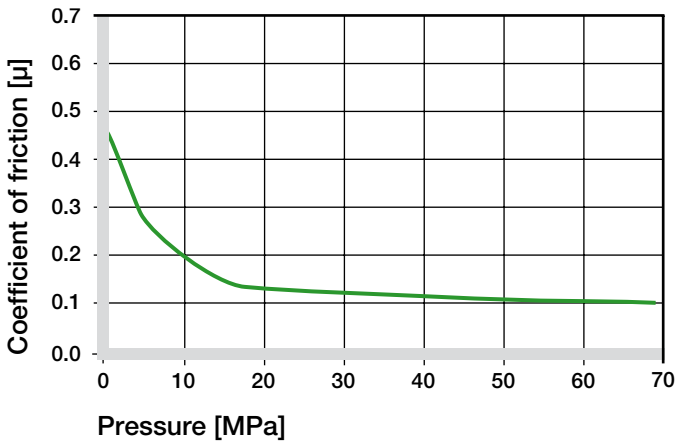
Friction and Wear

The coefficient of friction is dependent on the load that acts on the bearing. In iglidur® A500 bearings, the friction coefficient μ initially declines with increasing load. The most favorable coefficient of friction is attained from about 10 MPa. Friction and wear also depend to a high degree on the reverse partner. Thus extremely smooth shafts enhance not only the coefficient of friction, but also the bearing wear. The most suited are smoothed surfaces with an average surface finish of $R_a = 0.4$ to $0.6 \mu\text{m}$.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



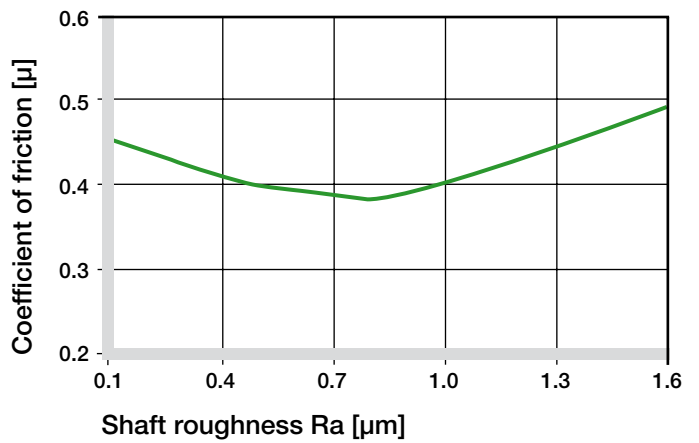
Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

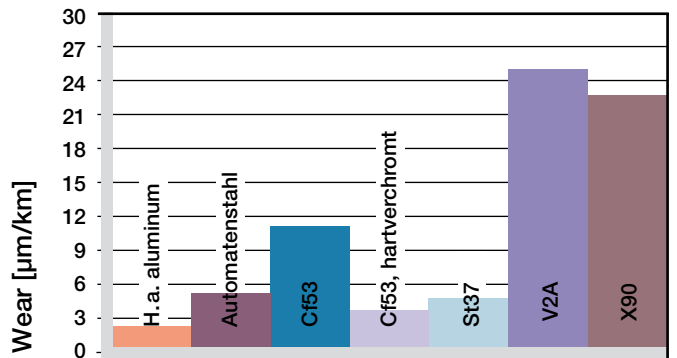
The graphs 06 to 09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® A500. The combination “iglidur® A500/hard-chromed shaft” clearly stands out in rotating application. Up to about 2.0 MPa , the wear of this combination remains largely independent of load. In pivoting motions with Cf53 shafts, the wear resistance is better than in rotations under equal load.

Please contact us in case the shaft material scheduled by you is not included in these figures.

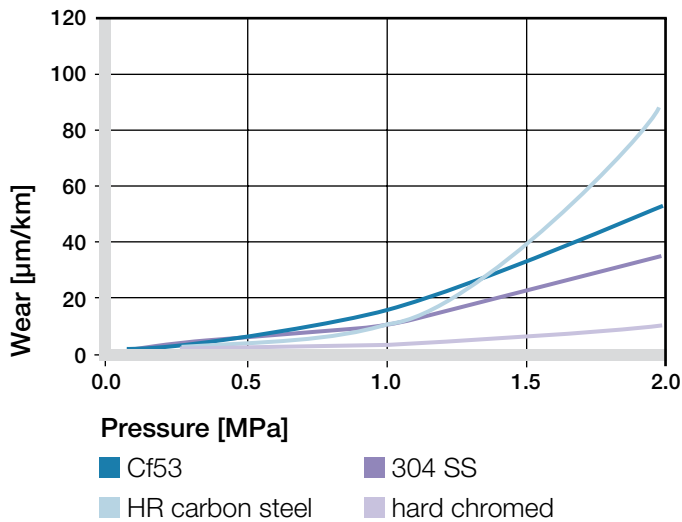
- ▶ Shaft Materials, **page 51**



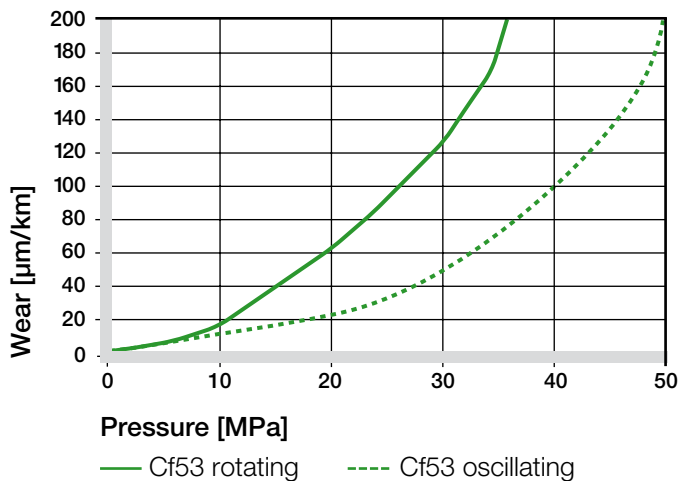
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® A500	Dry	Greases	Oil	Water
C. o. f. μ	0.26–0.41	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A500 plain bearings feature an excellent resistance with regard to detergents, greases, oils, bases and acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+
Strong acids	+
Diluted alkalines	+
Strong alkalines	+

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® A500 rank among the most radiation resistant products in the iglidur® range. The bearings are resistant up to a radiation intensity of $2 \cdot 10^5$ Gy. Higher radiation affects the material and can result in the loss of basic mechanical characteristics.

UV Resistance

To a large extent, iglidur® A500 plain bearings are resistant to UV radiation.

Vacuum

In a vacuum, iglidur® A500 plain bearings can only be used to a limited degree.

Electrical Properties

iglidur® A500 plain bearings are electrically insulating.

Volume resistance	$> 10^{14} \Omega\text{cm}$
Surface resistance	$> 10^{13} \Omega$

iglidur® A500 | Technical Data

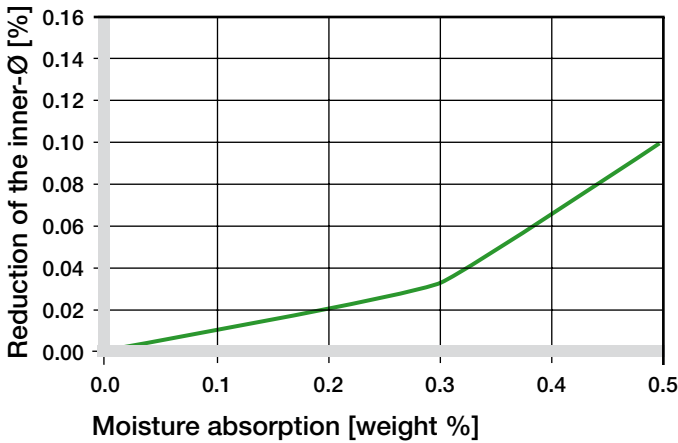
Moisture Absorption

The moisture absorption of iglidur® A500 plain bearings is only 0.5 % when saturated.

Maximum moisture absorption

At +23 °C/50 % r.h.	0.3 % weight
Max. moisture absorption	0.5 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

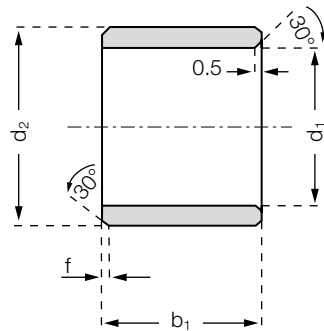
iglidur® A500 bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). After the installation in a housing bore with H7 tolerance, the inner diameter of the bearing automatically adjusts to the E10 tolerance.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® A500 F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

A500SM-0507-05



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® A500

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
A500SM-0507-05	5.0	+0.010 +0.058	7.0	5.0
A500SM-0810-06	8.0	+0.013 +0.071	10.0	6.0
A500SM-0810-10	8.0	+0.013 +0.071	10.0	10.0
A500SM-1012-12	10.0	+0.013 +0.071	12.0	12.0
A500SM-1416-16	14.0	+0.016 +0.086	16.0	16.0
A500SM-2023-30	20.0	+0.020 +0.104	23.0	30.0
A500SM-2225-30	22.0	+0.020 +0.104	25.0	30.0
A500SM-3236-30	32.0	+0.030 +0.150	36.0	30.0
A500SM-3539-50	35.0	+0.025 +0.125	39.0	50.0
A500SM-5055-30	50.0	+0.025 +0.125	55.0	30.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock



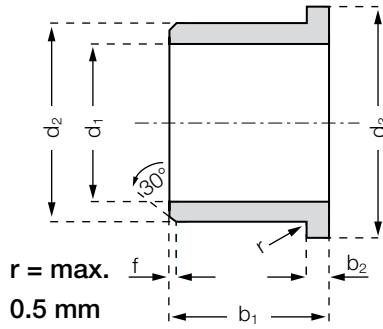
prices price list online
www.igus.co.uk/en/a500



order part number
example A500SM-0507-05

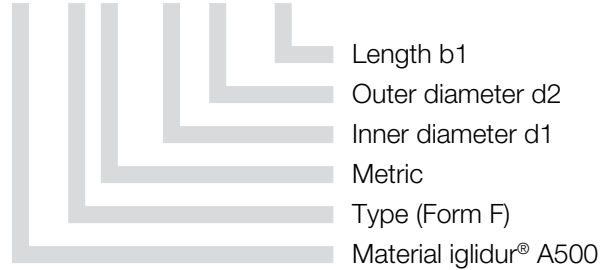
iglidur® A500 | Product Range

Flange bearing



Order key

A500FM-0405-04



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0,14
A500FM-0405-04	4.0	+0.010 +0.058	5.5	9.5	4.0	0.75
A500FM-0608-06	6.0	+0.010 +0.058	8.0	12.0	6.0	1.0
A500FM-0810-10	8.0	+0.013 +0.071	10.0	15.0	10.0	1.0
A500FM-1012-09	10.0	+0.013 +0.071	12.0	18.0	9.0	1.0
A500FM-1012-15	10.0	+0.013 +0.071	12.0	18.0	15.0	1.0
A500FM-1214-13	12.0	+0.016 +0.086	14.0	20.0	13.0	1.0
A500FM-1214-15	12.0	+0.016 +0.086	14.0	20.0	15.0	1.0
A500FM-1517-17	15.0	+0.016 +0.086	17.0	23.0	17.0	1.0
A500FM-1618-17	16.0	+0.016 +0.086	18.0	24.0	17.0	1.0
A500FM-2023-21	20.0	+0.020 +0.104	23.0	30.0	21.0	1.5
A500FM-3034-40	30.0	+0.020 +0.104	34.0	42.0	40.0	2.0
A500FM-3539-40	35.0	+0.025 +0.125	39.0	47.0	40.0	2.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock

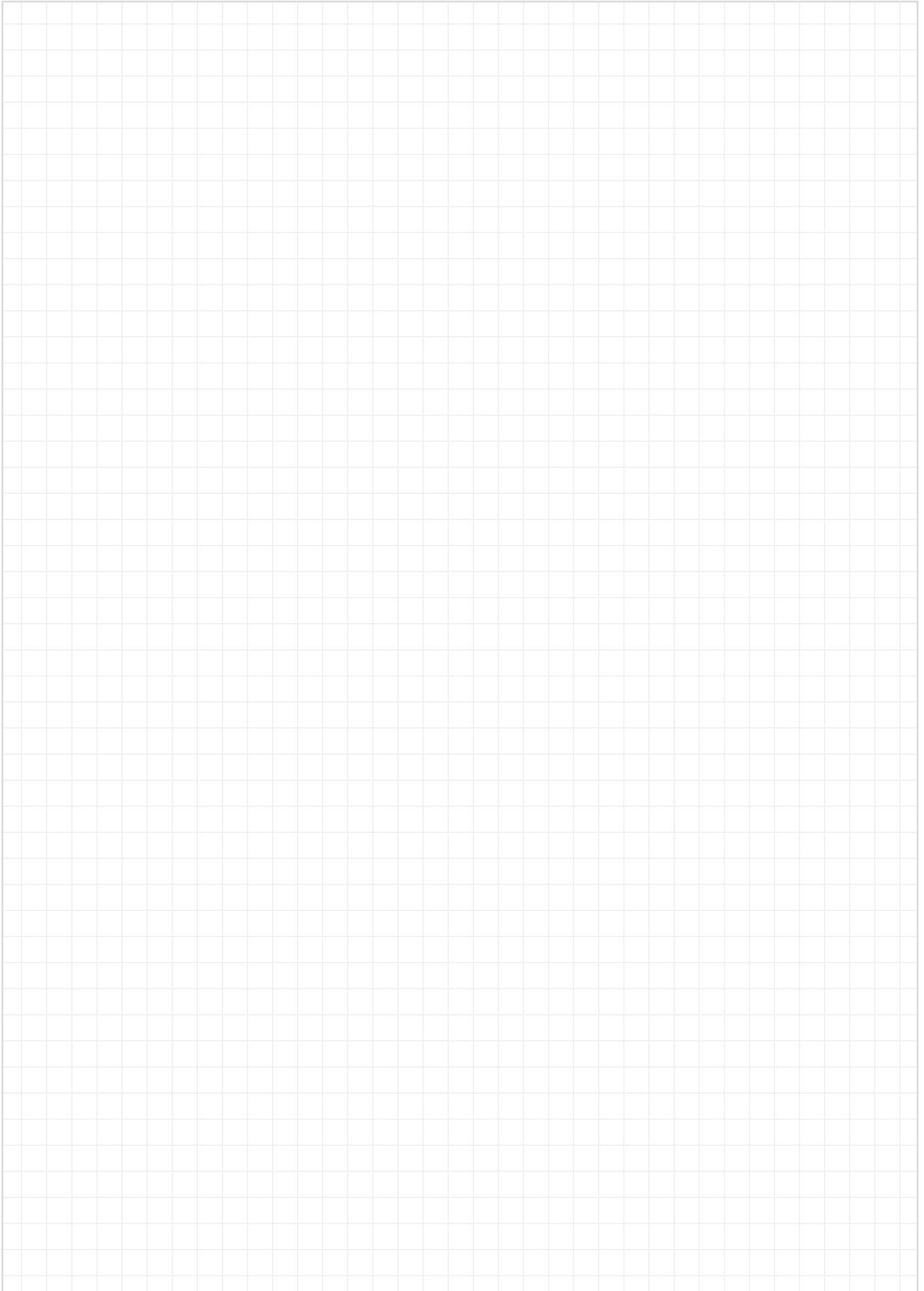


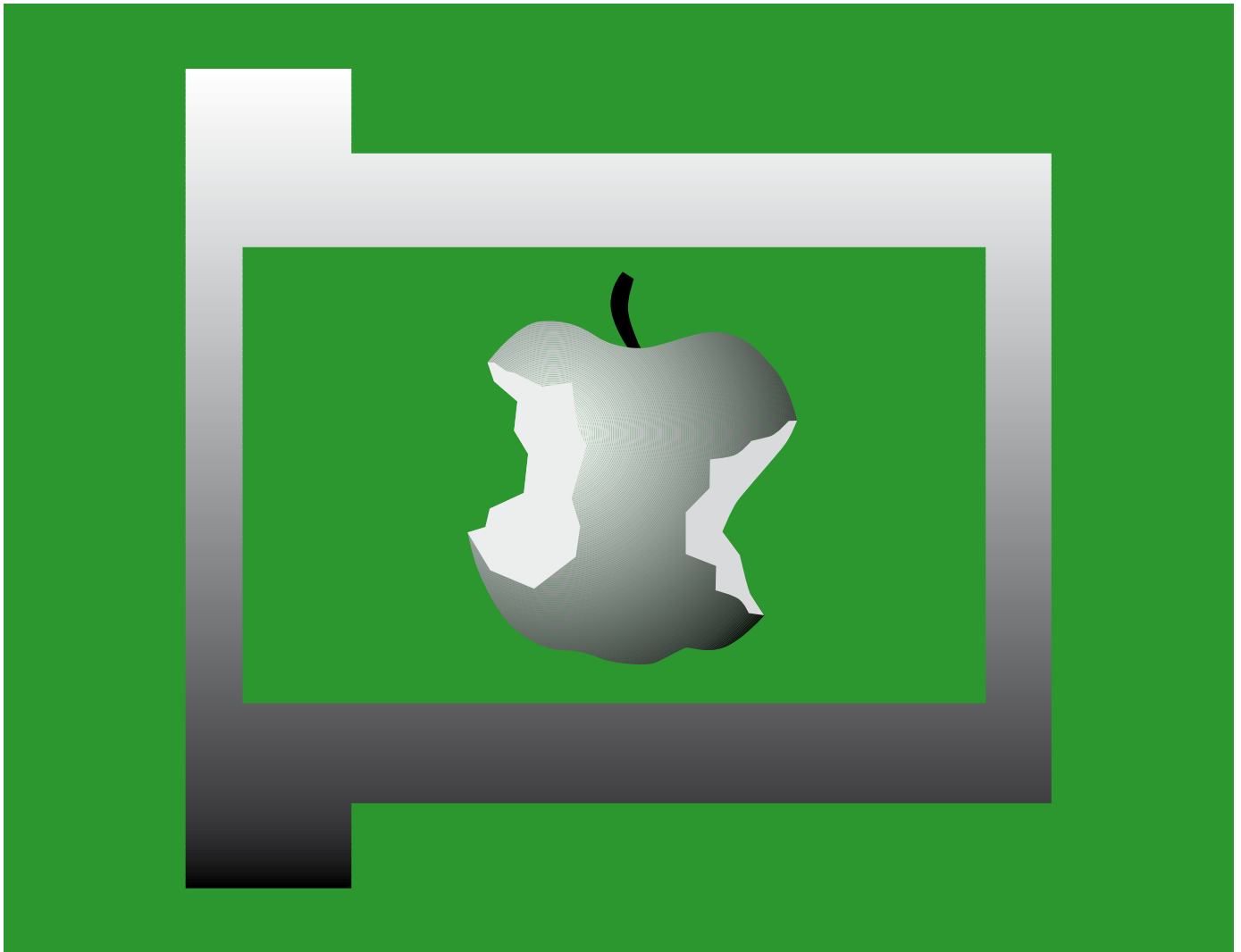
prices price list online
www.igus.co.uk/en/a500



order part number
example A500FM-0405-04

My Sketches





iglidur® A290 – the robust general purpose material



Standard range from stock

Complies with the requirements of the BfR

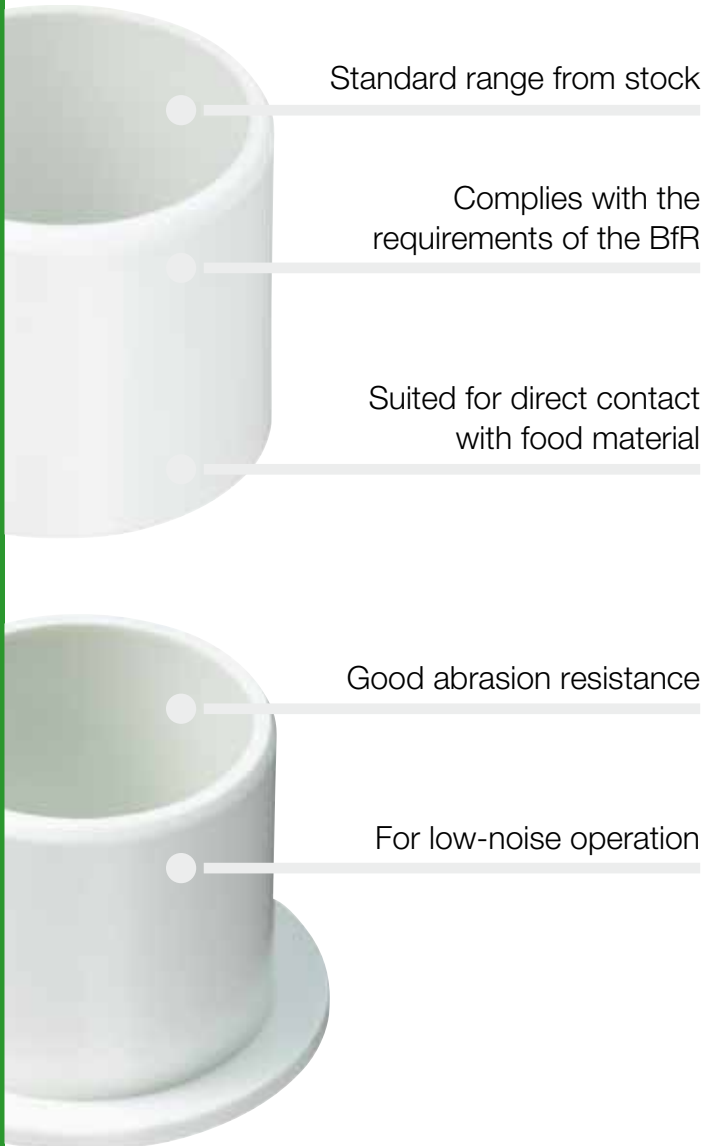
Suited for direct contact with food materials

Good abrasion resistance

For low-noise operation

iglidur® A290

The robust general purpose material. The bearings complies with the requirements of the BfR for contact with food. For medium and high loads.



Standard range from stock

Complies with the requirements of the BfR

Suited for direct contact with food material

Good abrasion resistance

For low-noise operation



When to use it?

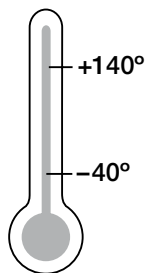
- Suitable for contact with food
- For low speeds
- For low-noise operation
- Physiologically safe
- Very good mechanical properties



When not to use it?

- When the material's FDA compliance is necessary
 - ▶ iglidur® A180, page 371
 - ▶ iglidur® A200, page 381
 - ▶ iglidur® A500, page 407
- When the highest wear resistance is required
 - ▶ iglidur® W300, page 131
- When temperatures are continuously greater than +140 °C
 - ▶ iglidur® A500, page 407
 - ▶ iglidur® H, page 325
 - ▶ iglidur® X, page 153
- When a cost-effective universal bearing is required
 - ▶ iglidur® G, page 61

Temperature



Product range

2 types
 Ø 3–50 mm
 more dimensions
 on request

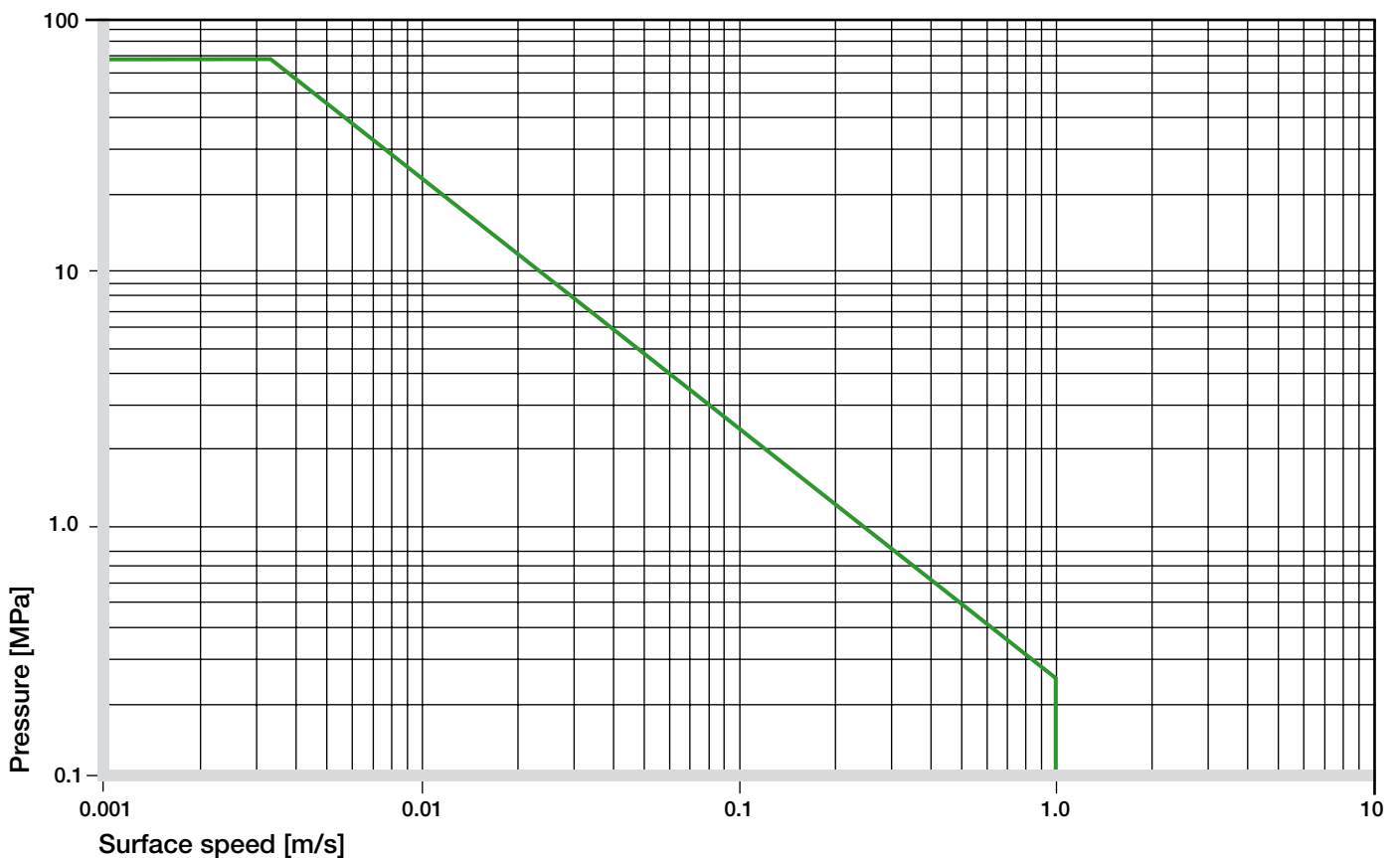


The material iglidur® A290 complies with the requirements of the BfR for contact with food.



Material data			
General properties	Unit	iglidur® A290	Testing method
Density	g/cm ³	1.41	
Colour		white	
Max. moisture absorption at +23 °C/50 % r. h.	% weight	1.7	DIN 53495
Max. moisture absorption	% weight	7.3	
Coefficient of sliding friction, dynamic against steel	μ	0.13–0.40	
pv value, max. (dry)	MPa · m/s	0.23	
Mechanical properties			
Modulus of elasticity	MPa	8,800	DIN 53457
Tensile strength at +20 °C	MPa	250	DIN 53452
Compressive strength	MPa	91	
Max. recommended surface pressure (+20 °C)	MPa	70	
Shore D hardness		88	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+140	
Max. short term application temperature	°C	+180	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	7	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹¹	DIN IEC 93
Surface resistance	Ω	> 10 ¹¹	DIN 53482

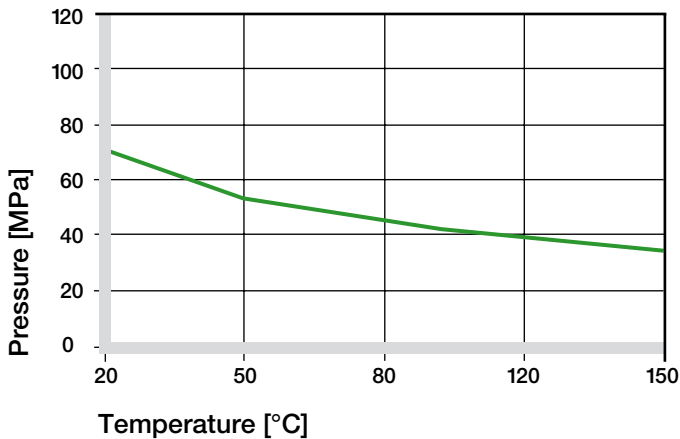
Table 01: Material data



Graph 01: Permissible pv values for iglidur® A290 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Mechanical Properties

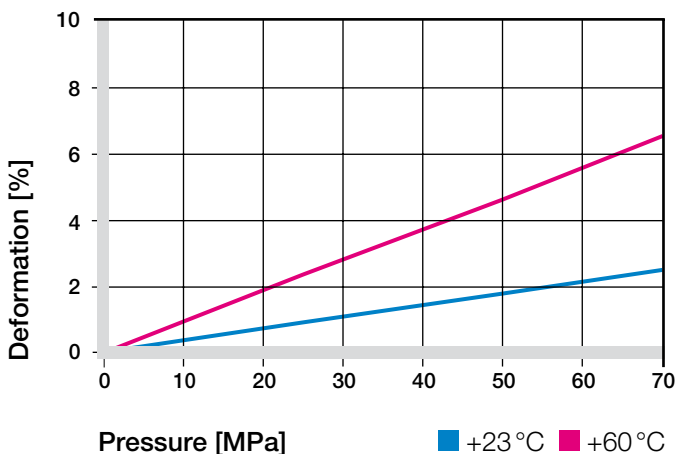
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® A290 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +140 °C the permissible surface pressure is almost 35 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (70 MPa at +20 °C)

iglidur® A290 bearings are an advanced development for the use in food industry. Compared to the bearings made of iglidur® A200, the tribological properties could be significantly improved. Hence the maximum recommended surface pressure for example is 70 MPa. Under this load, the deformation is only about 2.5% at room temperature. A plastic deformation can be negligible up to this load. It is however also dependent on the period of exposure.

► Surface Pressure, page 43



Permissible Surface Speeds

iglidur® A290 is suitable for low surface speeds. Due to the relatively high friction particularly in the low load range, the bearings made of iglidur® A290 heat more strongly than other bearings. With higher speeds, the friction also increases.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	3
Short term	2	1.4	4

Table 02: Maximum running speed

Temperatures

The short-term permitted maximum temperature is +180 °C. With increasing temperatures, the compressive strength of iglidur® A290 bearings decreases. The graph 02 clarifies this connection. The temperatures prevailing in the bearing system also have an influence on the bearing wear. The wear increases with rising temperatures, and the influence is especially marked from +120 °C temperature onwards.

► Application Temperatures, page 46

iglidur® A290	Application temperature
Minimum	-40 °C
Max. long term	+140 °C
Max. short term	+180 °C
Add. securing is required from	+110 °C

Table 03: Temperature limits

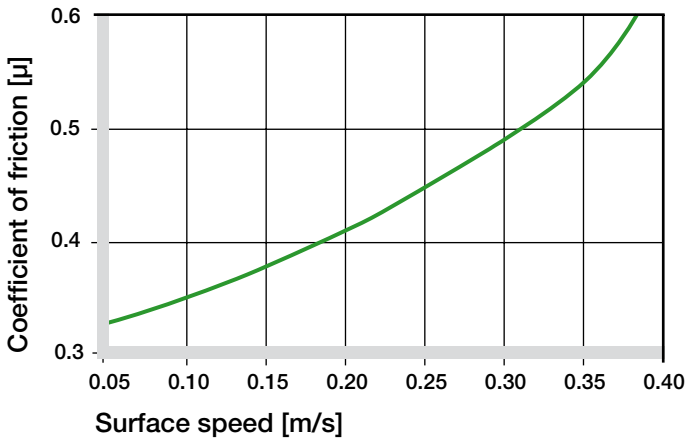
iglidur® A290 | Technical Data

Friction and Wear

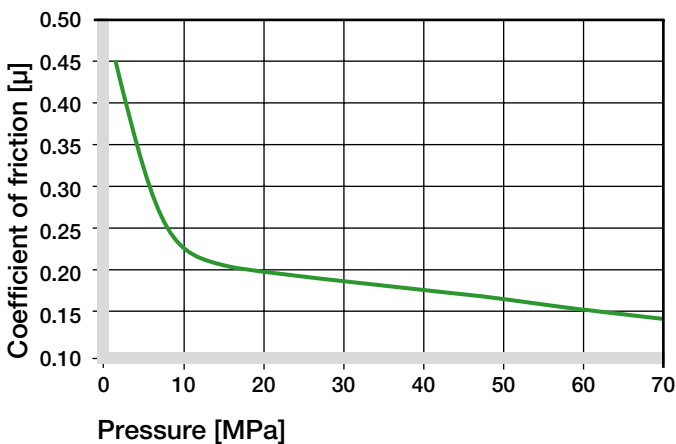
The coefficient of friction alters like the wear resistance with increasing load and surface speed. With increasing speed and constant load, the coefficient of friction steadily rises. In contrast a reverse behavior is noticed at increasing load and constant speed (see graphs 04 and 05). Friction and wear depend to a high degree on the reverse partner. Very smooth shafts increase the coefficient of both friction and wear. iglidur® A290 proves to be relatively insensitive to shaft surfaces and retains a 0.4 friction coefficient μ with average surface finishes of $R_a = 0.4$ to $1.6 \mu\text{m}$.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$

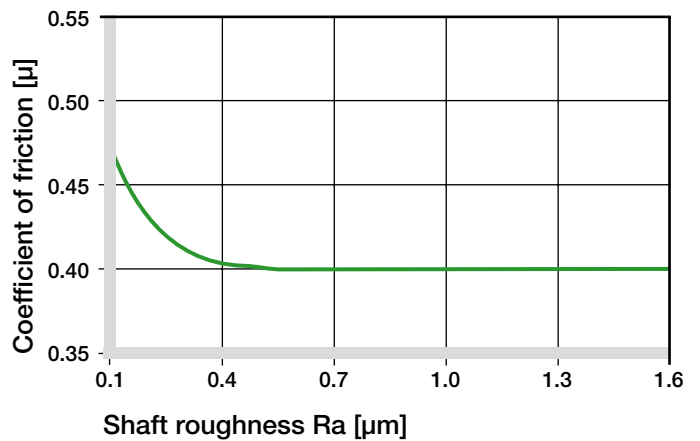


Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

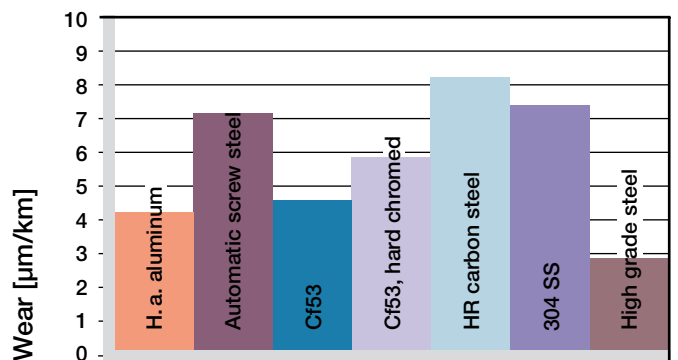
Shaft Materials

Graphs 06 to 09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® A290. Compared to iglidur® A200, the improved tribological properties of iglidur® A290 are also reflected in the coefficients of wear. At low loads, the differences in the wear resistance of the combinations of iglidur® A290 with different shaft materials are very distinct. Graph 08 shows that the advantage of hard-chromed shafts increases with rising load. This counter partner is also well-suited for pivoting applications and are frequently found in packaging machines. Other hardened surfaces such as the Cf53 are also recommended.

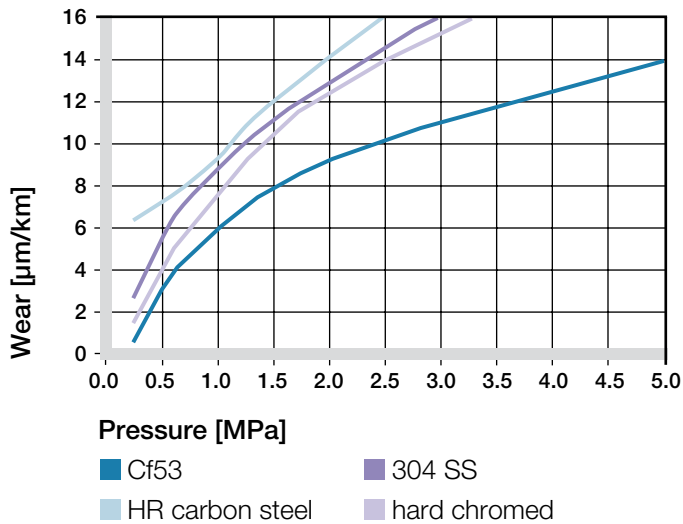
► Shaft Materials, **page 51**



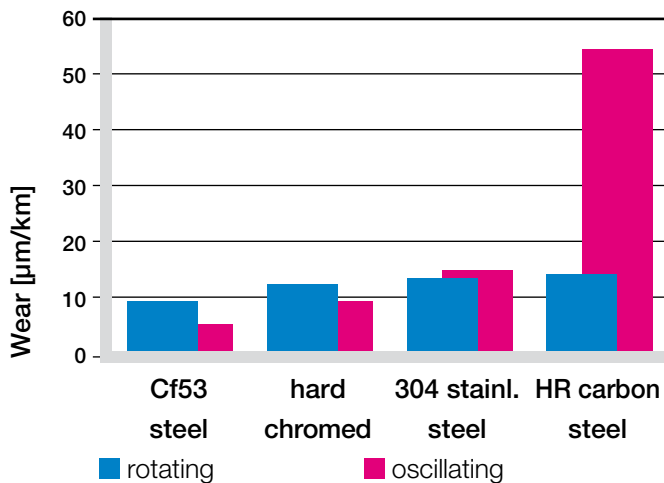
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur® A290	Dry	Greases	Oil	Water
C. o. f. μ	0.13–0.40	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® A290 bearings have a good resistance against chemicals. They are resistant to most lubricants. The iglidur® A290 is not affected by most weak organic and inorganic acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	+ to 0

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® A290 are resistant to radiation up to an intensity of $3 \cdot 10^2$ Gy.

UV Resistance

iglidur® A290 is resistant to UV radiation, tribological properties can be affected.

Vacuum

In a vacuum environment iglidur® A290 plain bearings have limited use due to the high moisture absorption.

Electrical Properties

iglidur® A290 plain bearings are electrically insulating.

Volume resistance	> 10^{11} Ω cm
Surface resistance	> 10^{11} Ω

iglidur® A290 | Technical Data

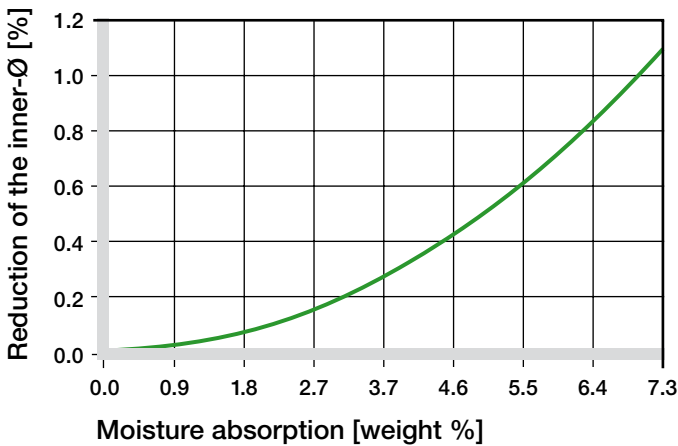
Moisture Absorption

The moisture absorption of iglidur® A290 bearings is approximately 1.7 % in standard atmosphere. The saturation limit in water is 7.3 %, a disadvantage which must be accounted for by all means in applications in humid and wet areas.

Maximum moisture absorption

At +23 °C/50 % r. h.	1.7 % weight
Max. moisture absorption	7.3 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

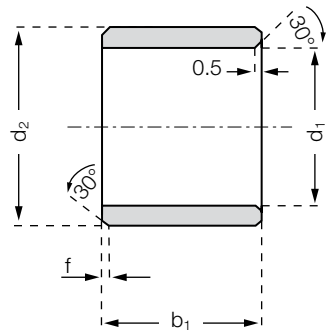
iglidur® A290 bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). After the installation in a housing bore with the tolerance H7, the inner diameter of the bearing automatically adjusts to the D11 tolerance.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® A290 D11 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.020 +0.080	0 +0.010
> 3 to 6	0-0.030	+0.030 +0.105	0 +0.012
> 6 to 10	0-0.036	+0.040 +0.130	0 +0.015
> 10 to 18	0-0.043	+0.050 +0.160	0 +0.018
> 18 to 30	0-0.052	+0.065 +0.195	0 +0.021
> 30 to 50	0-0.062	+0.080 +0.240	0 +0.025
> 50 to 80	0-0.074	+0.100 +0.290	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

A290SM-0304-03



Length b1

Outer diameter d2

Inner diameter d1

Metric

Type (Form S)

Material iglidur® A290

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
A290SM-0304-03	3.0	+0.020 +0.080	4.5	3.0
A290SM-0405-04	4.0	+0.030 +0.105	5.5	4.0
A290SM-0507-05	5.0	+0.030 +0.105	7.0	5.0
A290SM-0608-06	6.0	+0.030 +0.105	8.0	6.0
A290SM-0810-08	8.0	+0.040 +0.130	10.0	8.0
A290SM-1012-10	10.0	+0.040 +0.130	12.0	10.0
A290SM-1214-15	12.0	+0.050 +0.160	14.0	15.0
A290SM-1517-15	15.0	+0.050 +0.160	17.0	15.0
A290SM-1618-15	16.0	+0.050 +0.160	18.0	15.0
A290SM-1820-15	18.0	+0.050 +0.160	20.0	15.0
A290SM-2023-20	20.0	+0.065 +0.195	23.0	20.0
A290SM-2528-20	25.0	+0.065 +0.195	28.0	20.0
A290SM-3034-30	30.0	+0.065 +0.195	34.0	30.0
A290SM-3539-40	35.0	+0.080 +0.240	39.0	40.0
A290SM-4044-50	40.0	+0.080 +0.240	44.0	50.0
A290SM-5055-40	50.0	+0.080 +0.240	55.0	40.0

* after pressfit. Testing methods ► page 55



delivery available
time ex stock

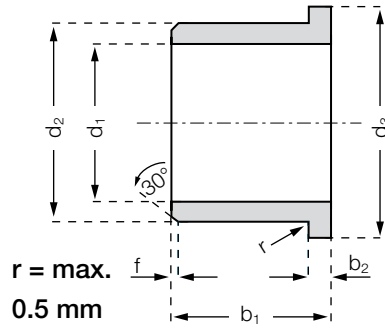


prices price list online
www.igus.co.uk/en/a290



order part number
example A290SM-0304-03

Flange bearing



Structure – part no.

A290FM-0405-06



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® A290

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1–6	Ø 6–12	Ø 12–30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0,14
A290FM-0405-06	4.0	+0.030 +0.105	5.5	9.5	6	0.75
A290FM-0507-05	5.0	+0.030 +0.105	7.0	11.0	5	1.00
A290FM-0608-08	6.0	+0.030 +0.105	8.0	12.0	8	1.00
A290FM-0810-09	8.0	+0.040 +0.130	10.0	15.0	9	1.00
A290FM-1012-09	10.0	+0.040 +0.130	12.0	18.0	9	1.00
A290FM-1214-12	12.0	+0.050 +0.160	14.0	20.0	12	1.00
A290FM-1517-17	15.0	+0.050 +0.160	17.0	23.0	17	1.00
A290FM-1618-17	16.0	+0.050 +0.160	18.0	24.0	17	1.00
A290FM-2023-21	20.0	+0.065 +0.195	23.0	30.0	21	1.50
A290FM-2528-21	25.0	+0.065 +0.195	28.0	35.0	21	1.50
A290FM-3034-26	30.0	+0.065 +0.195	34.0	42.0	26	2.00
A290FM-3539-26	35.0	+0.080 +0.240	39.0	47.0	26	2.00
A290FM-4044-40	40.0	+0.080 +0.240	44.0	52.0	40	2.00
A290FM-5055-40	50.0	+0.080 +0.240	55.0	63.0	40	2.00

* after pressfit. Testing methods ► page 55



delivery available
time ex stock

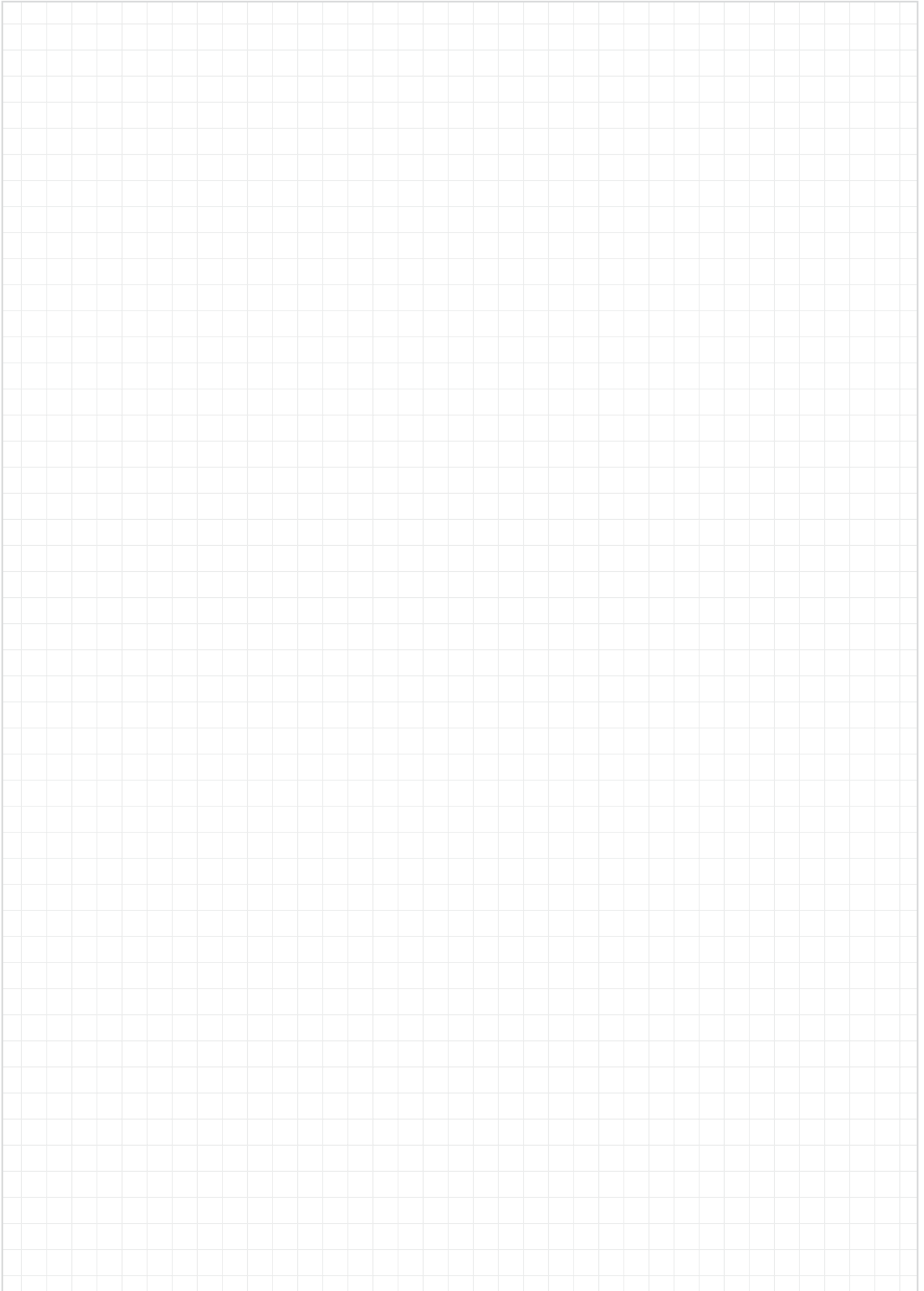


prices price list online
www.igus.co.uk/en/a290



order part number
example A290FM-0405-06

My Sketches





iglidur® T220 – suitable for the tobacco industry



Free of unwanted components as requested by
main manufacturers of tobacco products

iglidur® T220

Suitable for the tobacco industry. Bearings that constitute only materials “recommended” for the tobacco industry. They are free from carcinogenic additives like, for instance, PTFE.



Free of unwanted components as requested by main manufacturers of tobacco products



When to use it?

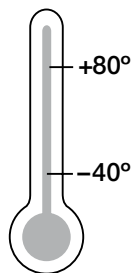
- When my bearings need to be free of substances that are not permitted for applications in the tobacco industry



When not to use it?

- When high compression strength occurs
 - ▶ **iglidur® Z, page 299**
- When a cost-effective universal bearing is required
 - ▶ **iglidur® G, page 61**
 - ▶ **iglidur® M250, page 107**
- If highest wear resistance and low pressure load is necessary
 - ▶ **iglidur® J, page 89**
- If the bearing should be free merely from PTFE and silicon
 - ▶ **iglidur® C, page 493**
 - ▶ **iglidur® R, page 249**

Temperature



Product range

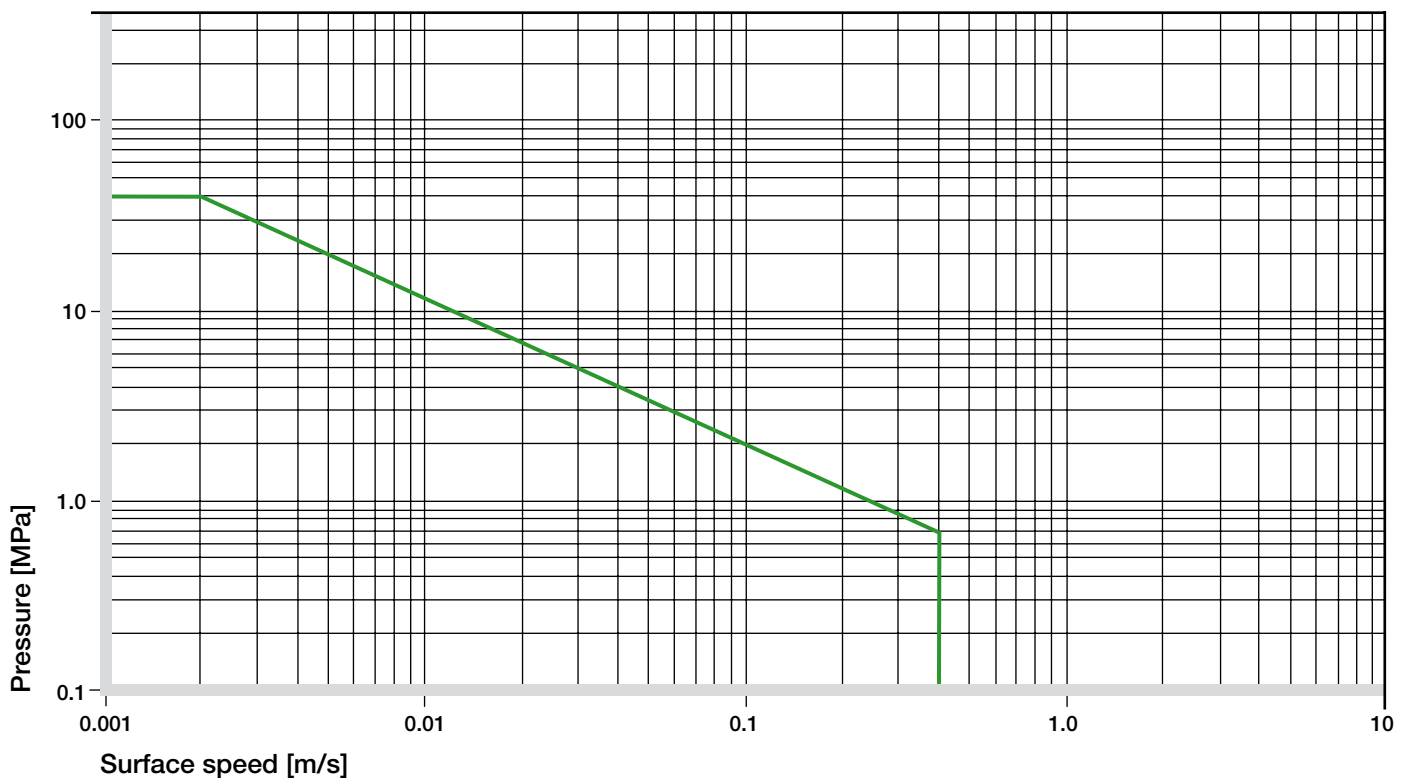
on request



Material data			
General properties	Unit	iglidur® T220	Testing method
Density	g/cm ³	1.28	
Colour		white	
Max. moisture absorption at +23 °C/50 % r. h.	% weight	0.3	DIN 53495
Max. moisture absorption	% weight	0.5	
Coefficient of sliding friction, dynamic against steel	μ	0.20–0.32	
pv value, max. (dry)	MPa · m/s	0.28	
Mechanical properties			
Modulus of elasticity	MPa	1,800	DIN 53457
Tensile strength at +20 °C	MPa	65	DIN 53452
Compressive strength	MPa	55	
Max. recommended surface pressure (+20 °C)	MPa	40	
Shore D hardness		76	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+100	
Max. short term application temperature	°C	+160	
Max. ambient temperature, short term ¹⁾	°C	+170	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	11	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹⁰	DIN IEC 93
Surface resistance	Ω	> 10 ¹⁰	DIN 53482

¹⁾ Without additional load; no sliding movement; relaxation possible

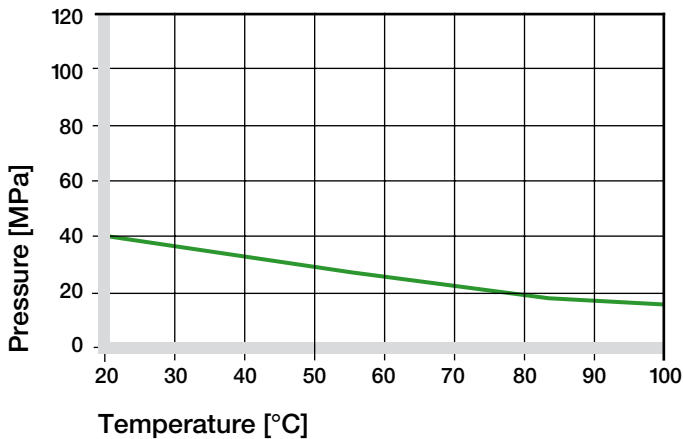
Table 01: Material data



Graph 01: Permissible pv values for iglidur® T220 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® C plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +100°C the permissible surface pressure is almost 10 MPa.

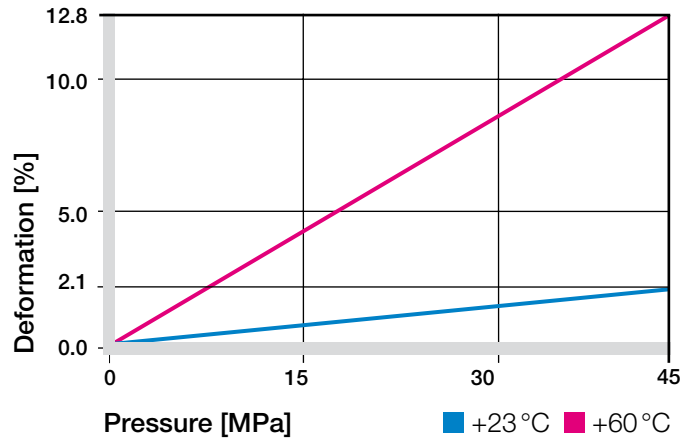


Graph 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

iglidur® T220 is a special material for application in the tobacco processing industry. It fulfills the demands of the tobacco industry (engineering database). The material is free of undesirable or banned ingredients, as requested by reputed manufacturers from 2004 onward.

iglidur® T220 bearings can be stressed up to the permitted limit of 45 MPa. However, the level of the load has an influence on the bearing's wear. The permitted load is limited by higher temperatures. (Graph 02).

► Surface Pressure, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

The maximum speeds of iglidur® T220 bearings amount to 0.4 m/s with continuous rotation. The friction and the entailing heating limit the permitted speeds. From this it follows that in intermittent service or in linear movements, higher speeds can be attained.

► Surface Speed, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	0.4	0.3	1
Short term	1	0.7	2

Table 02: Maximum running speed

Temperatures

The plain bearings of iglidur® T220 can be continuously used up to +100 °C. Temporarily, temperatures up to +160 °C are permissible.

The elasticity of the bearings depends on the temperature. +60 °C already results in a clear increase in elasticity. Usually iglidur® T220 bearings will need to be mechanically secured in the housing when being used at temperatures over +50 °C.

► Application Temperatures, [page 46](#)

iglidur® T220	Application temperature
Minimum	-40 °C
Max. long term	+100 °C
Max. short term	+160 °C
Add. securing is required from	+50 °C

Table 03: Temperature limits

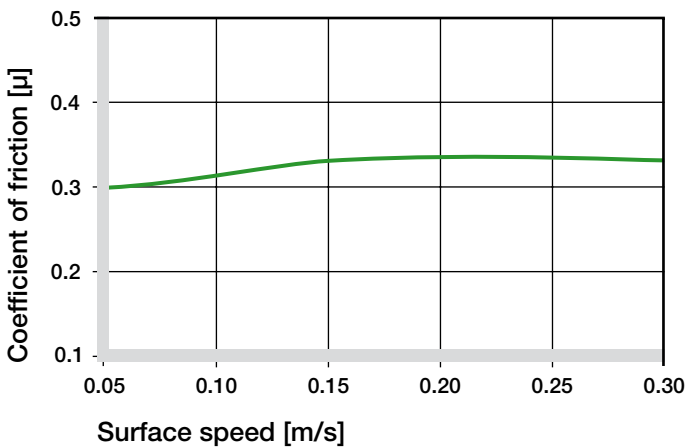
iglidur® T220 | Technical Data

Friction and Wear

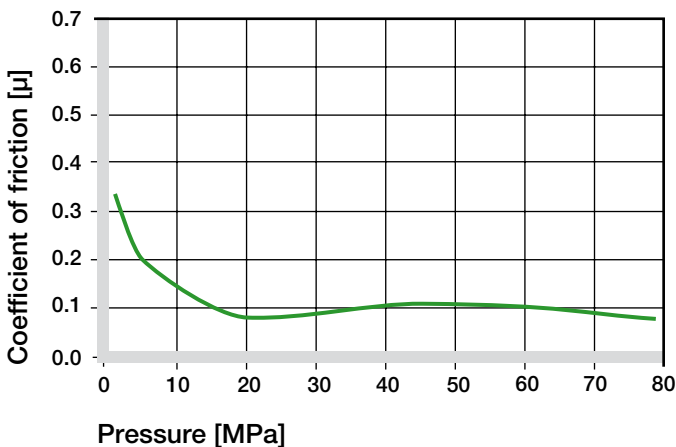
This material was developed in strict compliance with the specific requirements of the tobacco processing industry. This eliminated the use of friction reducing additives, which means that the friction and wear values of iglidur® T220 plain bearings fall well behind those of the better iglidur materials.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$

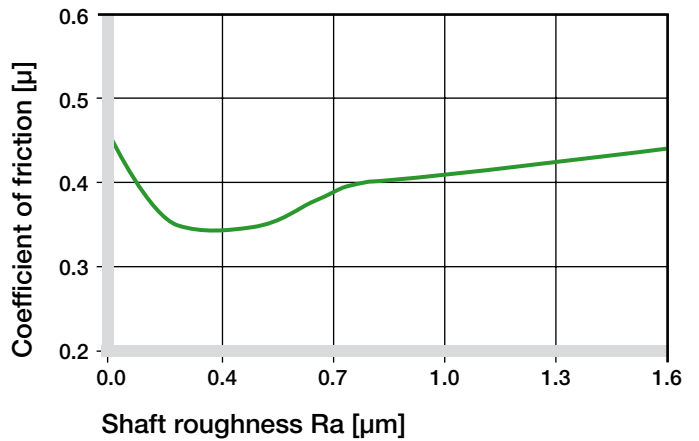


Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

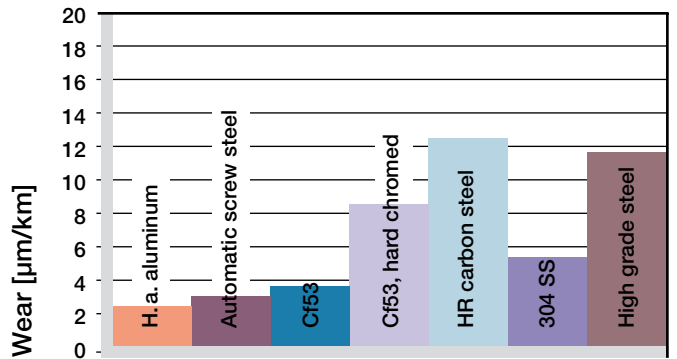
Shaft Materials

Graphs 06 to 09 show the test results of iglidur® T220 bearings running against various shaft materials. Graph 09 shows that the bearings react with a heavy increase in wear when the load is increased. Therefore it should be observed that the load should be kept below 5 MPa by the correct dimensioning of the bearings.

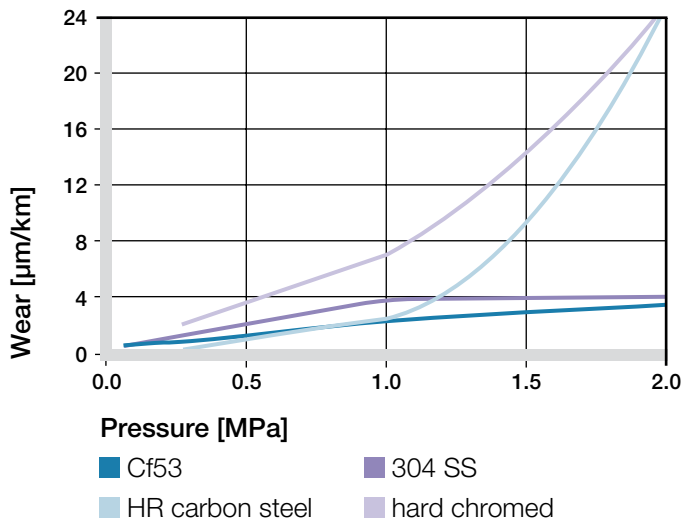
► Shaft Materials, **page 51**



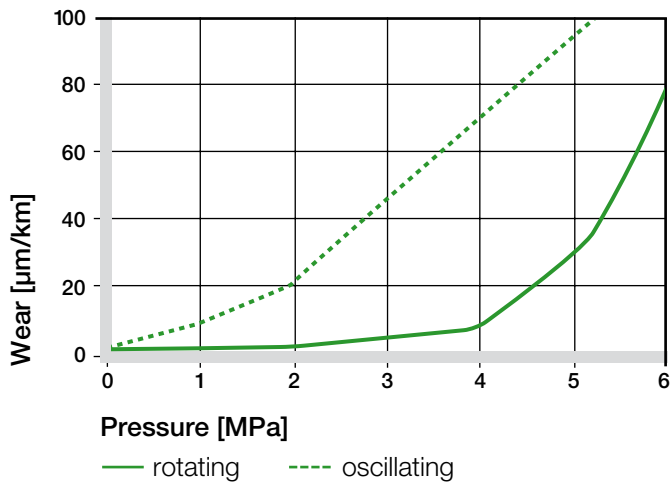
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® T220	Dry	Greases	Oil	Water
C.o.f. μ	0.2–0.32	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® T220 plain bearings are resistant to strongly diluted alkalines and very weak acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	–
Greases, oils without additives	+
Fuels	+
Diluted acids	0
Strong acids	–
Diluted alkalines	–
Strong alkalines	–

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® T220 are radiation resistant up to a radiation intensity of $3 \cdot 10^2$ Gy.

UV Resistance

iglidur® T220 plain bearings are not resistant to the impact of UV radiation.

Vacuum

Applications in a vacuum are only possible to a limited extent. Only dehumidified bearings of iglidur® T220 should be tested in a vacuum.

Electrical Properties

iglidur® T220 plain bearings are electrically insulating.

Volume resistance	$> 10^{10} \Omega\text{cm}$
Surface resistance	$> 10^{10} \Omega$

iglidur® T220 | Technical Data

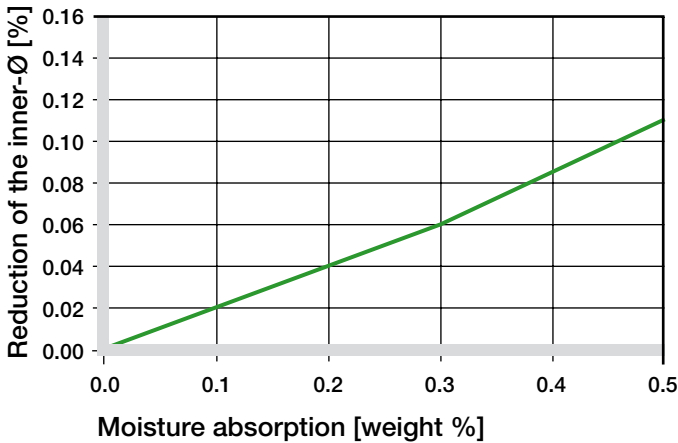
Moisture Absorption

The moisture absorption of iglidur® T220 plain bearings is approximately 0.3% in standard atmosphere. The saturation limit in water is 0.5%. These values are so low that consideration of expansion by moisture absorption is only required under extreme circumstances.

Maximum moisture absorption

At +23 °C/50 % r.h.	0.3 % weight
Max. moisture absorption	0.5 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® T220 bearings are standard bearings for shafts with h-tolerance (recommended minimum h9). After the installation in a housing bore with H7 tolerance, the inner diameter of the bearing automatically adjusts to the E10 tolerance.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® T220 E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® T220 plain bearings are manufactured to special order.



iglidur® F

electrically conductive
and strong

Standard range from stock ► from page 439



iglidur® H4

the automotive standard

Standard range from stock ► from page 451



iglidur® Q

wear-resistant at
high loads

Standard range from stock ► from page 461



iglidur® UW

for fast rotation
under water

Standard range from stock ► from page 475



iglidur® B

the flexible material

On request ► from page 485



iglidur® C

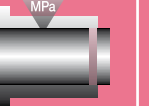
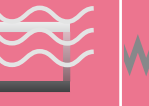










free from PTFE and silicone

On request ► from page 493

iglidur® Specialists | Selection According to Main Criteria

iglidur®
polymer
bearings

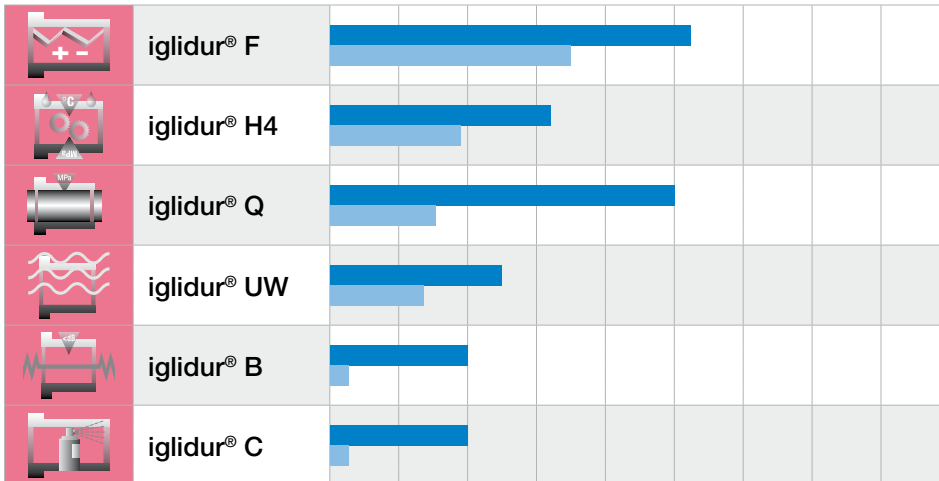
iglidur®- Specialists – Special Applications

						
	iglidur® F	iglidur® H4	iglidur® Q	iglidur® UW	iglidur® B	iglidur® C
 Long life dry running		●	●			
 For high loads	●	●	●			
 For high temperatures		●				
 Low friction/high speed		●	●			
 Dirt resistant						
 Chemicals resistant		●				
 Low water absorption		●	●	●		
 Food-suitable						
 Vibration-dampening					●	
 Edge pressure		●			●	●
 For under water use		●		●		
 Cost-effective		●		●		
from page	439	451	461	475	485	493

iglidur® Specialists | Selection According to Main Criteria

Load [MPa]

0 20 40 60 80 100 120 140 160

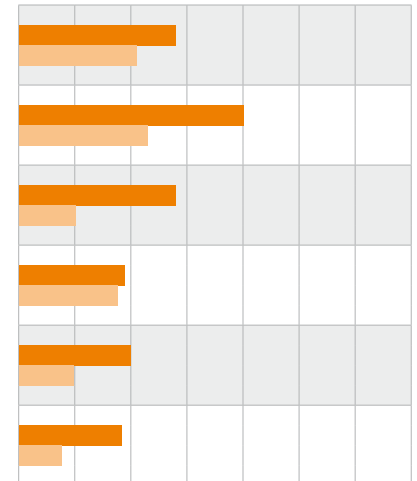


Maximum permissible radial load of iglidur® bearings at

- +20°C
- +120°C

Temperature [°C]

0 50 100 150 200 250 300

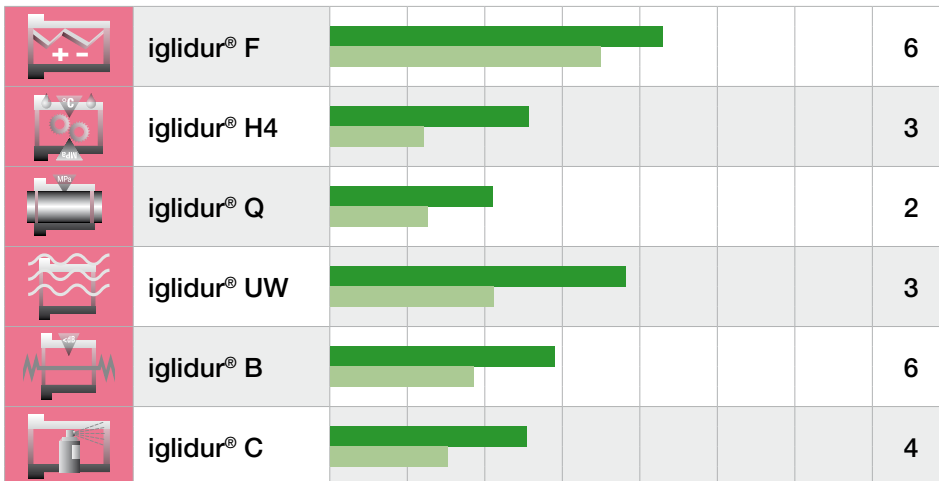


Important temperatur limits of iglidur® bearings

- Maximum permissible application temperature, continous
- Temperature where bearings need to be secured against radial or axial movement in the housing

Coefficient of Friction [μ]

0 0.1 0.2 0.3 0.4 0.5 0.6 Shaft



Coefficients of friction of iglidur® bearings sliding against steel, p = 1.2 MPa, v = 0.3 m/s

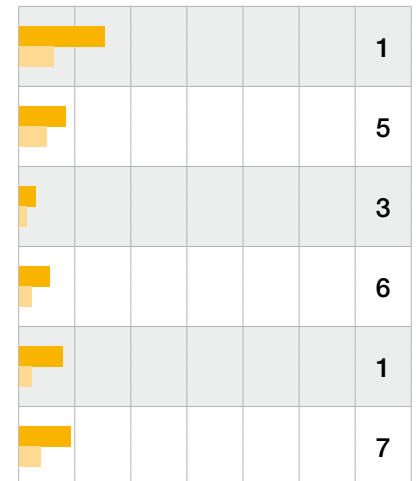
- Average coefficient of all the seven sliding combinations tested
- Coefficient of friction of best combination

Shaft material:

- 1 = Cf53
- 2 = hard chromed
- 3 = Aluminum, hc
- 4 = Automatic screw steel
- 5 = HR carbon steel
- 6 = 304 SS
- 7 = High grade steel

Wear [μm/km]

0 5 10 15 20 25 Shaft



Wear of iglidur® bearings sliding against steel, p = 1 MPa

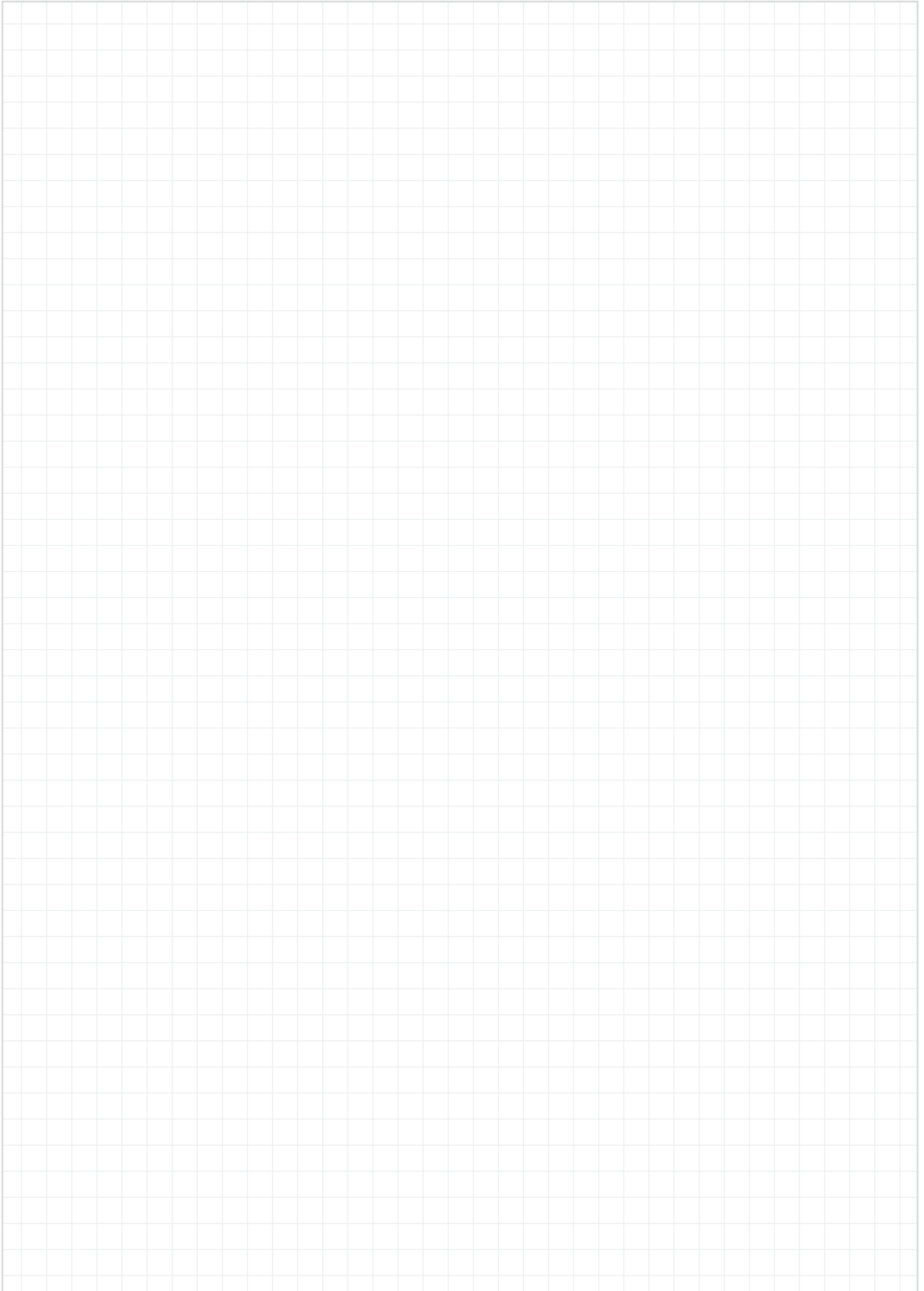
- Average wear of all the seven sliding combination tested
- Wear of best combination

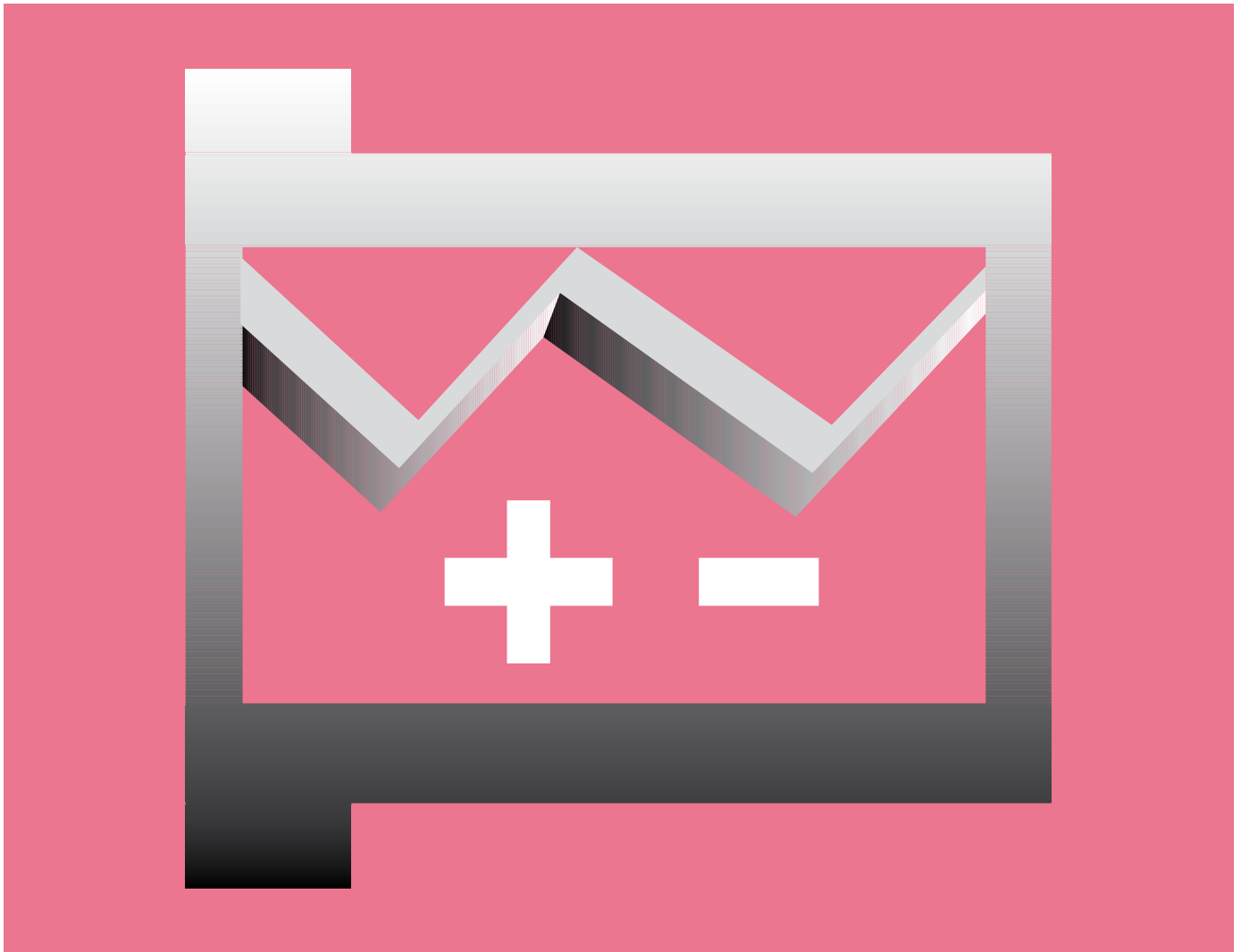
Material data							
General properties	Unit	iglidur® F	iglidur® H4	iglidur® Q	iglidur® UW	iglidur® B	iglidur® C
Density	g/cm ³	1.25	1.79	1.40	1.52	1.15	1.1
Colour		black	brown	black	black	grey	white
Max. moisture absorption at +23 °C/50% r.h.	% weight	1.8	0.1	0.9	0.2	1.0	1.0
Max. moisture absorption	% weight	8.4	0.2	4.9	0.8	6.3	6.9
Coefficient of sliding friction, dynamic against steel	μ	0.10–0.39	0.08–0.25	0.05–0.15	0.15–0.35	0.18–0.28	0.17–0.25
pv value, max. (dry)	MPa · m/s	0.34	0.7	0.55	0.11	0.15	0.10
Mechanical properties							
Modulus of elasticity	MPa	11,600	7,500	4,500	9,600	1,800	1,900
Tensile strength at +20 °C	MPa	260	120	120	90	55	60
Compressive strength	MPa	98	50	89	70	20	30
Max. recommended surface pressure (+20 °C)	MPa	105	65	100	40	40	40
Shore D hardness		84	80	83	78	69	72
Physical and thermal properties							
Max. long term application temperature	°C	+140	+200	+135	+90	+100	+90
Max. short term application temperature	°C	+180	+240	+155	+110	+130	+130
Min. application temperature	°C	-40	-40	-40	-50	-40	-40
Thermal conductivity	W/m · K	0.65	0.24	0.23	0.60	0.24	0.24
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	12	5	5	6	12	15
Electrical properties							
Specific volume resistance	Ωcm	< 10 ³	> 10 ¹³	> 10 ¹⁵	< 10 ⁵	> 10 ¹⁰	> 10 ¹⁰
Surface resistance	Ω	< 10 ²	> 10 ¹²	> 10 ¹²	< 10 ⁵	> 10 ⁹	> 10 ⁹

Material resistance (at +20 °C)						
Chemical resistance	iglidur® F	iglidur® H4	iglidur® Q	iglidur® UW	iglidur® B	iglidur® C
Alcohol	+ to 0	+	+ to 0	+	+ to 0	+ to 0
Hydrocarbons	+	+	+	+	-	+
Greases, oils without additives	+	+	+	+	-	+
Fuels	+	+	+	+	-	+
Diluted acids	0 to -	+ to 0	0 to -	0 to -	0 to -	0 to -
Strong acids	-	+ to -	-	-	-	-
Diluted alkalines	+	+	+	+	-	+
Strong alkalines	+ to 0	+	0	+ to 0	-	0
Radiation resistance [Gy] to	3 · 10²	2 · 10²	2 · 10⁴	3 · 10²	3 · 10²	2 · 10⁴

+ resistant 0 conditionally resistant - not resistant

My Sketches





iglidur® F – electrically conductive and strong



Standard range from stock

Electrically conductive

High compressive strength

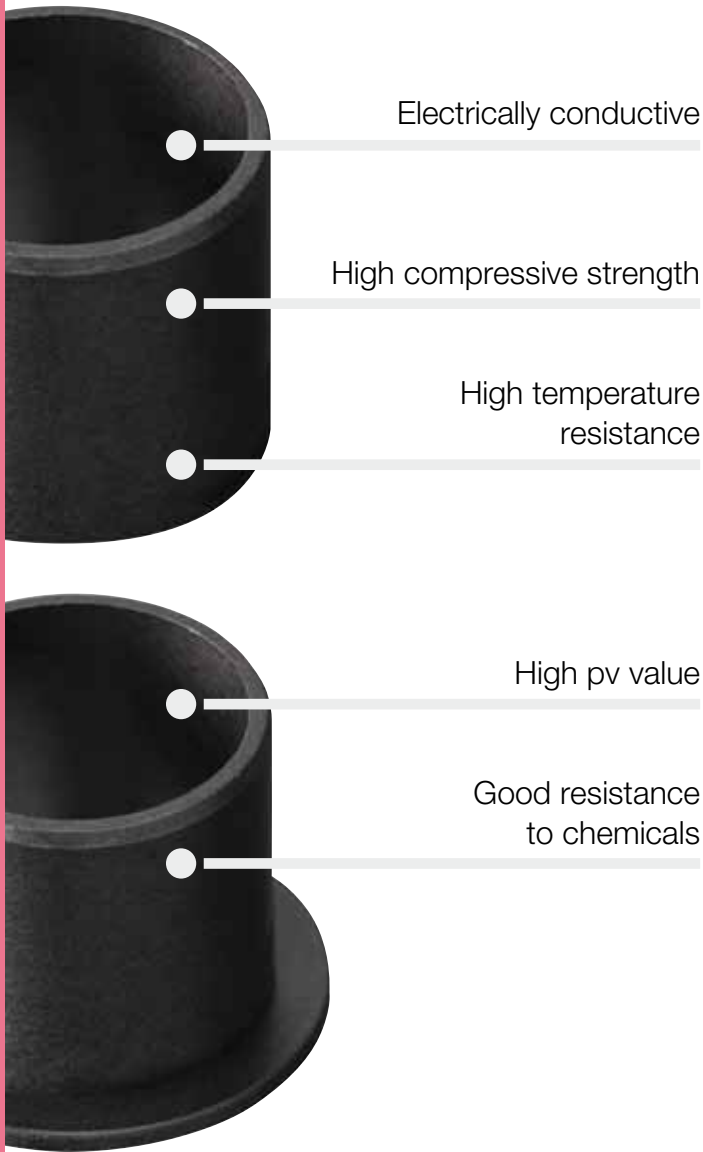
Good temperature resistance

High pv value

Good resistance to chemicals

iglidur® F

Electrically conductive and strong. Extreme stiffening and hardening, besides being highly electrically conductive iglidur® F bearings can be used in dry operation only conditionally, but display full mechanical potentials with oil and fat lubrication.



When to use it?

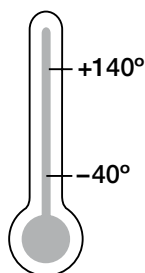
- When the bearing should be electrically conductive
- For high static loads



When not to use it?

- When mechanical reaming of the wall surface is necessary
 - ▶ **iglidur® M250, page 107**
- When the highest wear resistance is needed
 - ▶ **iglidur® W300, page 131**
- When very low coefficients of friction in the dry run are needed
 - ▶ **iglidur® J, page 89**
- For underwater applications
 - ▶ **iglidur® H370, page 347**
- When you need an universal bearing
 - ▶ **iglidur® G, page 61**

Temperature



Product range

2 types
 Ø 2–70 mm
 more dimensions
 on request



iglidur® F | Application Examples

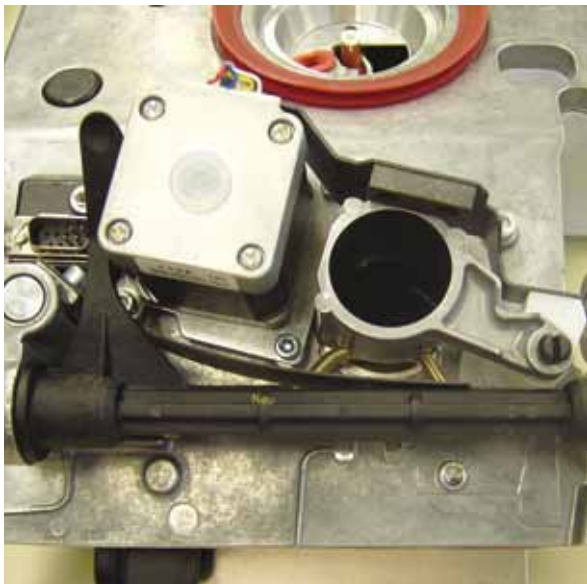


Typical sectors of industry and application areas

- Textile technology
- Automotive etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/spinningbox

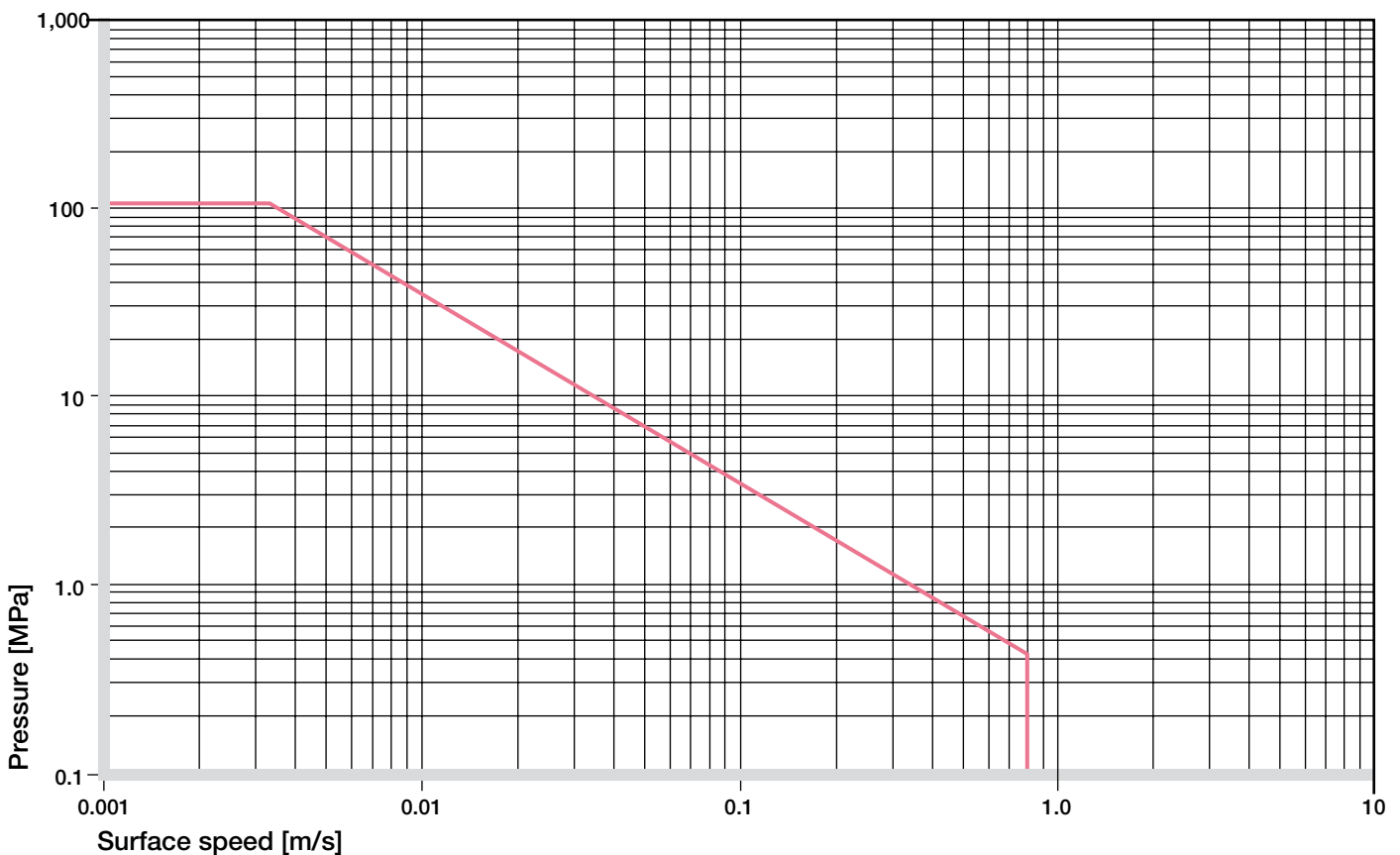


► www.igus.co.uk/textile-machine

Material data

General properties	Unit	iglidur® F	Testing method
Density	g/cm ³	1.25	
Colour		black	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	1.8	DIN 53495
Max. moisture absorption	% weight	8.4	
Coefficient of sliding friction, dynamic against steel	μ	0.1–0.39	
pv value, max. (dry)	MPa · m/s	0.34	
Mechanical properties			
Modulus of elasticity	MPa	11,600	DIN 53457
Tensile strength at +20 °C	MPa	260	DIN 53452
Compressive strength	MPa	98	
Max. recommended surface pressure (+20 °C)	MPa	105	
Shore D hardness		84	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+140	
Max. short term application temperature	°C	+180	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.65	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	12	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	< 10 ³	DIN IEC 93
Surface resistance	Ω	< 10 ²	DIN 53482

Table 01: Material data

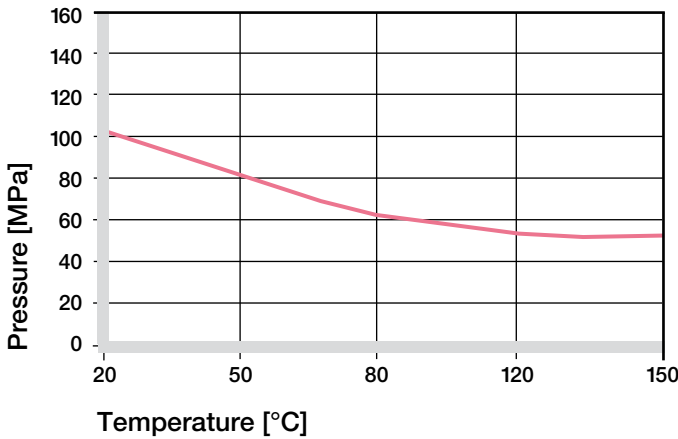


Graph 01: Permissible pv values for iglidur® F with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® F | Technical Data

Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® F plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +140°C the permissible surface pressure is almost 50 MPa.



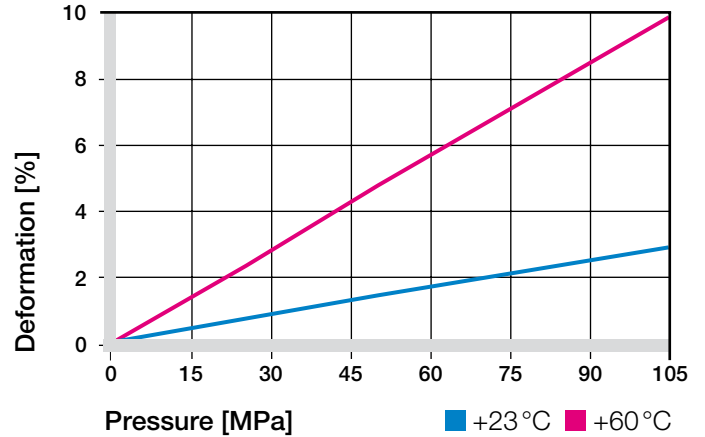
Graph 02: Recommended maximum surface pressure as a function of temperature (100 MPa at +20 °C)

When bearings need to be electrically conductive, especially in applications that should keep out static, the iglidur® F is the right choice. Moreover, the iglidur® F bearings are extremely pressure resistant. At room temperature, they could be statically loaded up to 100 MPa.

Graph 03 shows the elastic deformation of iglidur® F with radial loads. Under the maximum recommended surface pressure of 105 MPa, the deformation amounts to less than 3.5%.

A plastic deformation can be negligible up to this pressure load. It is however also dependent on the period of exposure.

► Surface Pressure, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

The maximum permitted surface speeds are based on the operation period and the type of motion. A bearing is the most stressed in long-term rotating motions. Here the maximum speed for the iglidur® F bearing is 0.8 m/s.

The maximum values specified in Table 02 are attained only at minimum pressure loads. In practice these limit values are not often attained due to interactions.

► Surface Speed, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	0.8	0.6	3
Short term	1.5	1.1	6

Table 02: Maximum running speed

Temperatures

The ambient temperatures strongly influence the features of bearings. The short-term permitted maximum temperature is +180 °C. Long-term operating temperatures should not exceed +140 °C.

With increasing temperatures, the compressive strength of iglidur® F bearings decreases. Graph 02 clarifies this connection. The wear too rises.

► Application Temperatures, [page 46](#)

iglidur® F	Application temperature
Minimum	-40 °C
Max. long term	+140 °C
Max. short term	+180 °C
Add. securing is required from	+105 °C

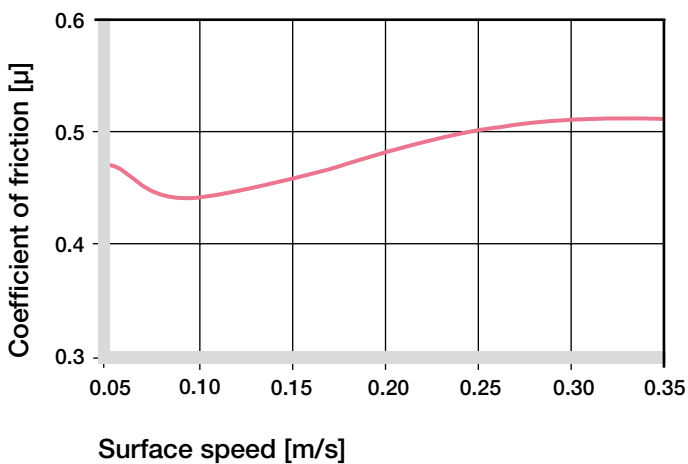
Table 03: Temperature limits

Friction and Wear

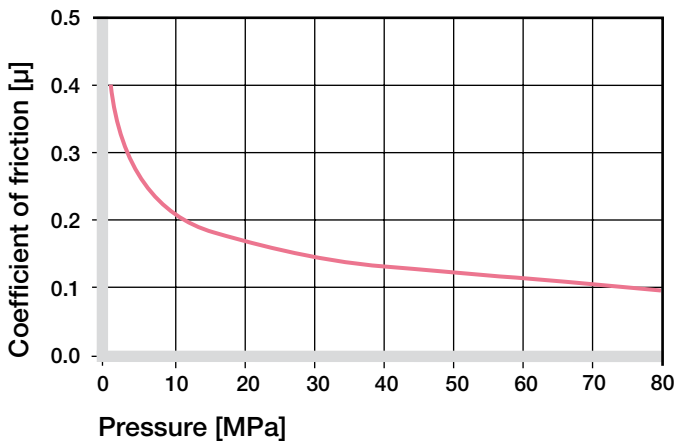
The coefficients of friction in the dry operation are not so favorable in iglidur® F bearings like in many other iglidur® materials. However iglidur® bearings can be lubricated without any problems, and iglidur® F bearings attain excellent results compared among the lubricated iglidur® bearings.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



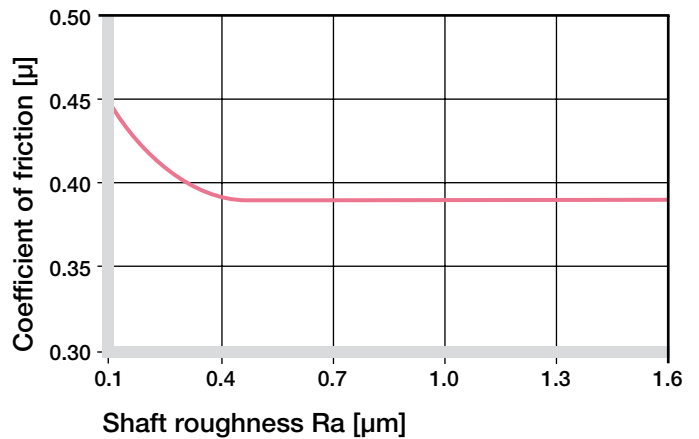
Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

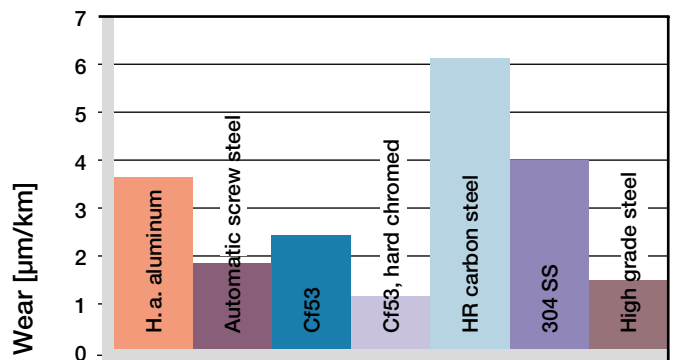
Graphs 07–09 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® F. In the lowest load range, the hard-chromed shafts prove to be the most suitable counter partner in rotating applications with iglidur® F bearings. It behaves otherwise in pivoting applications (see Graph 09) At 2 MPa loads, the V2A shaft and the hard-chromed shaft are more favorable than the Cf53 shaft, having much higher coefficients of wear altogether than in rotations.

Please contact us in case the shaft material scheduled by you is not included in these diagrams.

► Shaft Materials, **page 51**

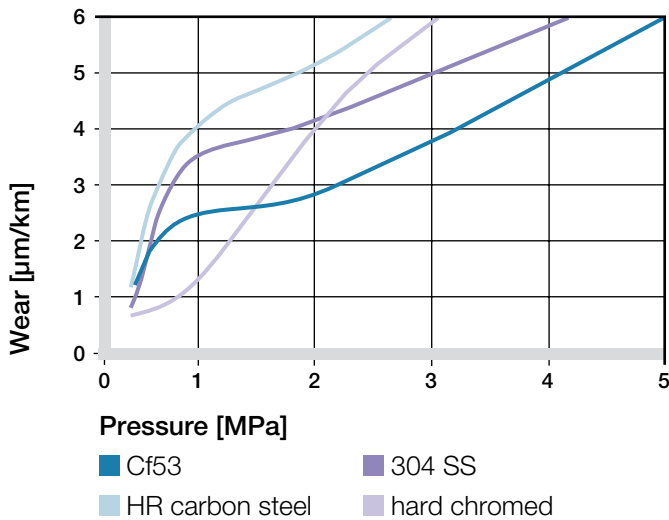


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

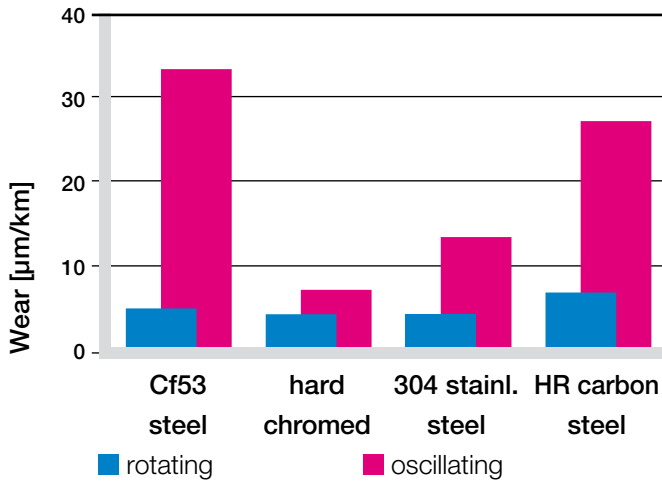


Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$

iglidur® F | Technical Data



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

iglidur® F	Dry	Greases	Oil	Water
C.o.f. μ	0.08–0.15	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® F plain bearings have a good chemical resistance. They have a high resistance to lubricants, even at high temperatures (around +120 °C). Hence the iglidur® F bearings are particularly suitable for applications that call for lubrication necessitated by other parts. The iglidur® F is not affected by most weak organic and inorganic acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	+ to 0

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® F are radiation resistant up to a radiation intensity of $3 \cdot 10^2$ Gy.

UV Resistance

iglidur® F plain bearings are permanently resistant to UV radiation.

Vacuum

iglidur® F plain bearings outgas in a vacuum. Use in a vacuum environment is only possible with dehumidified bearings.

Electrical Properties

iglidur® F plain bearings are electrically conductive.

Volume resistance	< $10^3 \Omega\text{cm}$
Surface resistance	< $10^2 \Omega$

Moisture Absorption

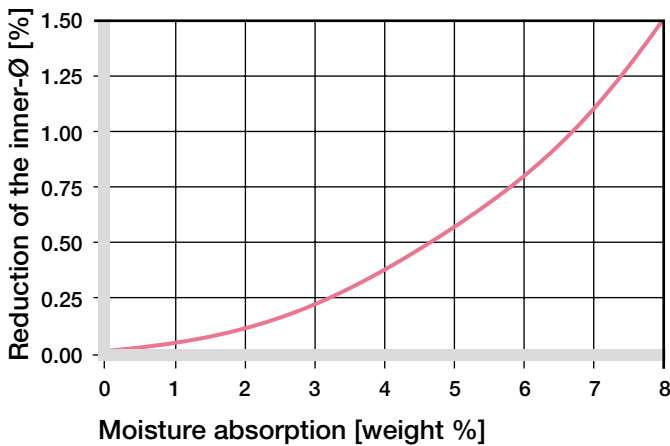
The moisture absorption of iglidur® F plain bearings is approximately 1.8% in standard atmosphere. The saturation limit in water is 8.4%. This must be taken into account along with the other applicable conditions.

Maximum moisture absorption

At +23 °C/50 % r.h. 1.8% weight

Max. moisture absorption 8.4% weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® F bearings are standard bearings for shafts with h-tolerance (recommended minimum h9).

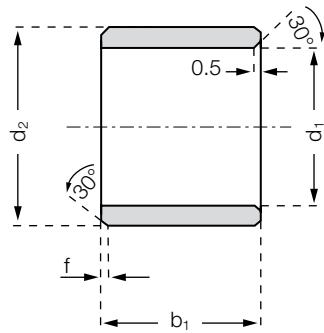
After the installation in a housing bore with the tolerance H7, the inner diameter of the bearing automatically adjusts to the D11 tolerance.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® F D11 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.020 +0.080	0 +0.010
> 3 to 6	0-0.030	+0.030 +0.105	0 +0.012
> 6 to 10	0-0.036	+0.040 +0.130	0 +0.015
> 10 to 18	0-0.043	+0.050 +0.160	0 +0.018
> 18 to 30	0-0.052	+0.065 +0.195	0 +0.021
> 30 to 50	0-0.062	+0.080 +0.240	0 +0.025
> 50 to 80	0-0.074	+0.100 +0.290	0 +0.030

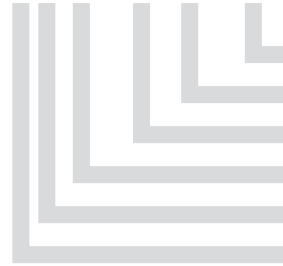
Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

FSM-0203-03



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® F

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
FSM-0203-03	2.0	+0.020 +0.080	3.5	3.0
FSM-0304-03	3.0	+0.020 +0.080	4.5	3.0
FSM-0405-04	4.0	+0.030 +0.105	5.5	4.0
FSM-0507-05	5.0	+0.030 +0.105	7.0	5.0
FSM-0507-08	5.0	+0.030 +0.105	7.0	8.0
FSM-0608-06	6.0	+0.030 +0.105	8.0	6.0
FSM-0608-08	6.0	+0.030 +0.105	8.0	8.0
FSM-0608-10	6.0	+0.030 +0.105	8.0	10.0
FSM-0608-13	6.0	+0.030 +0.105	8.0	13.8
FSM-0709-10	7.0	+0.040 +0.130	9.0	10.0
FSM-0709-12	7.0	+0.040 +0.130	9.0	12.0
FSM-0810-08	8.0	+0.040 +0.130	10.0	8.0
FSM-0810-10	8.0	+0.040 +0.130	10.0	10.0
FSM-0810-15	8.0	+0.040 +0.130	10.0	15.0
FSM-1012-06	10.0	+0.040 +0.130	12.0	6.0
FSM-1012-10	10.0	+0.040 +0.130	12.0	10.0
FSM-1214-10	12.0	+0.050 +0.160	14.0	10.0
FSM-1214-15	12.0	+0.050 +0.160	14.0	15.0
FSM-1416-15	14.0	+0.050 +0.160	16.0	15.0
FSM-1517-15	15.0	+0.050 +0.160	17.0	15.0
FSM-1517-20	15.0	+0.050 +0.160	17.0	20.0
FSM-1618-15	16.0	+0.050 +0.160	18.0	15.0
FSM-1820-15	18.0	+0.050 +0.160	20.0	15.0
FSM-1820-20	18.0	+0.050 +0.160	20.0	20.0
FSM-2022-14	20.0	+0.065 +0.195	22.0	14.5

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/f



order part number
example FSM-0203-03



Sleeve bearing

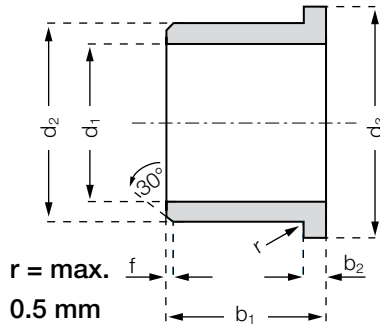
Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
FSM-2022-20	20.0	+0.065 +0.195	22.0	20.0
FSM-2023-15	20.0	+0.065 +0.195	23.0	15.0
FSM-2023-20	20.0	+0.065 +0.195	23.0	20.0
FSM-2225-15	22.0	+0.065 +0.195	25.0	15.0
FSM-2528-20	25.0	+0.065 +0.195	28.0	20.0
FSM-2832-20	28.0	+0.065 +0.195	32.0	20.0
FSM-2832-30	28.0	+0.065 +0.195	32.0	30.0
FSM-3034-20	30.0	+0.065 +0.195	34.0	20.0
FSM-3034-30	30.0	+0.065 +0.195	34.0	30.0
FSM-3034-40	30.0	+0.065 +0.195	34.0	40.0
FSM-3236-30	32.0	+0.080 +0.240	36.0	30.0
FSM-3539-30	35.0	+0.080 +0.240	39.0	30.0
FSM-3539-40	35.0	+0.080 +0.240	39.0	40.0
FSM-4044-30	40.0	+0.080 +0.240	44.0	30.0
FSM-4044-50	40.0	+0.080 +0.240	44.0	50.0
FSM-4550-50	45.0	+0.080 +0.240	50.0	50.0
FSM-5055-40	50.0	+0.080 +0.240	55.0	40.0
FSM-5560-50	55.0	+0.100 +0.290	60.0	50.0
FSM-6065-60	60.0	+0.100 +0.290	65.0	60.0

* after pressfit. Testing methods ► page 55

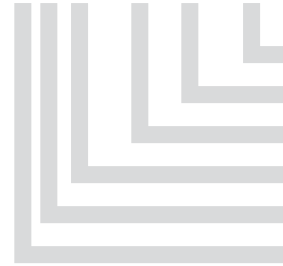
iglidur® F | Product Range

Flange bearing



Order key

FFM-0405-04



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® F

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
FFM-0405-04	4.0	+0.030 +0.105	5.5	9.5	4.0	0.75
FFM-0405-06	4.0	+0.030 +0.105	5.5	9.5	6.0	0.75
FFM-0507-05	5.0	+0.030 +0.105	7.0	11.0	5.0	1.0
FFM-0608-08	6.0	+0.030 +0.105	8.0	12.0	8.0	1.0
FFM-0810-06	8.0	+0.040 +0.130	10.0	15.0	6.0	1.0
FFM-0810-09	8.0	+0.040 +0.130	10.0	15.0	9.0	1.0
FFM-1012-06	10.0	+0.040 +0.130	12.0	18.0	6.0	1.0
FFM-1012-08	10.0	+0.040 +0.130	12.0	15.0	8.0	1.0
FFM-1012-09	10.0	+0.040 +0.130	12.0	18.0	9.0	1.0
FFM-1012-15	10.0	+0.040 +0.130	12.0	18.0	15.0	1.0
FFM-1012-18	10.0	+0.040 +0.130	12.0	18.0	18.0	1.0
FFM-1214-09	12.0	+0.050 +0.160	14.0	20.0	9.0	1.0
FFM-1214-12	12.0	+0.050 +0.160	14.0	20.0	12.0	1.0
FFM-1416-12	14.0	+0.050 +0.160	16.0	22.0	12.0	1.0
FFM-1416-17	14.0	+0.050 +0.160	16.0	22.0	17.0	1.0
FFM-1517-12	15.0	+0.050 +0.160	17.0	23.0	12.0	1.0
FFM-1517-17	15.0	+0.050 +0.160	17.0	23.0	17.0	1.0
FFM-1618-17	16.0	+0.050 +0.160	18.0	24.0	17.0	1.0
FFM-1820-12	18.0	+0.050 +0.160	20.0	26.0	12.0	1.0
FFM-1820-17	18.0	+0.050 +0.160	20.0	26.0	17.0	1.0
FFM-2023-21	20.0	+0.065 +0.195	23.0	30.0	21.0	1.5
FFM-2528-21	25.0	+0.065 +0.195	28.0	35.0	21.0	1.5
FFM-3034-26	30.0	+0.065 +0.195	34.0	42.0	26.0	2.0
FFM-3236-26	32.0	+0.080 +0.240	36.0	45.0	26.0	2.0
FFM-3539-26	35.0	+0.080 +0.240	39.0	47.0	26.0	2.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock



prices price list online
www.igus.co.uk/en/f



order part number
example FFM-0405-04



Flange bearing

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
FFM-4044-30	40.0	+0.080 +0.240	44.0	52.0	30.0	2.0
FFM-4044-40	40.0	+0.080 +0.240	44.0	52.0	40.0	2.0
FFM-4550-50	45.0	+0.080 +0.240	50.0	58.0	50.0	2.0
FFM-5055-40	50.0	+0.080 +0.240	55.0	63.0	40.0	2.0
FFM-6065-40	60.0	+0.100 +0.290	65.0	73.0	40.0	2.0
FFM-7075-40	70.0	+0.100 +0.290	75.0	83.0	40.0	2.0

* after pressfit. Testing methods ► page 55



iglidur® H4 – the automotive under bonnet standard



Standard range from stock

Low coefficients of friction

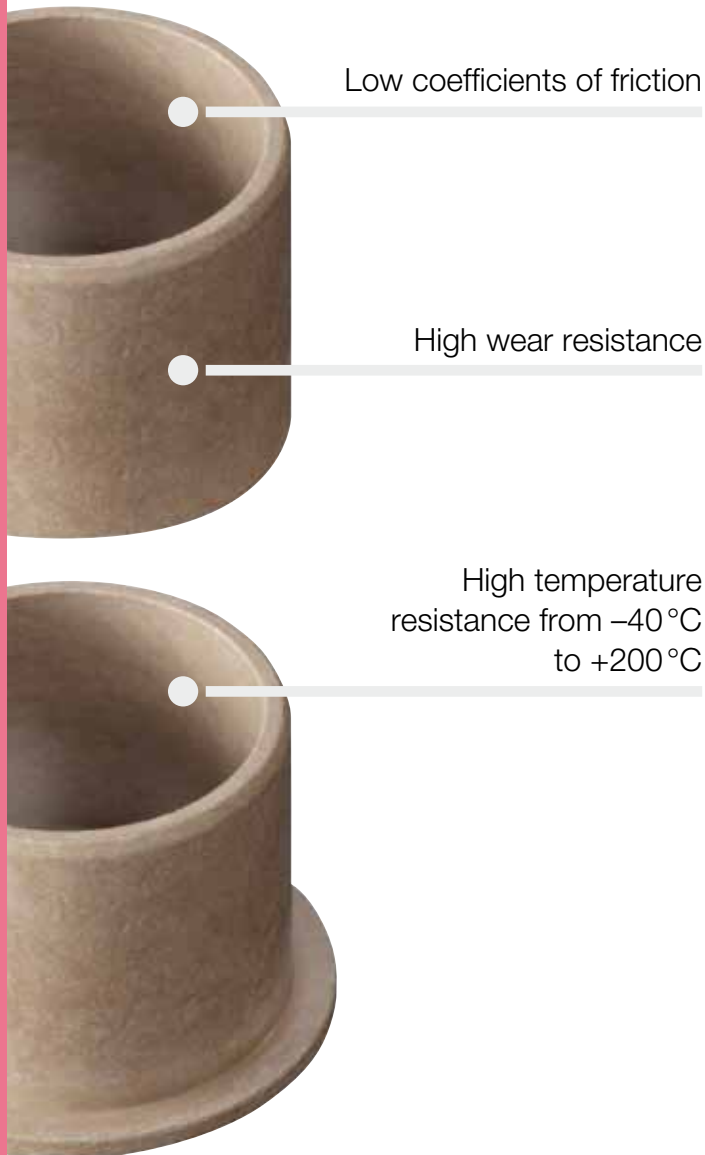
Good abrasion resistance

High temperature resistance from -40°C to $+200^{\circ}\text{C}$

High chemical resistance

iglidur® H4

The automotive under bonnet standard. Very cost-efficient high-temperature material with good dry-operation properties and “engine compartment resistance”.



When to use it?

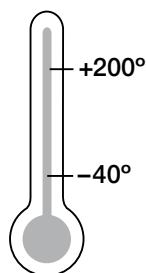
- Application with fuels, oils etc.
- When high wear resistance is required
- For low coefficients of friction
- For high temperature resistance from -40 °C to +200 °C
- For high chemical resistance



When not to use it?

- For underwater use
 - ▶ **iglidur® H370, page 347**
- When a cost-effective universal bearing is required
 - ▶ **iglidur® G, page 61**
- When you need a temperature- and media-resistant bearing for static applications.
 - ▶ **iglidur® H2, page 359**

Temperature



Product range

2 types
Ø 6–40 mm
more dimensions
on request



iglidur® H4 | Application Examples



Typical sectors of industry and application areas

- Automotive ● Automation
- Packaging etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

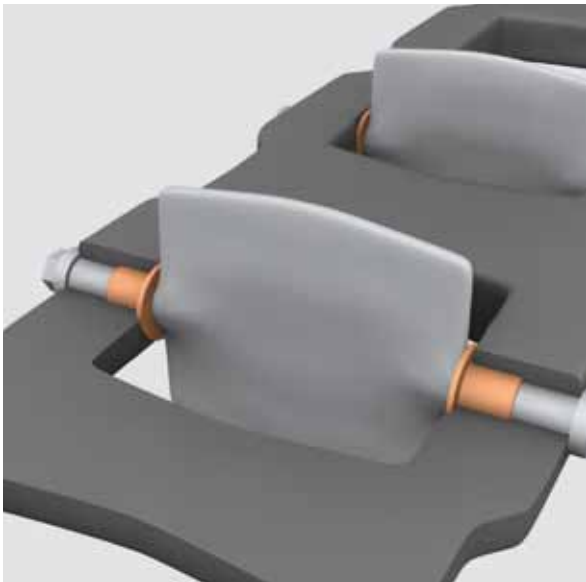
► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/gear-actuator



► www.igus.co.uk/throttle-valves



► www.igus.co.uk/intake-systems

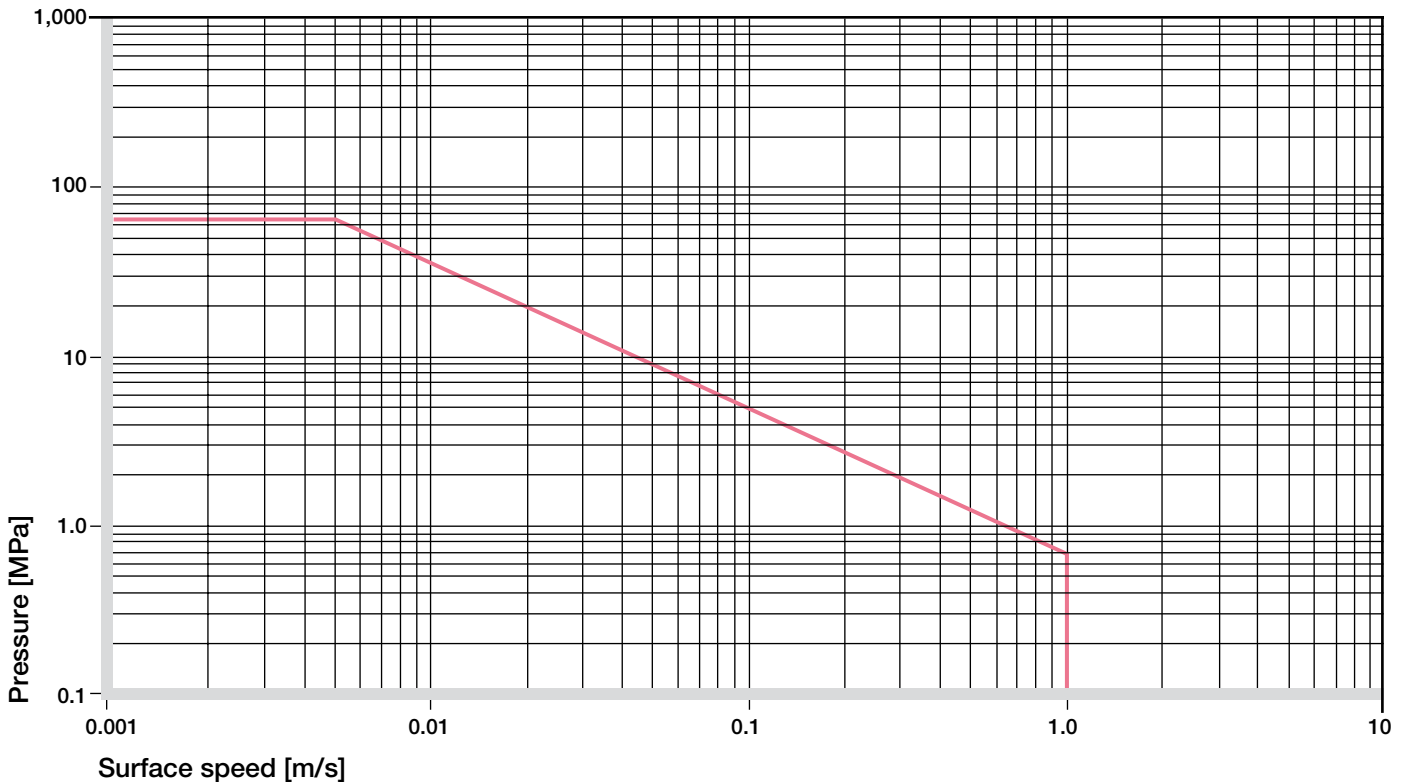


► www.co.uk/automotive

Material data			
General properties	Unit	iglidur® H4	Testing method
Density	g/cm ³	1.79	
Colour		brown	
Max. moisture absorption at +23 °C/50 % r. h.	% weight	0.1	DIN 53495
Max. moisture absorption	% weight	0.2	
Coefficient of sliding friction, dynamic against steel	μ	0.08–0.25	
pv value, max. (dry)	MPa · m/s	0.7	
Mechanical properties			
Modulus of elasticity	MPa	7,500	DIN 53457
Tensile strength at +20 °C	MPa	120	DIN 53452
Compressive strength	MPa	50	
Max. recommended surface pressure (+20 °C)	MPa	65	
Shore D hardness		80	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+200	
Max. short term application temperature	°C	+240	
Min. application temperature	°C	+260	
Thermal conductivity	°C	–40	
Coefficient of thermal expansion (at +23 °C)	W/m · K	0.24	ASTM C 177
Wärmeausdehnungskoeffizient (bei +23 °C)	K ⁻¹ · 10 ⁻⁵	5	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹³	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

¹⁾ Without additional load; no sliding movement; relaxation possible

Table 01: Material data

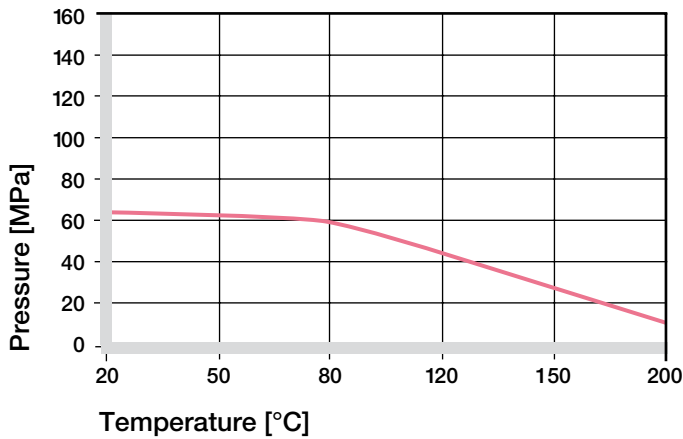


Graph 01: Permissible pv values for iglidur® H4 with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur[®] H4 | Technical Data

Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur[®] H4 plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +200°C the permissible surface pressure is almost 10 MPa.

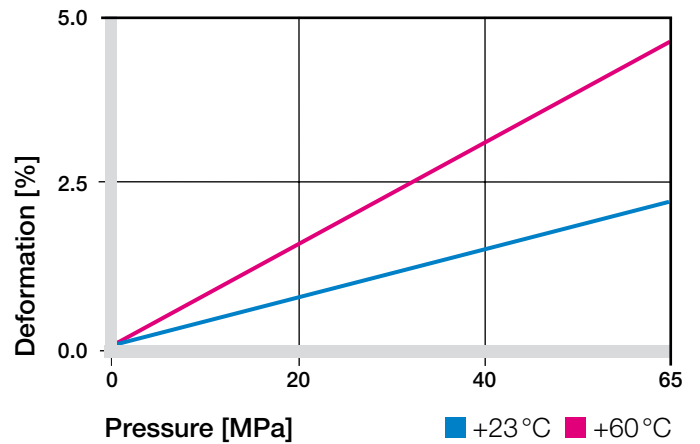


Graph 02: Recommended maximum surface pressure of iglidur[®] H4 as a function of temperature (65 MPa at +20 °C)

iglidur[®] H4 bearings stand for high carrying capacity, good abrasion resistance and good temperature resistance, besides the obvious economic factors. Temperatures up to +200 °C, permitted surface pressure up to 65 MPa, and excellent chemical resistance are only some of the essential attributes. Solid lubricants lower the coefficient of friction and support the wear resistance, which was essentially improved compared to the likewise cost-efficient iglidur[®] H2 bearings. iglidur[®] H4 bearings are self-lubricating and suitable for all motions.

Graph 03 shows the elastic deformation of iglidur[®] H4 with radial loads.

► Surface Pressure, **page 43**



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

In contrast to the similarly cost-efficient iglidur[®] H2 bearings, the iglidur[®] H4 has an essentially favorable coefficient of friction. This accounts for the higher permitted surface speeds that can be attained with these bearings. In the dry operation, long-term speeds of 0.8 m/s are possible. The speeds stated in Table 02 are limit values for the lowest bearing loads. With higher loads, the permitted speed drops with the extent of the load due to the limitations by the pv value.

► Surface Speed, **page 45**

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	1
Short term	1.5	1.1	2

Table 02: Maximum running speed

Temperatures

iglidur[®] H4 is a temperature resistant material. The short-term maximum permissible temperature is +240 °C, and therefore allows for the use of iglidur[®] H4 plain bearings in applications where the bearings for instance undergo a drying process without further loading. The compressive strength of iglidur[®] H4, however, decreases with increasing temperatures.

The additional friction heat in the bearing system should be considered in the temperatures.

► Application Temperatures, **page 46**

iglidur® H4	Application temperature
Minimum	-40 °C
Max. long term	+200 °C
Max. short term	+240 °C
Add. securing is required from	+110 °C

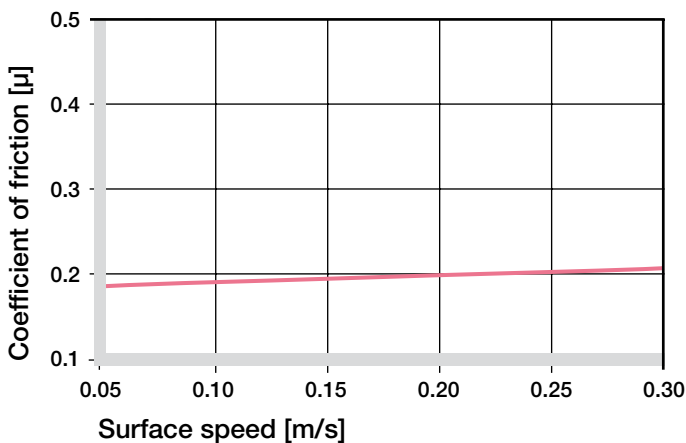
Table 03: Temperature limits

Friction and Wear

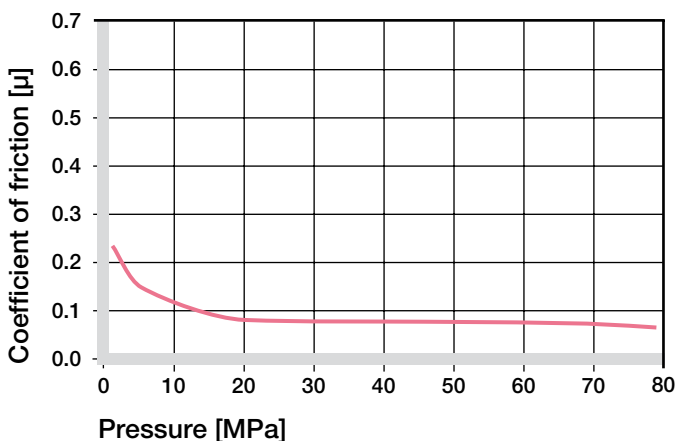
The coefficient of friction of the iglidur® H4 bearing is very low. However it must be noted that an extremely coarse gliding partner can increase the friction. We recommend a shaft surface finish (Ra) of 0.1 to maximum 0.4 µm. The coefficient of friction of the iglidur® H4 bearings is dependent on the surface speed only to a minor extent. The influence of the load is greater; an increase in load lowers the coefficient of friction up to 0.08.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa

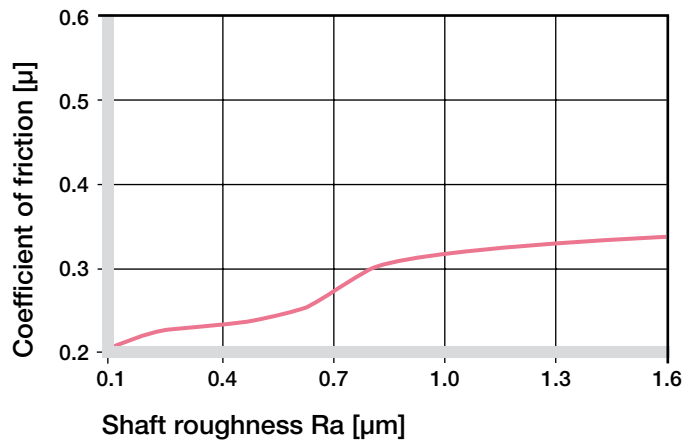


Graph 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s

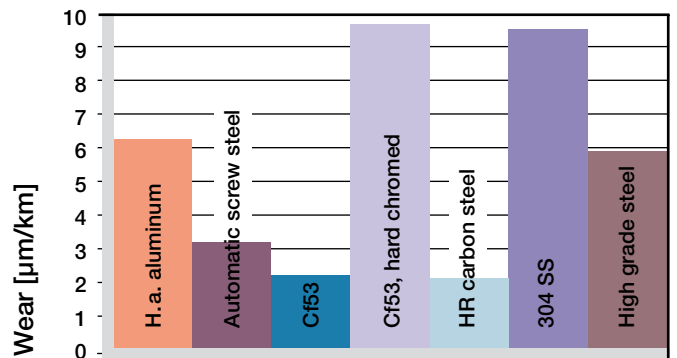
Shaft Materials

In many of the usable shaft materials, the iglidur® H4 is the economical alternative to many other high-temperature bearings. The important thing is however the selection of the suitable shaft material. It cannot be generally stated that iglidur® H4 is better suited for hard or soft shafts. Tests have however shown that pivoting motions yield better wear data. In rotating applications, the wear increases markedly from 10 MPa.

► Shaft Materials, **page 51**

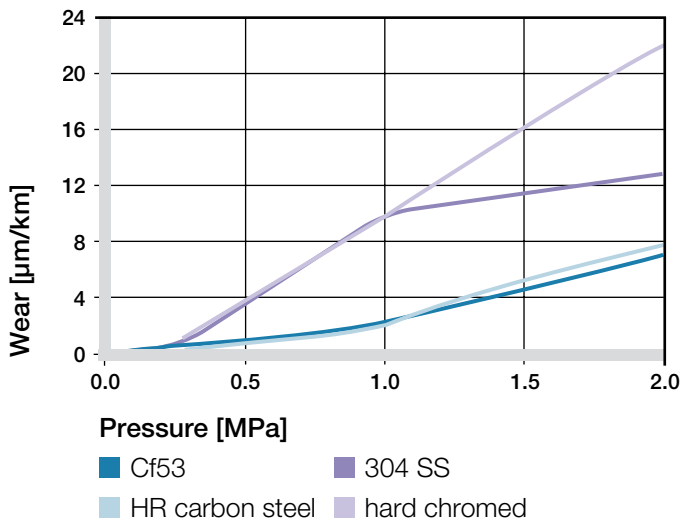


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

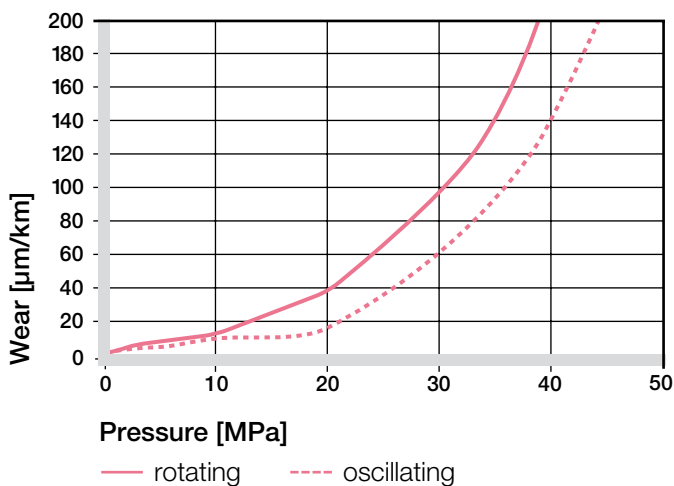


Graph 07: Wear, rotating with different shaft materials, pressure p = 0.75 MPa, v = 0.5 m/s

iglidur® H4 | Technical Data



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® H4	Dry	Greases	Oil	Water
C.o.f. μ	0.08-0.25	0.09	0.04	0.04

Table 04: Coefficient of friction against steel ($R_a = 1 \mu\text{m}$, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® H4 plain bearings feature good chemical resistance. They are resistant to most lubricants. The iglidur® H4 is not affected by most weak organic and inorganic acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	+ to 0
Strong acids	+ to -
Diluted alkalines	+
Strong alkalines	+

+ resistant 0 conditionally resistant - not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

iglidur® H4 withstands neutron radiation as well as gamma radiation without noticeable losses of its excellent mechanical characteristics. Plain bearings of iglidur® H4 are radiation resistant up to a radiation intensity of $2 \cdot 10^2 \text{ Gy}$.

UV Resistance

iglidur® H4 plain bearings change under the influence of UV radiation and other climatic influences. The surface gets rougher, and the compressive strength decreases. The use of iglidur® H4 in applications directly exposed to atmospheric conditions should therefore be tested.

Vacuum

In a vacuum, any moisture present will out gas. Use in a vacuum is usually possible.

Electrical Properties

iglidur® H4 plain bearings are electrically insulating.

Volume resistance	$> 10^{13} \Omega\text{cm}$
Surface resistance	$> 10^{12} \Omega$

Moisture Absorption

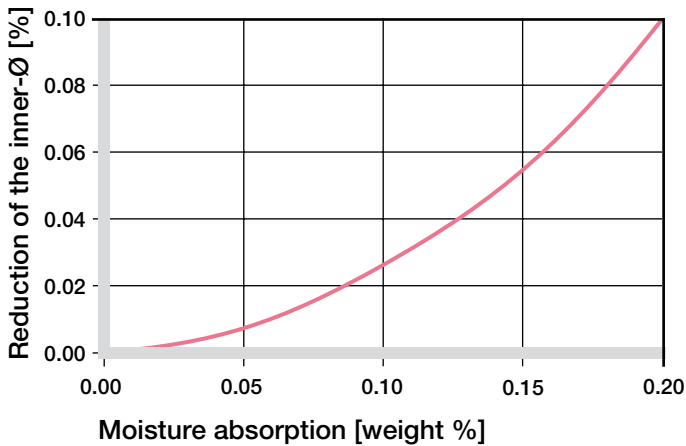
The moisture absorption of iglidur® H4 plain bearings is below 0.1 % in standard atmosphere. The saturation limit in water is 0.2 %. iglidur® H4 is therefore an ideal material for wet environments.

Maximum moisture absorption

At +23 °C/50 % r. h. 0.1 % weight

Max. moisture absorption 0.2 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® H4 bearings are standard bearings for shafts with h-tolerance (recommended minimum h9).

After the installation in a housing bore with H7 tolerance, the inner diameter of the bearing automatically adjusts to F10 tolerance.

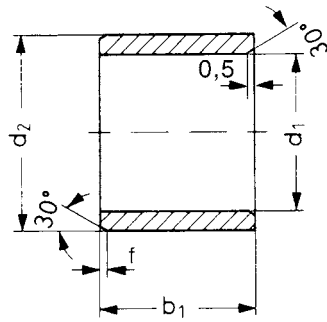
► Testing Methods, **page 55**

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® H4 F10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.006 +0.046	0 +0.010
> 3 to 6	0-0.030	+0.010 +0.058	0 +0.012
> 6 to 10	0-0.036	+0.013 +0.071	0 +0.015
> 10 to 18	0-0.043	+0.016 +0.086	0 +0.018
> 18 to 30	0-0.052	+0.020 +0.104	0 +0.021
> 30 to 50	0-0.062	+0.025 +0.125	0 +0.025
> 50 to 80	0-0.074	+0.030 +0.150	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

iglidur® H4 | Product Range

Sleeve bearing



Order key

H4SM-0405-04



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material: iglidur® H4

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
H4SM-0405-04	4.0	+0.010 +0.058	5.5	4.0
H4SM-0608-08	6.0	+0.010 +0.058	8.0	8.0
H4SM-0810-20	8.0	+0.013 +0.071	10.0	20.0
H4SM-1618-20	16.0	+0.016 +0.086	18.0	20.0
H4SM-1820-15	18.0	+0.016 +0.086	20.0	15.0
H4SM-2022-15	20.0	+0.020 +0.104	22.0	15.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock

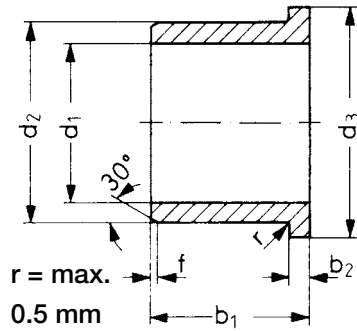


prices price list online
www.igus.co.uk/en/h4



order part number
example H4SM-0405-04

Flange bearing



Order key

H4FM-0608-08



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material: iglidur® H4

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
H4FM-0608-08	6.0	+0.010 +0.058	8.0	12.0	8.0	1.0
H4FM-0810-10	8.0	+0.013 +0.071	10.0	15.0	10.0	1.0
H4FM-1012-05	10.0	+0.013 +0.071	12.0	18.0	5.0	1.0
H4FM-1012-12	10.0	+0.013 +0.071	12.0	18.0	12.0	1.0
H4FM-1214-12	12.0	+0.016 +0.086	14.0	20.0	12.0	1.0
H4FM-1517-12	15.0	+0.016 +0.086	17.0	23.0	12.0	1.0
H4FM-1618-17	16.0	+0.016 +0.086	18.0	24.0	17.0	1.0
H4FM-1820-17	18.0	+0.016 +0.086	20.0	26.0	17.0	1.0
H4FM-2023-21	20.0	+0.020 +0.104	23.0	30.0	21.5	1.5
H4FM-2528-21	25.0	+0.020 +0.104	28.0	35.0	21.5	1.5
H4FM-3034-30	30.0	+0.020 +0.104	34.0	40.0	30.0	2.0
H4FM-4044-40	40.0	+0.030 +0.150	44.0	52.0	40.0	2.0

* after pressfit. Testing methods ► page 55



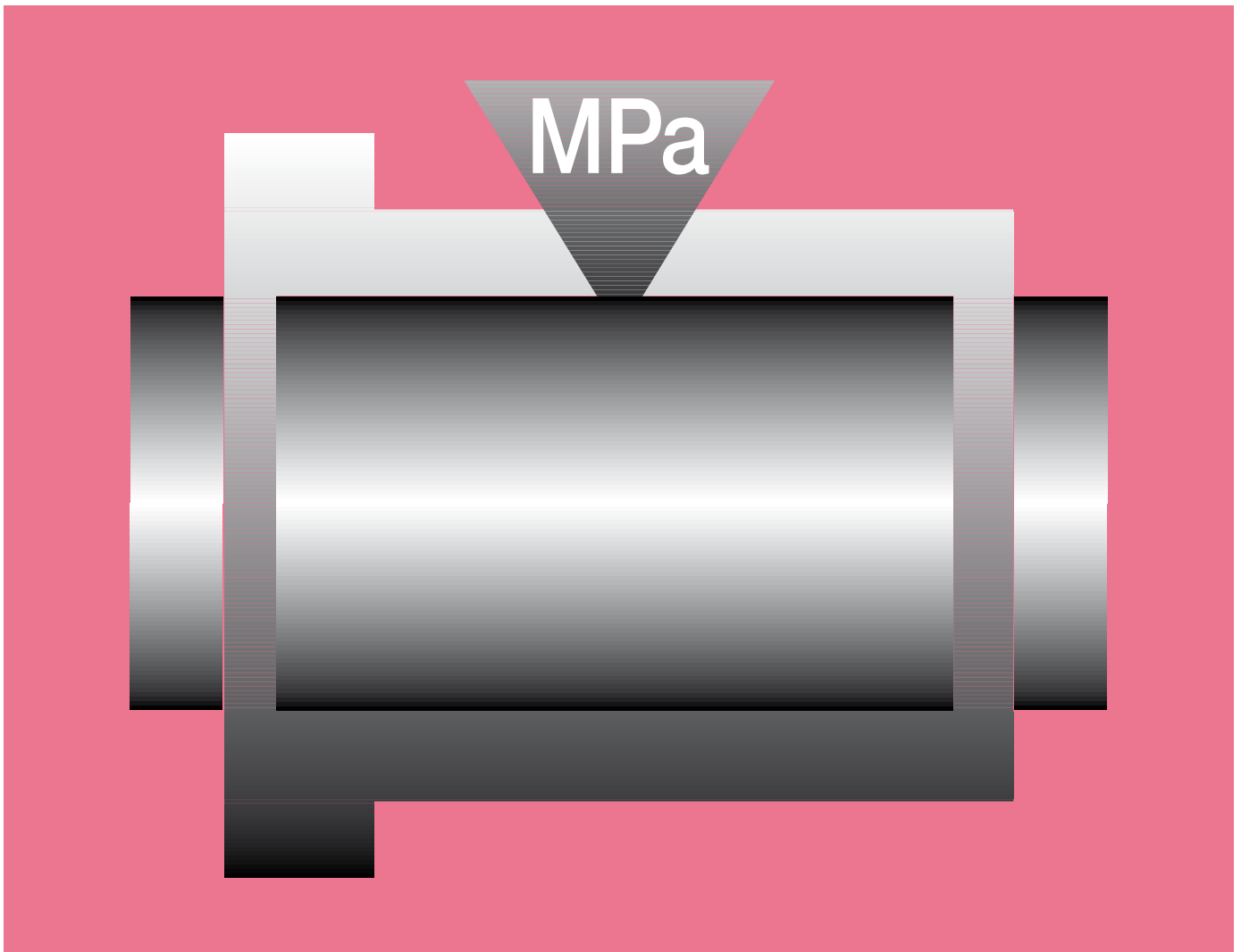
delivery available
time from stock



prices price list online
www.igus.co.uk/en/h4



order part number
example H4FM-0608-08



iglidur® Q – wear-resistant at high loads



Standard range from stock

Excellent wear resistance, especially for extreme loads

Recommended for extreme pv values

Good coefficients of friction

Insensitive to dirt

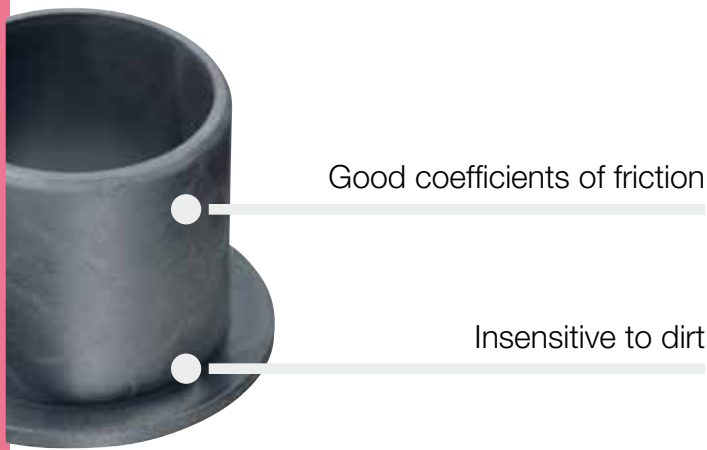
iglidur® Q

Wear-resistant at high loads. iglidur® Q is the low priced solution for high duty cycles at high to extreme loads. Bearing made from this material can be used in all types of motion, but is best suited to oscillating applications.



Excellent wear resistance, especially for extreme loads

Recommended for extreme pv values



Good coefficients of friction

Insensitive to dirt



When to use it?

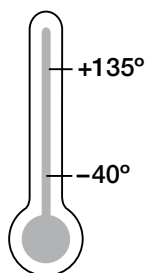
- For oscillating applications
- Excellent wear resistance, especially for extreme loads
- Recommended for extreme pv values
- If the bearing should be insensitive to dirt



When not to use it?

- For underwater applications
 - ▶ iglidur® H370, page 347
- When temperatures are constantly greater than +135 °C
 - ▶ iglidur® H, page 325
 - ▶ iglidur® X, page 153
 - ▶ iglidur® Z, page 299
- When electrically conductive bearings are needed
 - ▶ iglidur® F, page 439
 - ▶ iglidur® H, page 325

Temperature



Product range

3 types
 Ø 6–80 mm
 more dimensions
 on request



iglidur® Q | Application Examples

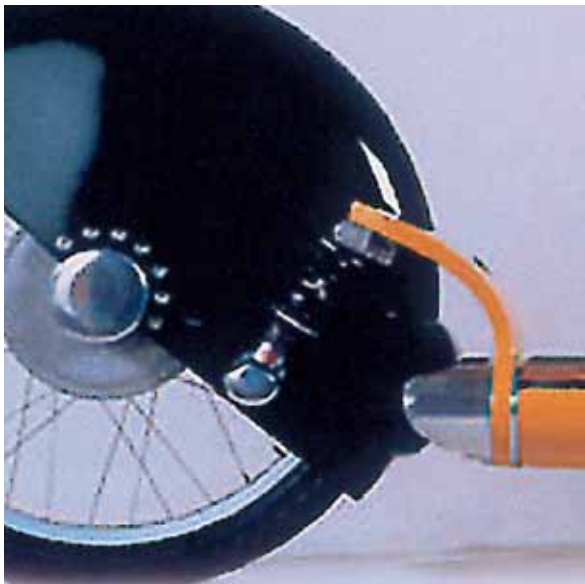


Typical sectors of industry and application areas

- Construction machinery
- Sheet metal industry ● Agricultural machines
- Railway technology
- Doors and gates etc.

Improve technology and reduce costs – 310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/electro-roller



► www.igus.co.uk/tank-truck



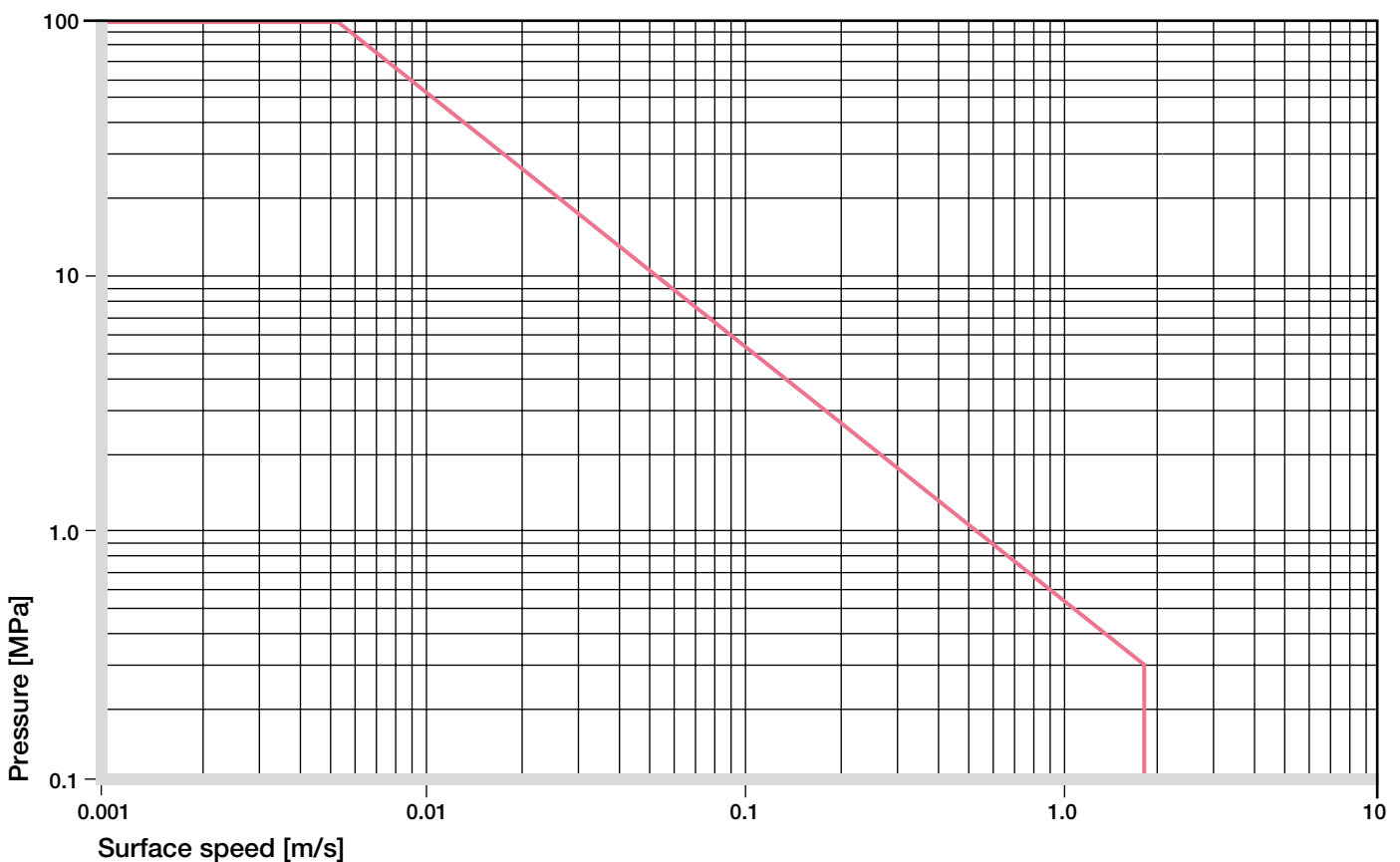
► www.igus.co.uk/baggripper



► www.igus.co.uk/tv-stand

Material data

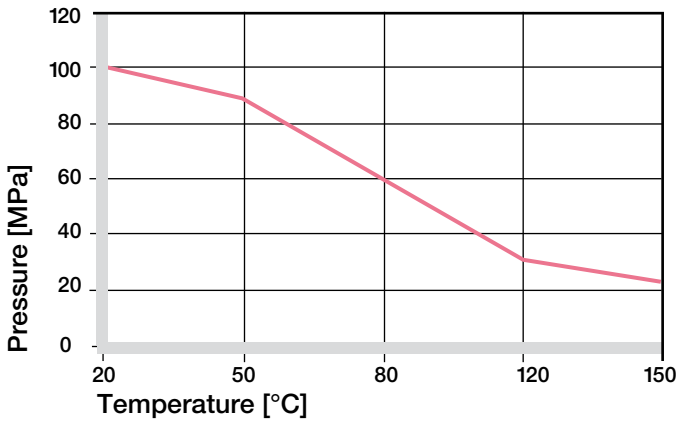
General properties	Unit	igidur® Q	Testing method
Density	g/cm ³	1.40	
Colour		black	
Max. moisture absorption at +23 °C/50 % r. h.	% weight	0.9	DIN 53495
Max. moisture absorption	% weight	4.9	
Coefficient of sliding friction, dynamic against steel	μ	0.05–0.15	
pv value, max. (dry)	MPa · m/s	0.55	
Mechanical properties			
Modulus of elasticity	MPa	4,500	DIN 53457
Tensile strength at +20 °C	MPa	120	DIN 53452
Compressive strength	MPa	89	
Max. recommended surface pressure (+20 °C)	MPa	100	
Shore D hardness		83	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+135	
Max. short term application temperature	°C	+155	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.23	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	5	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹⁵	DIN IEC 93
Surface resistance	Ω	> 10 ¹²	DIN 53482

Tabelle 01: Material data

Graph 01: Permissible pv values for iglidur® Q with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur[®] Q | Technical Data

Mechanical Properties

The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur[®] Q plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +135 °C the permissible surface pressure is almost 30 MPa.

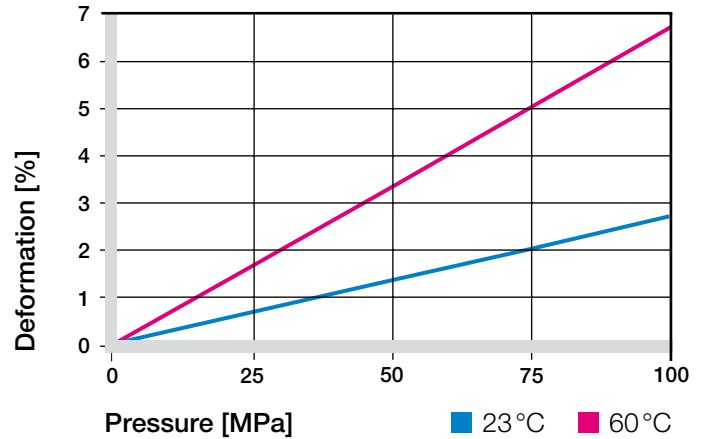


Graph 02: Recommended maximum surface pressure of as a function of temperature (100 MPa at +20 °C)

iglidur[®] Q bearings were developed especially for extreme loads. Under high loads, iglidur[®] Q figures among the iglidur[®] materials that display the best wear resistance. From a radial pressure of 25 MPa, it outclasses even bearings made of the highly abrasion-resistant iglidur[®] W300. Specific solid lubricants, precisely integrated into the material, ensure that the maintenance-free dry operation is guaranteed under any load.

iglidur[®] Q is a material used when high pv values are reached through high loads. pv values above 1 are possible for loads over 50 MPa. Graph 03 shows the elastic deformation of iglidur[®] Q with radial loads. Under the maximum recommended surface pressure of 100 MPa, the deformation at room temperature amounts to less than 3%.

► Surface Pressure, **page 43**



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

Under extreme radial loads, the iglidur[®] Q bearings can reach the maximum pv values, which are possible in the dry operation with plain bearings. Though the iglidur[®] Q bearings have the greatest advantages with high loads and low speeds, high surface speeds are also attainable due to the excellent coefficients of friction. The values stated in Table 02 show the speed at which the temperature rises to the maximum permitted value as a result of friction.

► Surface Speed, **page 45**

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	5
Short term	2	1.4	6

Table 02: Maximum running speed

Temperatures

Plain bearings made of iglidur[®] Q have excellent wear resistance even at high temperatures. The maximum long term application temperature is +135 °C. Because of different environmental influences, the bearing can lose pressfit at lower temperatures. Therefore, it may be necessary to secure the bearings in the housing bore. Also, notice that the coefficient of friction increases rapidly as temperature increases from around +100 °C.

► Application Temperatures, **page 46**

iglidur® Q	Application temperature
Minimum	-40 °C
Max. long term	+135 °C
Max. short term	+155 °C
Add. securing is required from	+50 °C

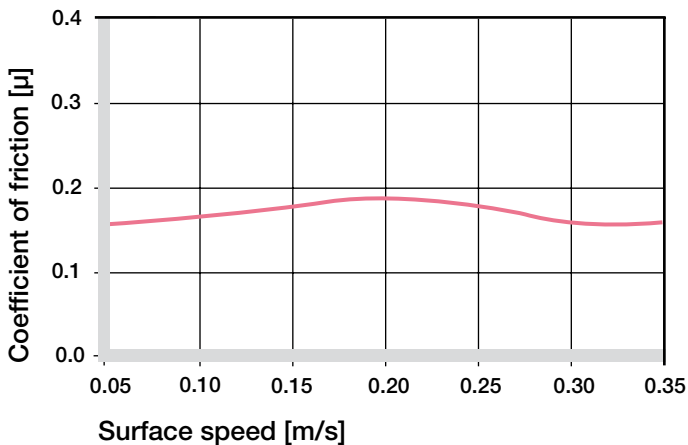
Table 03: Temperature limits

Friction and Wear

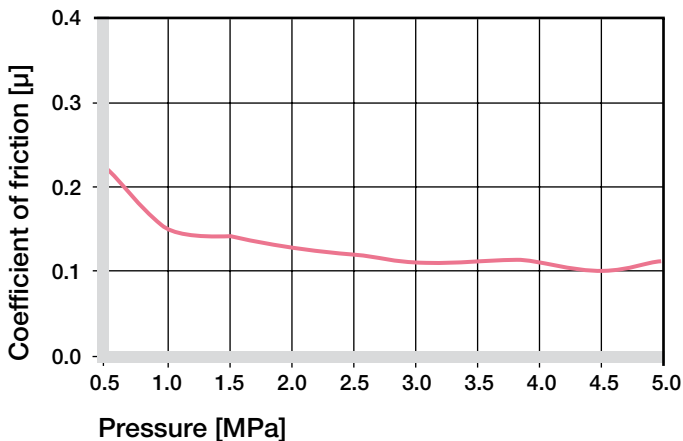
Although most dry running plastic bearings feature decreasing coefficients of friction with increasing pressure, iglidur® Q goes further than most, under high pressures the material gives excellent low values. Soon after the short run-in period, the coefficient of friction stabilizes to the final value. The shaft material also has significant influence on friction and wear. Extremely smooth shafts enhance the coefficient of friction of the bearing. For applications with high loads, we recommend hardened and ground surfaces with an average surface finish of Ra = 0.15 to 0.3 µm.

► Coefficients of Friction and Surfaces, **page 48**

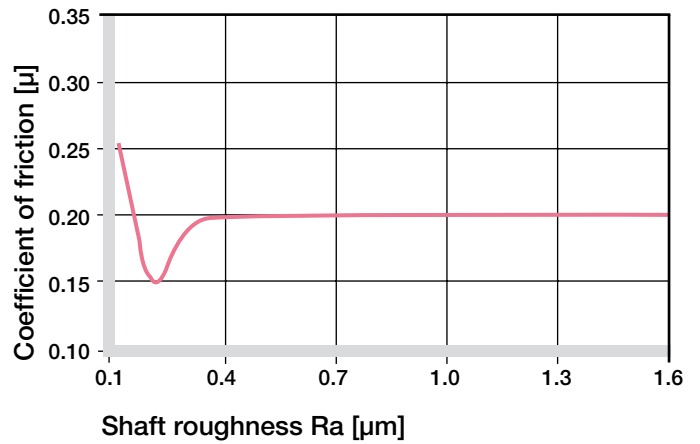
► Wear Resistance, **page 49**



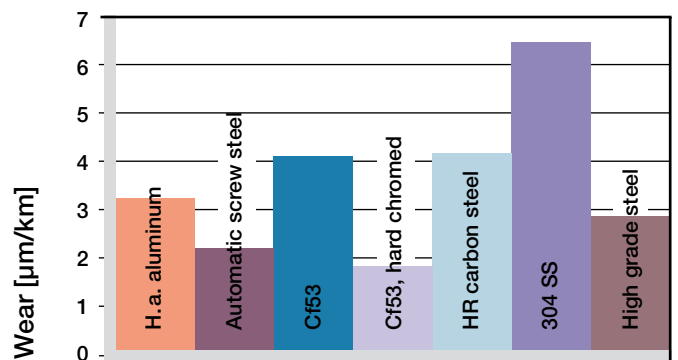
Graph 04: Coefficient of friction as a function of the running speed, p = 0.75 MPa



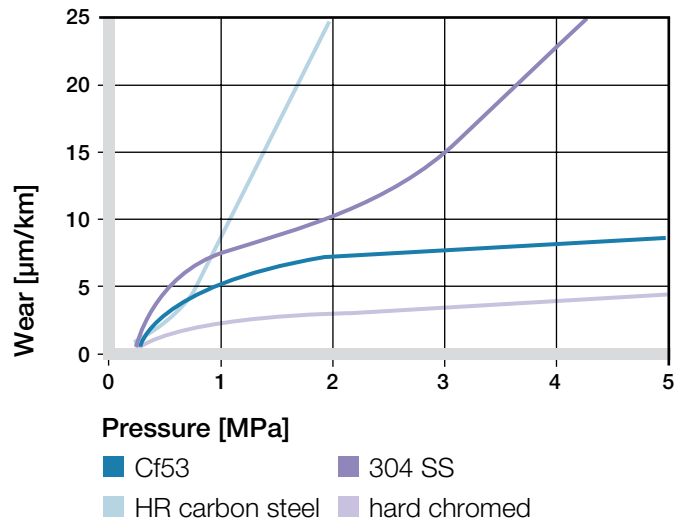
Graph 05: Coefficient of friction as a function of the pressure, v = 0.01 m/s



Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

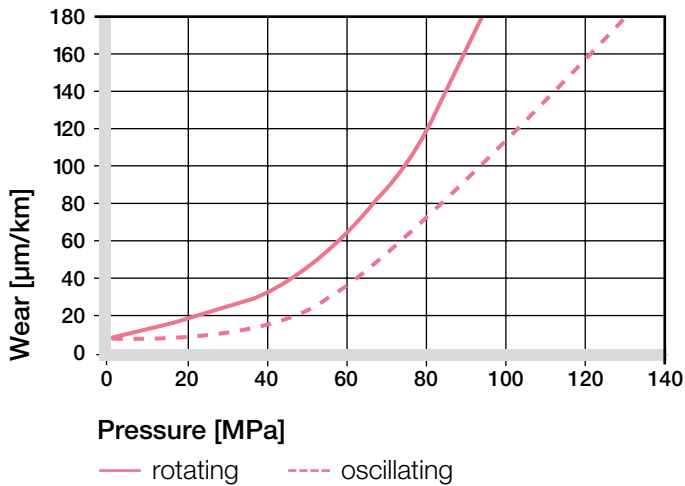


Graph 07: Wear, rotating with different shaft materials, pressure p = 1 MPa, v = 0.3 m/s



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure

iglidur® Q | Technical Data



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

Shaft Materials

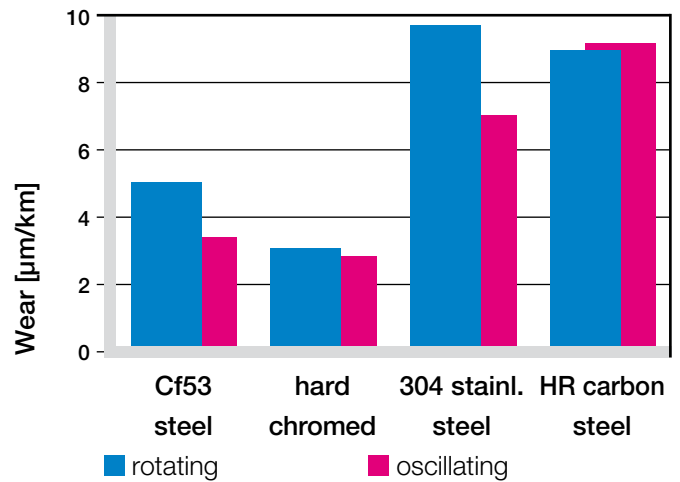
The graphs 06 and 07 display a summary of the results of tests with different shaft materials conducted with bearings made of iglidur® Q.

It is striking that in general the iglidur® Q bearings in the lower load range do not wear rates which are as good as, for example, bearings made of iglidur® J or iglidur® W300. The actual strength of iglidur® Q lies in the wear resistance under heavy loads and in pivoting applications. In pivoting applications, the iglidur® Q pairings with hard-chromed shafts and machining steel shafts turn out to be the best among the tested combinations.

► Shaft Materials, page 51

iglidur® Q	Dry	Greases	Oil	Water
C.o.f. μ	0.05–0.15	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)



Graph 10: Wear for rotating and oscillating applications with different shaft materials, p = 2 MPa

Additional Properties

Chemical Resistance

iglidur® Q bearings have a good resistance against chemicals. They possess an excellent resistance to organic solvents, fuels, oils and fats. The material is only partially resistant to weak acids and alkalis.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	0

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings made from iglidur® Q are resistant to radiation up to an intensity of applications $3 \cdot 10^2$ Gy.

UV Resistance

The tribological properties of iglidur® Q plain bearings stay constant for the most part under weathering effects. However, the material may become slightly brittle.

Vacuum

When used in a vacuum, the iglidur® Q plain bearings release existing moisture as a vapour. Therefore, only dehumidified bearings made of iglidur® Q are suitable for use in a vacuum.

Electrical Properties

iglidur® Q plain bearings are electrically insulating.

Volume resistance	> 10 ¹⁵ Ωcm
Surface resistance	> 10 ¹² Ω 10

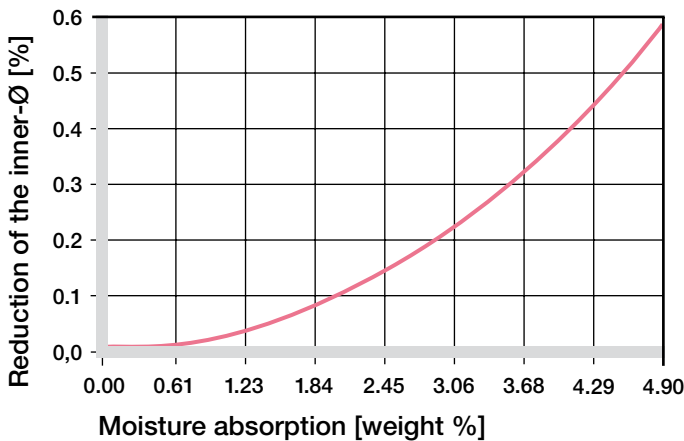
Moisture Absorption

The moisture absorption of iglidur® Q plain bearings is approximately 0.9% in standard atmosphere. The saturation limit in water is 4.9%. This must be taken into account along with any other application conditions.

Maximum moisture absorption

At +23°C/50% r.h.	0.9% weight
Max. moisture absorption	4.9% weight

Table 06: Moisture absorption



Graph 11: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® Q bearings are standard bearings for shafts with h tolerance (recommended minimum h9).

After the installation in a housing bore with H7 tolerance, the inner diameter of the bearing automatically adjusts to the E10 tolerance.

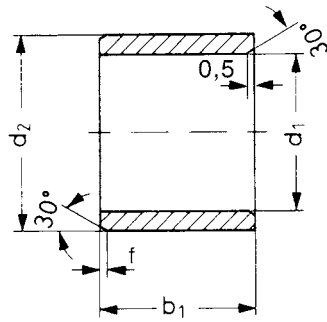
► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® Q E10 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.014 +0.054	0 +0.010
> 3 to 6	0-0.030	+0.020 +0.068	0 +0.012
> 6 to 10	0-0.036	+0.025 +0.083	0 +0.015
> 10 to 18	0-0.043	+0.032 +0.102	0 +0.018
> 18 to 30	0-0.052	+0.040 +0.124	0 +0.021
> 30 to 50	0-0.062	+0.050 +0.150	0 +0.025
> 50 to 80	0-0.074	+0.060 +0.180	0 +0.030
> 80 to 120	0-0.087	+0.072 +0.212	0 +0.035
> 120 to 180	0-0.100	+0.085 +0.245	0 +0.040

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

iglidur® Q | Product Range

Sleeve bearing



Order key

QSM-0608-10



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form S)
- Material iglidur® Q

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
QSM-0608-10	6.0	+0.020 +0.068	8.0	10.0
QSM-0810-08	8.0	+0.025 +0.083	10.0	8.0
QSM-1012-10	10.0	+0.025 +0.083	12.0	10.0
QSM-1214-10	12.0	+0.032 +0.102	14.0	10.0
QSM-1214-20	12.0	+0.032 +0.102	14.0	20.0
QSM-1618-08	16.0	+0.032 +0.102	18.0	8.0
QSM-1618-12	16.0	+0.032 +0.102	18.0	12.5
QSM-1618-20	16.0	+0.032 +0.102	18.0	20.0
QSM-1820-20	18.0	+0.032 +0.102	20.0	20.0
QSM-2022-15	20.0	+0.040 +0.124	22.0	15.0
QSM-2023-15	20.0	+0.040 +0.124	23.0	15.0
QSM-2023-20	20.0	+0.040 +0.124	23.0	20.0
QSM-2023-25	20.0	+0.040 +0.124	23.0	25.0
QSM-2023-30	20.0	+0.040 +0.124	23.0	30.0
QSM-2528-25	25.0	+0.040 +0.124	28.0	25.0
QSM-2528-48	25.0	+0.040 +0.124	28.0	48.0

Part number	d1	d1-Tolerance*	d2	b1 h13
QSM-3034-20	30.0	+0.040 +0.124	34.0	20.0
QSM-3034-40	30.0	+0.040 +0.124	34.0	40.0
QSM-3539-15	35.0	+0.050 +0.150	39.0	15.0
QSM-3539-30	35.0	+0.050 +0.150	39.0	30.0
QSM-3539-50	35.0	+0.050 +0.150	39.0	50.0
QSM-4044-40	40.0	+0.050 +0.150	44.0	40.0
QSM-4044-47	40.0	+0.050 +0.150	44.0	47.0
QSM-4550-252	45.0	+0.050 +0.150	50.0	25.2
QSM-4550-50	45.0	+0.050 +0.150	50.0	50.0
QSM-5055-50	50.0	+0.050 +0.150	55.0	50.0
QSM-5055-60	50.0	+0.050 +0.150	55.0	60.0
QSM-6065-50	60.0	+0.060 +0.180	65.0	50.0
QSM-6570-34	65.0	+0.060 +0.180	70.0	34.0
QSM-7075-50	70.0	+0.060 +0.180	75.0	50.0
QSM-8085-60	80.0	+0.060 +0.180	85.0	60.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock

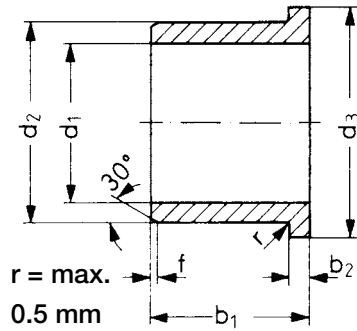


prices price list online
www.igus.co.uk/en/q



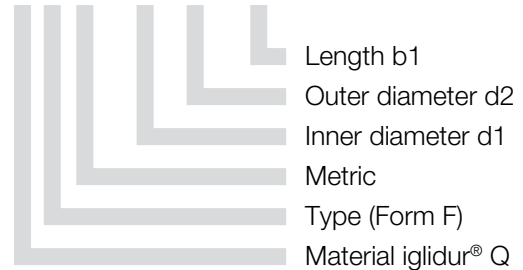
order part number
example QSM-0608-10

Flange bearing



Order key

QFM-0608-04



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0.14
QFM-0608-04	6.0	+0.020 +0.068	8.0	12.0	4.0	1.0
QFM-0810-05	8.0	+0.025 +0.083	10.0	15.0	5.5	1.0
QFM-0810-06	8.0	+0.025 +0.083	10.0	15.0	6.0	1.0
QFM-1012-06	10.0	+0.025 +0.083	12.0	18.0	6.0	1.0
QFM-1012-10	10.0	+0.025 +0.083	12.0	18.0	10.0	1.0
QFM-101215-035	10.0	+0.025 +0.083	12.0	15.0	3.5	1.0
QFM-101215-08	10.0	+0.025 +0.083	12.0	15.0	8.0	1.0
QFM-1214-08	12.0	+0.032 +0.102	14.0	20.0	8.0	1.0
QFM-1214-12	12.0	+0.032 +0.102	14.0	20.0	12.0	1.0
QFM-1214-20	12.0	+0.032 +0.102	14.0	20.0	20.0	1.0
QFM-1416-12	14.0	+0.032 +0.102	16.0	22.0	12.0	1.0
QFM-1618-17	16.0	+0.032 +0.102	18.0	24.0	17.0	1.0
QFM-1820-12	18.0	+0.032 +0.102	20.0	26.0	12.0	1.0
QFM-2023-21	20.0	+0.040 +0.124	23.0	30.0	21.5	1.5
QFM-2528-21	25.0	+0.040 +0.124	28.0	35.0	21.5	1.5
QFM-2730-20	27.0	+0.040 +0.124	30.0	38.0	20.0	1.5
QFM-3034-37	30.0	+0.040 +0.124	34.0	42.0	37.0	2.0
QFM-3539-26	35.0	+0.050 +0.150	39.0	47.0	26.0	2.0
QFM-4044-40	40.0	+0.050 +0.150	44.0	52.0	40.0	2.0
QFM-5055-50	50.0	+0.050 +0.150	55.0	63.0	50.0	2.0
QFM-6065-50	60.0	+0.060 +0.180	65.0	78.0	50.0	2.0
QFM-7075-50	70.0	+0.060 +0.180	75.0	83.0	50.0	2.0

* after pressfit. Testing methods ► page 55



delivery available
time from stock



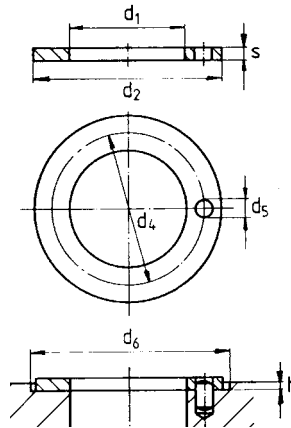
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order part number
example QFM-0608-04

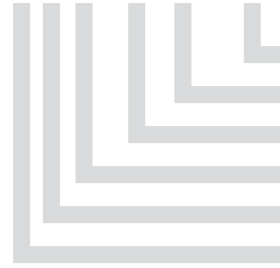
iglidur® Q | Product Range

Thrust washer



Order key

QTM-2842-015



Thickness s
Outer diameter d2
Inner diameter d1
Metric
Type (Form T)
Material iglidur® Q

Dimensions according to ISO 3547-1 and special dimensions

Dimensions [mm]

Part number	d1 +0.3	d2 -0.3	s -0.06	d4 -0.12/+0.12	d5 -0.375/+0.125	h +0.2/-0.2	d6 +0.12
QTM-2842-015	28.0	42.0	1.5	35.0	4.0	1.0	42.0
QTM-3254-015	32.0	54.0	1.5	43.0	4.0	1.0	54.0



delivery available
time from stock

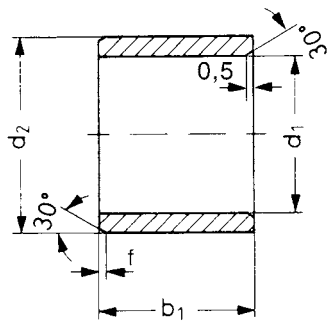


prices price list online
www.igus.co.uk/en/q



order part number
example QTM-2842-015

Sleeve bearing



Order key

QSI-0607-04



- Length b1
- Outer diameter d2
- Inner diameter d1
- Inch
- Type (Form S)
- Material iglidur® Q

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [Inch]:	Ø 0.040–0.236	Ø 0.236–0.472	Ø 0.472–1.18	Ø > 1.18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d1*		Housing bore		Shaft size	
				max.	min.	max.	min.	max.	min.
QSI-0607-04	3/8	15/32	1/4	.3773	.3750	.4691	.4684	.3740	.3731
QSI-0607-06	3/8	15/32	3/8	.3773	.3750	.4691	.4684	.3740	.3731
QSI-0607-08	3/8	15/32	1/2	.3773	.3750	.4691	.4684	.3740	.3731
QSI-0708-08	7/16	17/32	1/2	.4406	.4379	.5316	.5309	.4365	.4355
QSI-0809-12	1/2	19/32	3/4	.5030	.5003	.5941	.5934	.4990	.4980
QSI-1011-12	5/8	23/32	3/4	.6280	.6253	.7192	.7184	.6240	.6230
QSI-1214-08	3/4	7/8	1/2	.7541	.7507	.8755	.8747	.7491	.7479
QSI-1214-12	3/4	7/8	3/4	.7541	.7507	.8755	.8747	.7491	.7479
QSI-1214-16	3/4	7/8	1	.7541	.7507	.8755	.8747	.7491	.7479
QSI-1416-16	7/8	1	1	.8791	.8757	1.0005	.9997	.8741	.8729
QSI-1618-16	1	1 1/8	1	1.0041	1.0007	1.1255	1.1247	.9991	.9979
QSI-1618-24	1	1 1/8	1 1/2	1.0041	1.0007	1.1255	1.1247	.9991	.9979
QSI-1820-24	1 1/8	1 9/32	1 1/2	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
QSI-2022-20	1 1/4	1 13/32	1 1/4	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
QSI-2022-24	1 1/4	1 13/32	1 1/2	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
QSI-2426-24	1 1/2	1 21/32	1 1/2	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
QSI-2629-20	1 5/8	1 25/32	1 1/4	1.6297	1.6258	1.7818	1.7808	1.6238	1.6222
QSI-2831-32	1 3/4	1 15/16	2	1.7547	1.7507	1.9381	1.9371	1.7487	1.7471
QSI-3235-12	2	2 3/16	3/4	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
QSI-3235-16	2	2 3/16	1	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
QSI-3235-24	2	2 3/16	1 1/2	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
QSI-3235-32	2	2 3/16	2	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
QSI-3235-40	2	2 3/16	2 1/2	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
QSI-3639-32	2 1/4	2 7/16	2	2.2577	2.2531	2.4377	2.4365	2.2507	2.2489

* after pressfit. Testing methods ► page 55



delivery available
time from stock



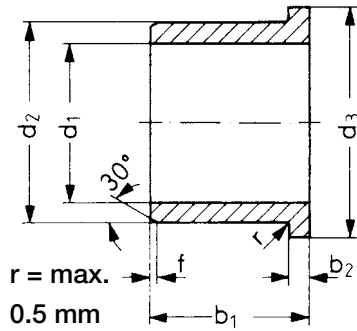
prices price list online
www.igus.co.uk/en/q



order part number
example QSI-0607-04

iglidur® Q | Product Range | Inch

Flange bearing



Order key

QFI-0607-04



Length b1
Outer diameter d2
Inner diameter d1
Inch
Type (Form F)
Material iglidur® Q

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [Inch]:	Ø 0.040–0.236	Ø 0.236–0.472	Ø 0.472–1.18	Ø > 1.18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
QFI-0607-04	3/8	15/32	1/4	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
QFI-0607-08	3/8	15/32	1/2	.687	.046	.3773	.3750	.4691	.4684	.3740	.3731
QFI-0809-04	1/2	19/32	1/4	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
QFI-0809-08	1/2	19/32	1/2	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
QFI-0809-12	1/2	19/32	3/4	.875	.046	.5030	.5003	.5941	.5934	.4990	.4980
QFI-1011-12	5/8	23/32	3/4	.937	.046	.6280	.6253	.7192	.7184	.6240	.6230
QFI-1012-08	5/8	3/4	3/4	1.000	.062	.6290	.6263	.7510	.7500	.6250	.6240
QFI-1214-08	3/4	7/8	1/2	1.125	.062	.7541	.7507	.8755	.8747	.7491	.7479
QFI-1214-12	3/4	7/8	3/4	1.125	.062	.7541	.7507	.8755	.8747	.7491	.7479
QFI-1214-16	3/4	7/8	1	1.125	.062	.7541	.7505	.8755	.8747	.7491	.7479
QFI-1416-12	7/8	1	3/4	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
QFI-1416-16	7/8	1	1	1.250	.062	.8791	.8757	1.0005	.9997	.8741	.8729
QFI-1618-08	1	1 1/8	1/2	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
QFI-1618-16	1	1 1/8	1	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
QFI-1618-24	1	1 1/8	1 1/2	1.375	.062	1.0041	1.0007	1.1255	1.1247	.9991	.9979
QFI-1820-12	1 1/8	1 9/32	3/4	1.562	.078	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
QFI-1820-24	1 1/8	1 9/32	1 1/2	1.562	.078	1.1288	1.1254	1.2818	1.2808	1.1238	1.1226
QFI-2022-20	1 1/4	1 13/32	1 1/4	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472

* after pressfit. Testing methods ► page 55



delivery available
time from stock

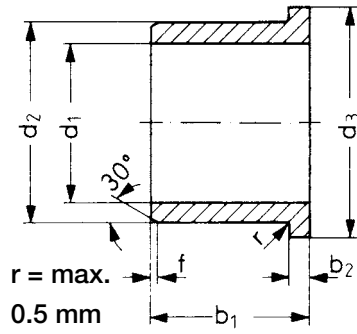


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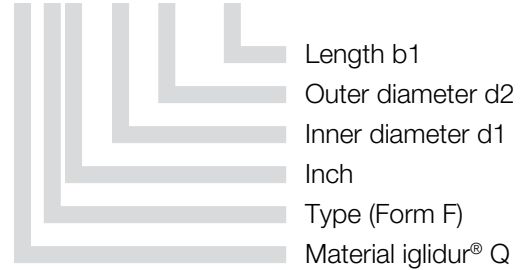
order part number
example QFI-0607-04

Flange bearing



Order key

QFI-0608-04



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [Inch]:	Ø 0.040–0.236	Ø 0.236–0.472	Ø 0.472–1.18	Ø > 1.18
f [Inch]:	0.012	0.019	0.031	0.047

Dimensions [Inch]

Part number	d1	d2	b1	d3	b2	d1*		Housing bore		Shaft size	
						max.	min.	max.	min.	max.	min.
QFI-2022-24	1 1/4	1 13/32	1 1/2	1.687	.078	1.2548	1.2508	1.4068	1.4058	1.2488	1.2472
QFI-2426-24	1 1/2	1 21/32	1 1/2	2.000	.078	1.5048	1.5008	1.6568	1.6558	1.4988	1.4972
QFI-2831-32	1 3/4	1 15/16	2	2.375	.093	1.7547	1.7507	1.9381	1.9371	1.7487	1.7471
QFI-3235-32	2	2 3/16	2	2.625	.093	2.0057	2.0011	2.1883	2.1871	1.9981	1.9969
QFI-3639-32	2 1/4	2 7/16	2	2.750	.093	2.2577	2.2531	2.4377	2.4365	2.2507	2.2489

* after pressfit. Testing methods ► page 55



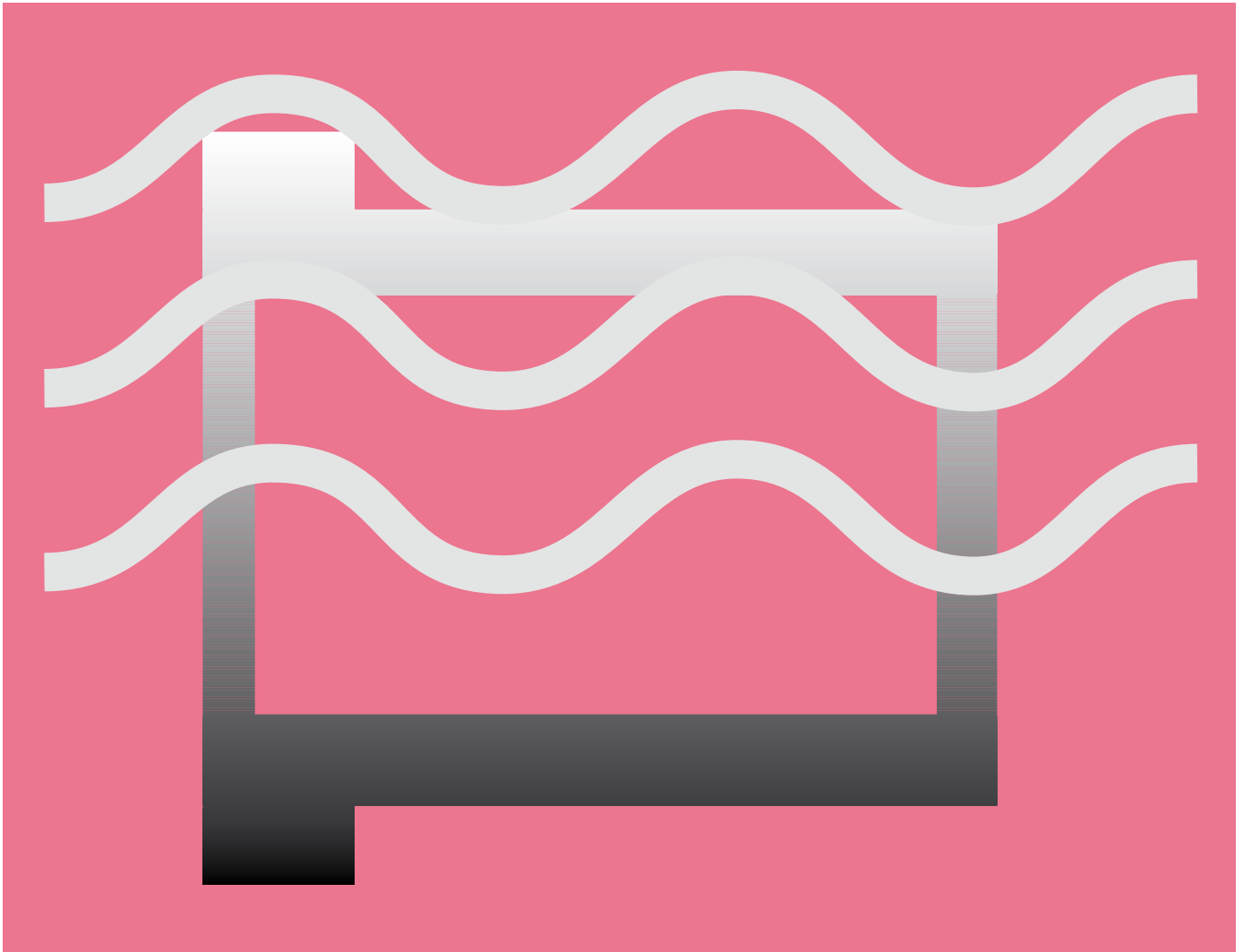
delivery available
time from stock



prices price list online
www.igus.co.uk/en/q



order part number
example QFI-2022-24



iglidur® UW – for fast rotation under water



Standard range from stock

For underwater applications

For fast and constant motion


Long service life

iglidur® UW

For fast rotation under water. The best iglidur® bearings for underwater applications. Extremely wear resistant under water, tested and free from maintenance. The first choice for pumping applications.



For underwater applications



For fast and constant motion



Long service life



When to use it?

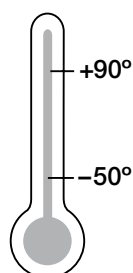
- For underwater applications and in liquid media
- For low loads
- For high speeds
- For extreme wear resistance in media-lubricated continuous operation



When not to use it?

- When temperatures are continuously higher than +90 °C
 - ▶ **iglidur® UW500, page 313**
- When high loads are required
 - ▶ **iglidur® H370, page 347**
 - ▶ **iglidur® UW500, page 313**
 - ▶ **iglidur® X, page 153**
- When only dry operation is feasible
 - ▶ **iglidur® J, page 89**

Temperature



Product range

2 types
 Ø 3–20 mm
 more dimensions
 on request



iglidur® UW | Application Examples



Typical sectors of industry and application areas

- Fluid technology etc.

Improve technology and reduce costs –
310 exciting examples for iglidur® plain bearings online

► www.igus.co.uk/iglidur-applications



► www.igus.co.uk/underwater-powerpump

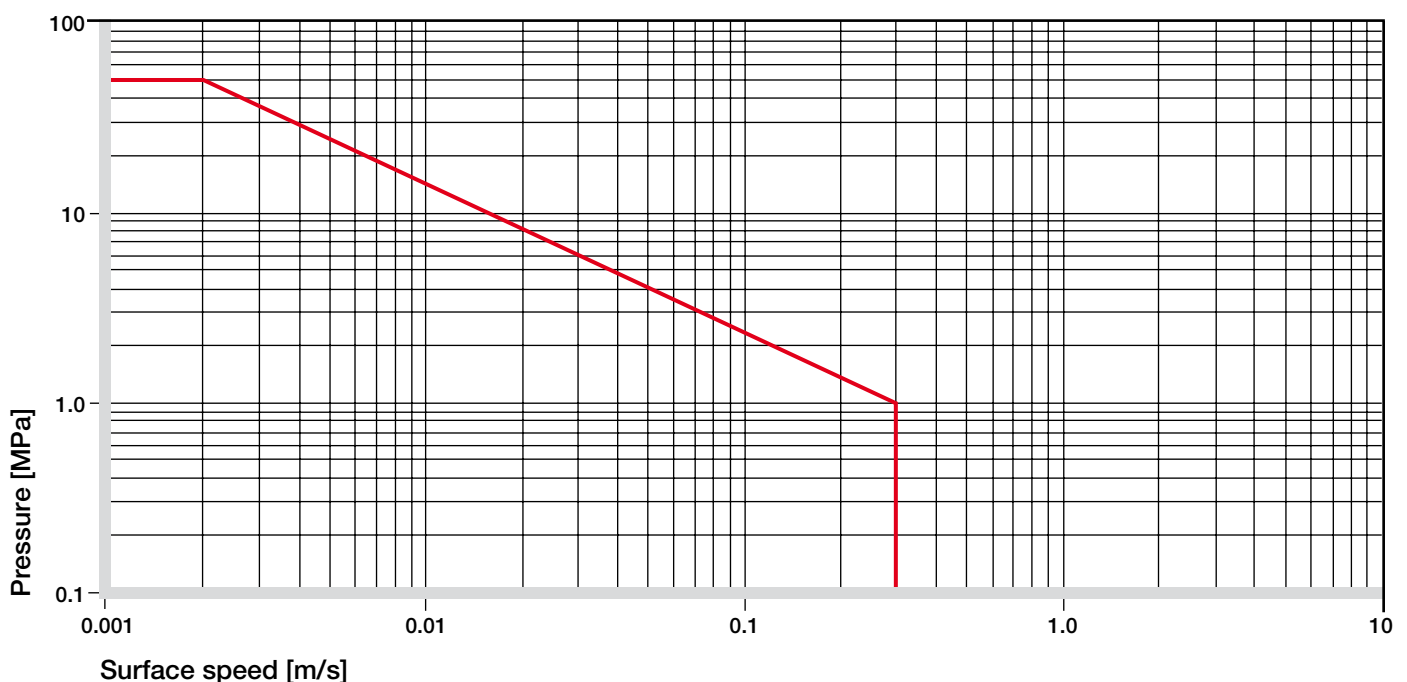
Material data			
General properties	Unit	iglidur® UW	Testing method
Density	g/cm ³	1,52	
Colour		black	
Max. moisture absorption at +23 °C/50 % r. h.	% weight	0.2	DIN 53495
Max. moisture absorption	% weight	0.8	
Coefficient of sliding friction, dynamic against steel	μ	0,15–0,35	
pv value, max. (dry)	MPa · m/s	0,11	
Mechanical properties			
Modulus of elasticity	MPa	9.600	DIN 53457
Tensile strength at +20 °C	MPa	90	DIN 53452
Compressive strength	MPa	70	
Max. recommended surface pressure (+20 °C)	MPa	40	
Shore D hardness		78	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+90	
Max. short term application temperature	°C	+110	
Max. short term ambient temperature ¹⁾	°C	+140	
Min. application temperature	°C	-50	
Thermal conductivity	W/m · K	0,60	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	6	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	< 10 ⁵	DIN IEC 93
Surface resistance	Ω	< 10 ⁵	DIN 53482

¹⁾ Without additional load, no sliding movement; relaxation possible

²⁾ The good conductivity of this plastic material under certain circumstances can favour the generation of corrosion on the metallic contact component.

³⁾ With respect to the use of the material in direct contact with water, it has to be pointed out that all results have been attained under laboratory conditions DW (demineralised water). We therefore recommend custom-designed tests under real application conditions.

Table 01: Material data

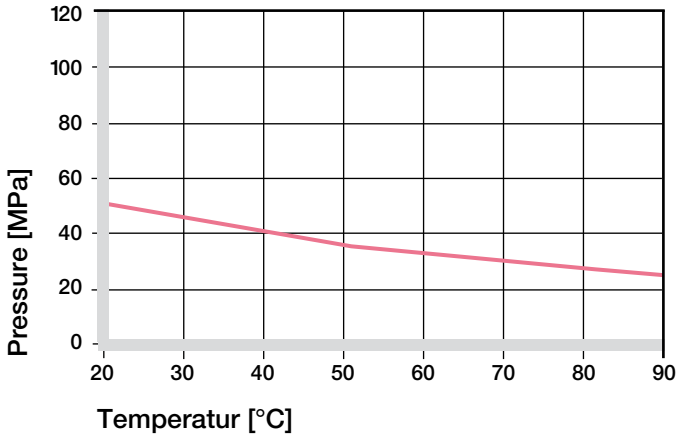


Graph 01: Permissible pv values for iglidur® UW with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

iglidur® UW | Technical Data

Mechanical Properties

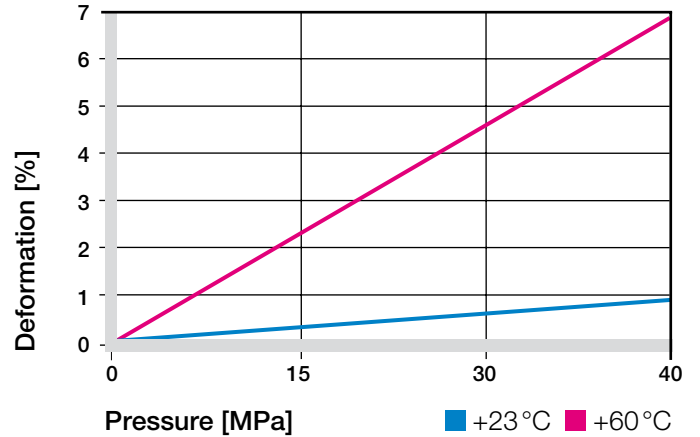
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® UW plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 25 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (50 MPa at +20 °C)

iglidur® UW was developed for underwater applications in which the maximum temperatures clearly lie below +100 °C. For application temperatures above this limit, the bearings made of iglidur® UW500 (► [page 313](#)) are available. Though iglidur® UW was developed for application in liquids, it is also suitable for dry operation. This one is particularly important in applications that call for both dry and wet operations. These applications can be seen often in practice. The features of the bearings made of iglidur® UW described in this section apply to the dry operation. Unless it is expressly mentioned otherwise. Graph 02 shows the permissible bearing loads at the respective temperatures. It can be said that iglidur® UW plain bearings are not very suitable for high loads. Normally in underwater applications there is no question of high loads being present. It is also important to note that the wear rate increases significantly from loads of 5 MPa (Graph 03).

► Surface Pressure, [page 43](#)



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® UW is excellent in both dry and wet operations. Through a hydrodynamic lubrication, attained under water with high speeds, surface speeds far above 2 m/s can be achieved.

In dry operation the iglidur® UW bearings can be used anyhow up to 1.5 m/s on the short term.

► Surface Speed, [page 45](#)

m/s	Rotating	Oscillating	Linear
Continuous	0,5	0,4	2
Short term	1,5	1,1	3

Table 02: Maximum running speed

Temperatures

As stated earlier, iglidur® UW plain bearings are recommended for the low temperature range. The bearing temperature can be up to 90 °C, although the frictional heat must also be considered here, especially when running dry. In underwater applications, the fluid aids heat dissipation, so in this case the temperature of the fluid is of greater importance.

► Application Temperatures, [page 46](#)

iglidur® UW	Application temperature
Minimum	-50 °C
Max. long term	+90 °C
Max. short term	+110 °C
Add. securing is required from	+80 °C

Table 03: Temperature limits

Friction and Wear

In dry operation the coefficient of friction rises up to 0.4 with low loads. With higher loads, it lowers to 0.1. The surface finishes of the shafts should not be extremely smooth in order to prevent a high adhesion effect and the entailing increases in the coefficient of friction.

Please contact us for the specifications of shaft surface finishes in underwater applications.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**

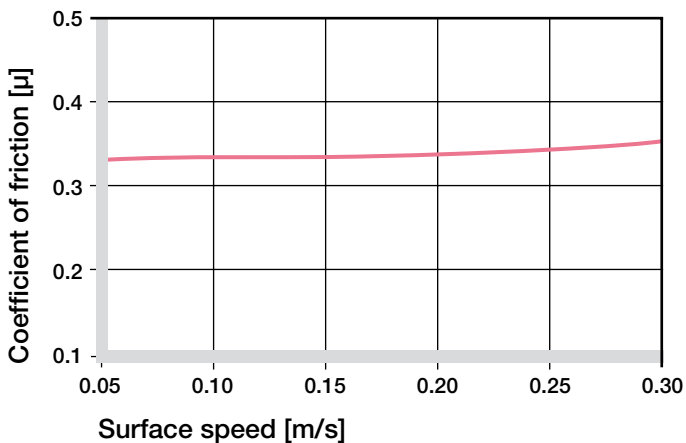
Shaft Materials

For low loads with rotation, the combinations achieve the best wear values with the stainless steels X90 and V2A.

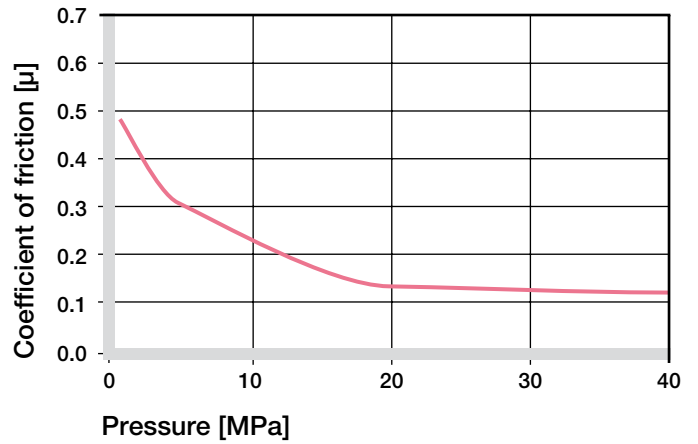
The conditions shift with increasing loads.

Graph 08 shows that this is more varied with increasing loads.

- ▶ Shaft Materials, **page 51**



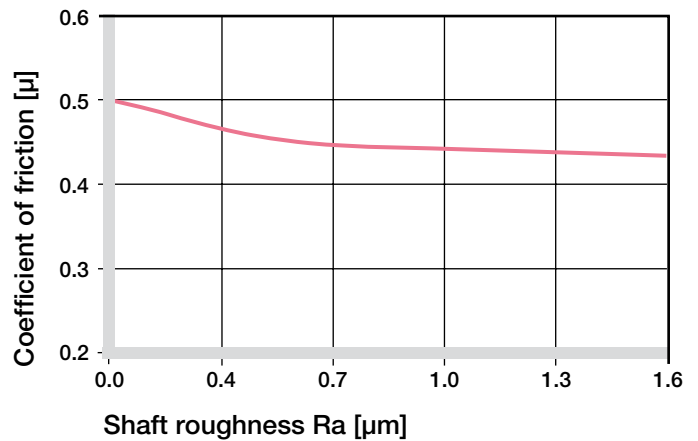
Graph 04: Coefficient of friction as a function of the running speed, $p = 0,75 \text{ MPa}$



Graph 05: Coefficient of friction as a function of the pressure, $v = 0,01 \text{ m/s}$

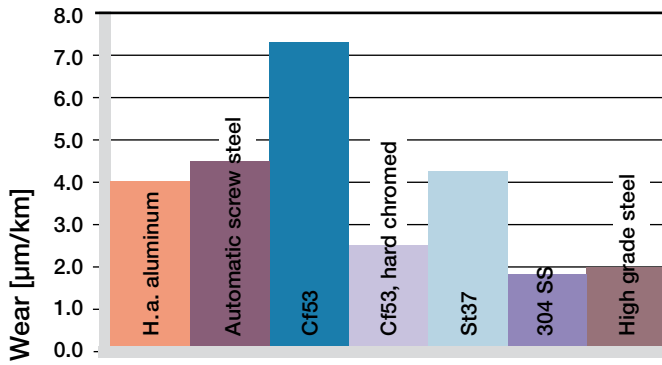
iglidur® UW	Dry	Greases	Oil	Water
C. o. f. μ	0,15–0,35	0,09	0,04	0,04

Table 04: Coefficient of friction against steel ($R_a = 1 \text{ }\mu\text{m}$, 50 HRC)

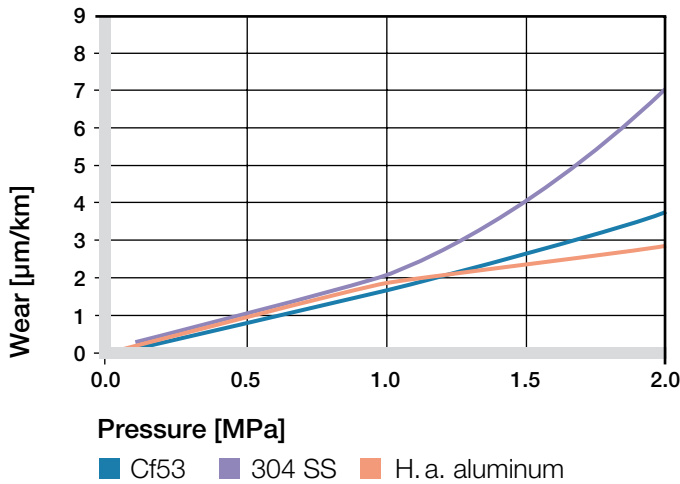


Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)

iglidur® UW | Technical Data



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0,75 \text{ MPa}$, $v = 0,5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational applications

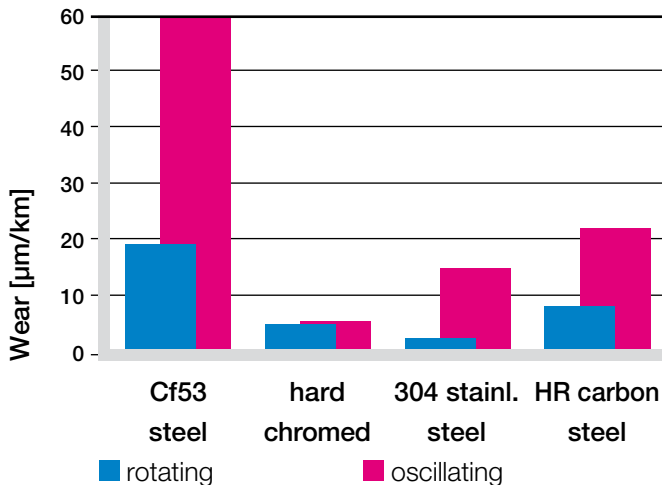


Abb. 09: Wear for rotating and oscillating applications with different shaft materials, $p = 2 \text{ MPa}$

Additional Properties

Chemical Resistance

iglidur® UW bearings are resistant to diluted alkalis and very weak acids as well as to solvents and all kinds of lubricants.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to -
Strong acids	-
Diluted alkalines	+
Strong alkalines	+ to 0

+ resistant 0 conditionally resistant - not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® UW are radiation resistant to a radiation intensity of $3 \cdot 10^2 \text{ Gy}$.

UV Resistance

iglidur® UW plain bearings are resistant to the impact of UV radiation.

Vacuum

Applications in a vacuum are only possible to a limited extent. Only dehumidified bearings of iglidur® UW should be tested in a vacuum.

Electrical Properties

iglidur® UW plain bearings are electrically conductive.

Volume resistance	$< 10^5 \Omega \text{cm}$
Surface resistance	$< 10^5 \Omega 10$

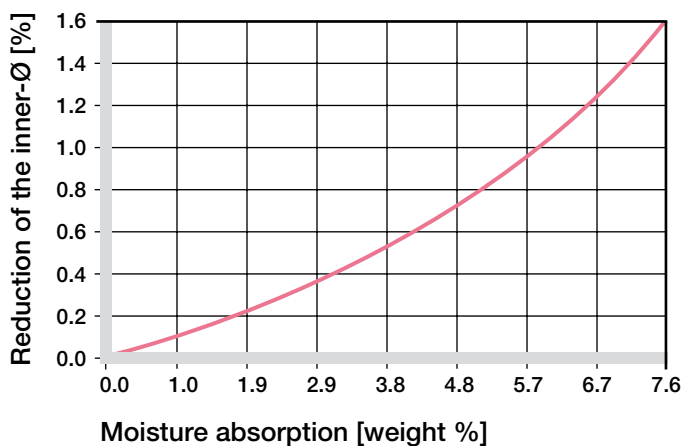
Moisture Absorption

The humidity absorption of iglidur® UW bearings amounts to about 0,2 % in standard climatic conditions. The saturation limit in water is 0,8 %. These values are so low that a moisture expansion need to be considered only in extreme cases.

Maximum moisture absorption

At +23°C/50 % r.h.	0,2 % weight
Max. moisture absorption	0,8 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® UW bearings are standard bearings for shafts with h-tolerance (recommended minimum h9).

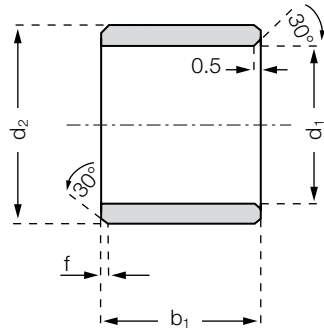
After the installation in a housing bore with H7 tolerance, the inner diameter of the bearing automatically adjusts to the E10 tolerance.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® UW E10 [mm]	Housing H7 [mm]
up to 3	0-0,025	+0,014 +0,054	0 +0,010
> 3 to 6	0-0,030	+0,020 +0,068	0 +0,012
> 6 to 10	0-0,036	+0,025 +0,083	0 +0,015
> 10 to 18	0-0,043	+0,032 +0,102	0 +0,018
> 18 to 30	0-0,052	+0,040 +0,124	0 +0,021
> 30 to 50	0-0,062	+0,050 +0,150	0 +0,025
> 50 to 80	0-0,074	+0,060 +0,180	0 +0,030
> 80 to 120	0-0,087	+0,072 +0,212	0 +0,035
> 120 to 180	0-0,100	+0,085 +0,245	0 +0,040

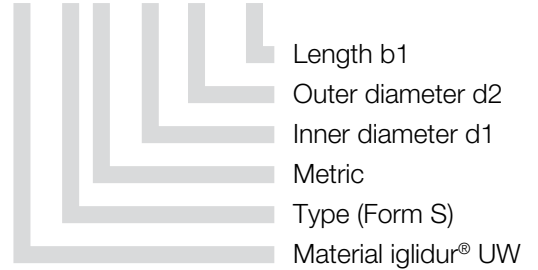
Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Sleeve bearing



Order key

UWSM-0304-05



Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	b1 h13
UWSM-0304-05	3,0	+0,014 +0,054	4,5	5,0
UWSM-0405-06	4,0	+0,020 +0,068	5,5	6,0
UWSM-0507-08	5,0	+0,020 +0,068	7,0	8,0
UWSM-0608-08	6,0	+0,020 +0,068	8,0	8,0
UWSM-0810-10	8,0	+0,025 +0,083	10,0	10,0
UWSM-1012-10	10,0	+0,025 +0,083	12,0	10,0
UWSM-1214-12	12,0	+0,032 +0,102	14,0	12,0

* after pressfit. Testing methods ► page 55



delivery available
time from stock

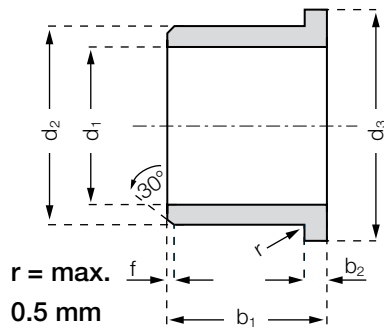


prices price list online
www.igus.co.uk/en/uw



order part number
example UWSM-0304-05

Flange bearing



Order key

UWFM-0304-05



- Length b1
- Outer diameter d2
- Inner diameter d1
- Metric
- Type (Form F)
- Material iglidur® UW

Dimensions according to ISO 3547-1 and special dimensions

Chamfer in relation to the d1

d1 [mm]:	Ø 1-6	Ø 6-12	Ø 12-30	Ø > 30
f [mm]:	0.3	0.5	0.8	1.2

Dimensions [mm]

Part number	d1	d1-Tolerance*	d2	d3 d13	b1 h13	b2 -0,14
UWFM-0304-05	3,0	+0,014 +0,054	4,5	7,5	5	0,75
UWFM-0405-06	4,0	+0,020 +0,068	5,5	9,5	6	0,75
UWFM-0507-05	5,0	+0,020 +0,068	7,0	11,0	5	1
UWFM-0608-06	6,0	+0,020 +0,068	8,0	12,0	6	1
UWFM-0810-10	8,0	+0,025 +0,083	10,0	15,0	10	1
UWFM-1012-10	10,0	+0,025 +0,083	12,0	18,0	10	1
UWFM-1214-12	12,0	+0,032 +0,102	14,0	20,0	12	1
UWFM-1618-17	16,0	+0,032 +0,102	18,0	24,0	17	1
UWFM-2023-21	20,0	+0,040 +0,124	23,0	30,0	21,5	1,5

* after pressfit. Testing methods ► page 55



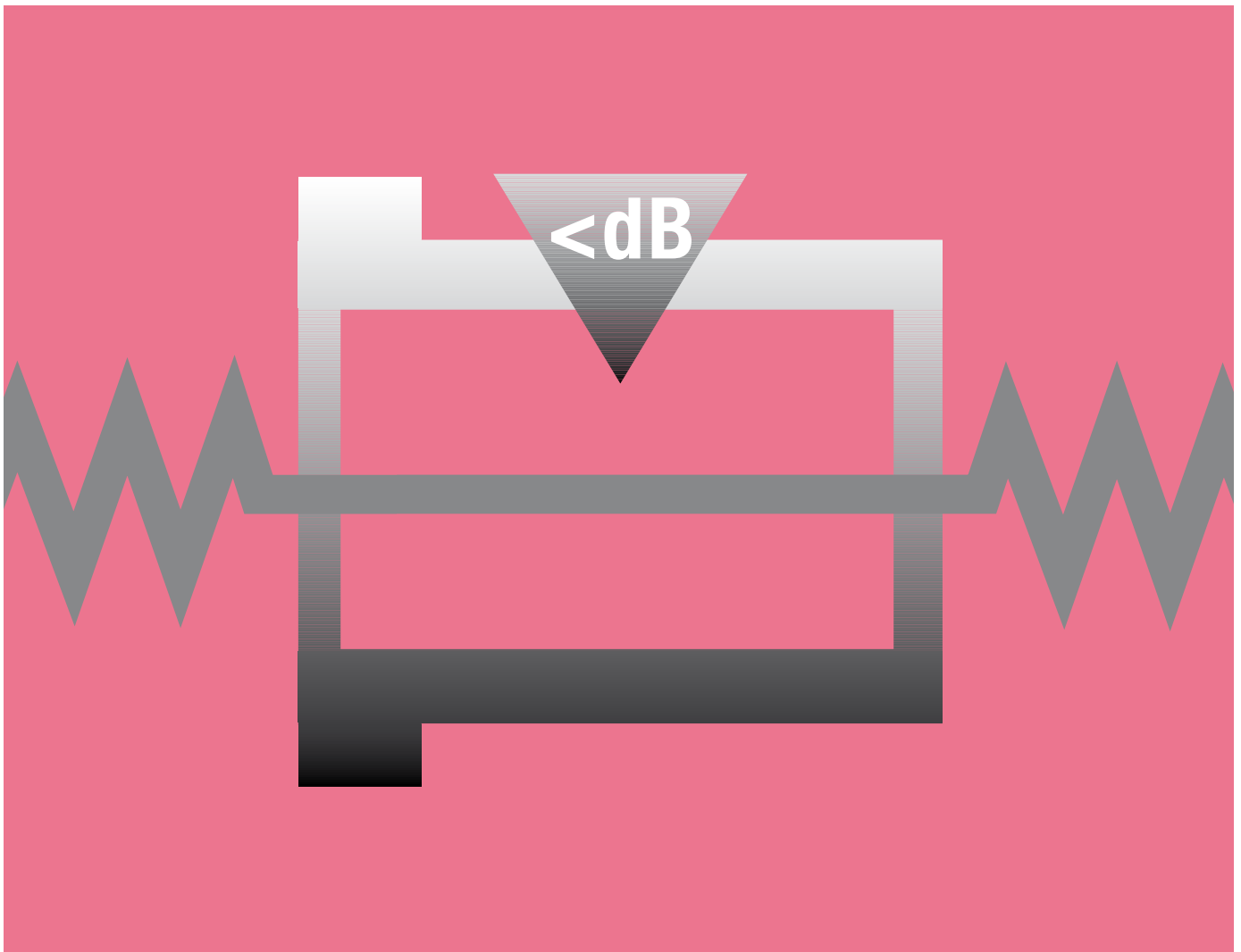
delivery available
time from stock



prices price list online
www.igus.co.uk/en/uw



order part number
example UWFM-0304-05



iglidur® B – the flexible material



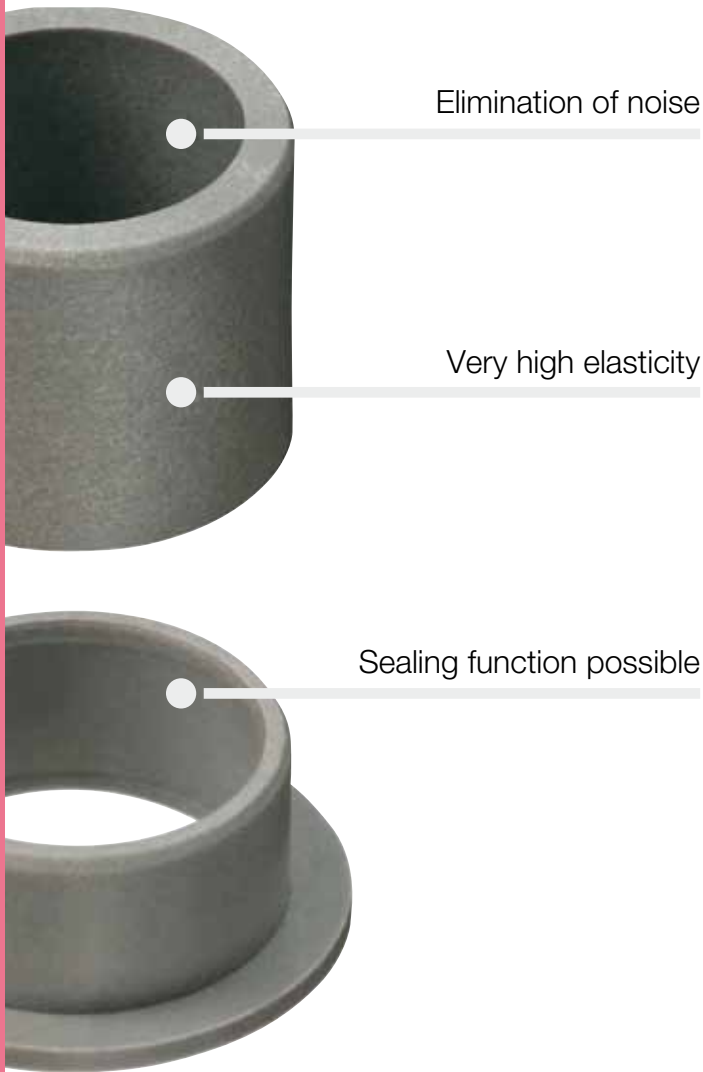
Elimination of noise

Very high elasticity

Sealing function possible

iglidur® B

The flexible material. Vibration dampening is the salient feature of the iglidur® B bearings, which are also well-suited for edge loads at low forces.



When to use it?

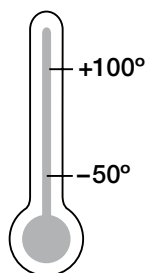
- When maximum vibration dampening is required
- When sealing function has to be integrated
- When high edge loads occur



When not to use it?

- In applications with high atmospheric humidity
 - ▶ iglidur® J, page 89
- When a cost-effective universal bearing is required
 - ▶ iglidur® R, page 249
- When the highest wear resistance is required
 - ▶ iglidur® J, page 89

Temperature



Product range

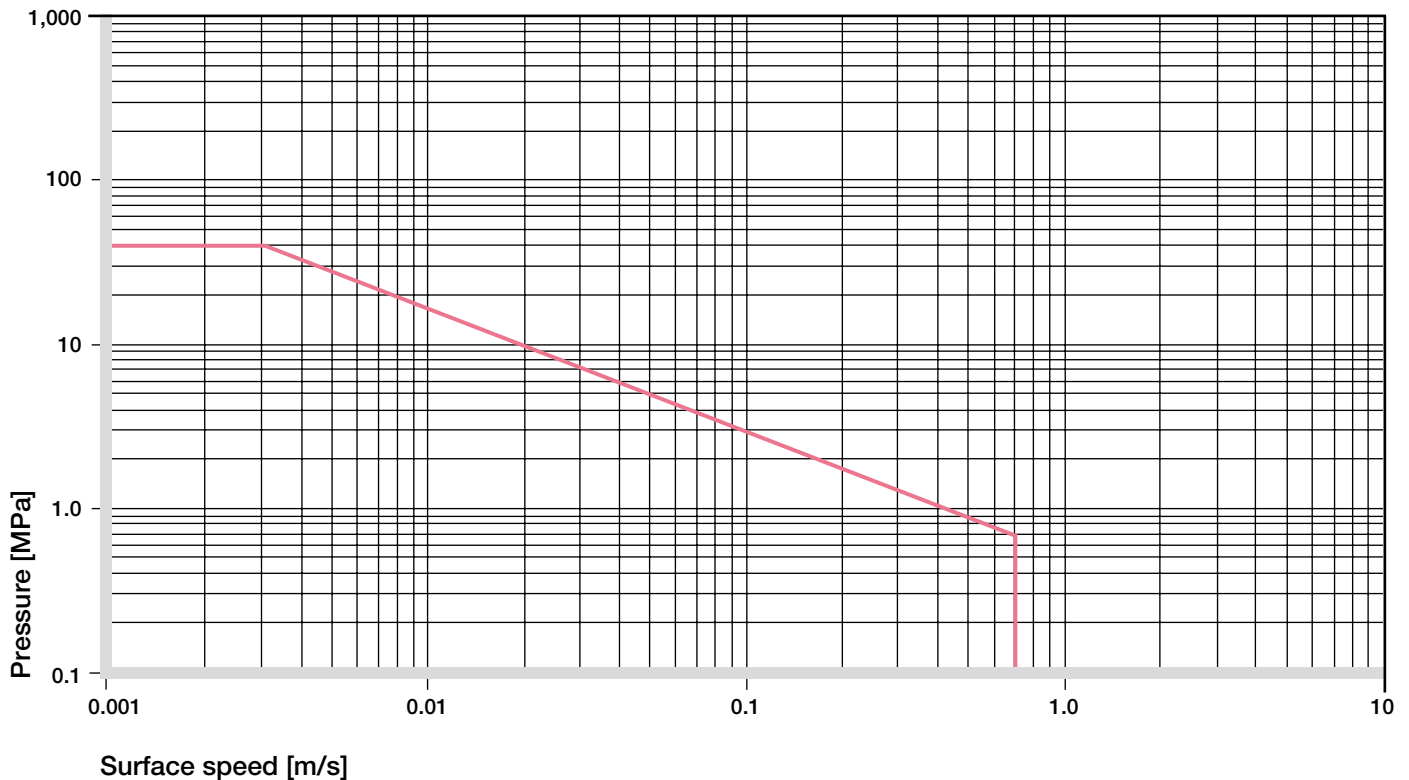
on request



Material data			
General properties	Unit	iglidur® B	Testing method
Density	g/cm ³	1.15	
Colour		grey	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	1.0	DIN 53495
Max. moisture absorption	% weight	6.3	
Coefficient of sliding friction, dynamic against steel	μ	0.18–0.28	
pv value, max. (dry)	MPa · m/s	0.15	
Mechanical properties			
Modulus of elasticity	MPa	1,800	DIN 53457
Tensile strength at +20 °C	MPa	55	DIN 53452
Compressive strength	MPa	20	
Max. recommended surface pressure (+20 °C)	MPa	40	
Shore D hardness		69	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+100	
Max. short term application temperature	°C	+130	
Max. short term ambient temperature ¹⁾	°C	+150	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	12	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹⁰	DIN IEC 93
Surface resistance	Ω	> 10 ⁹	DIN 53482

¹⁾ Without additional load; no sliding movement; relaxation possible

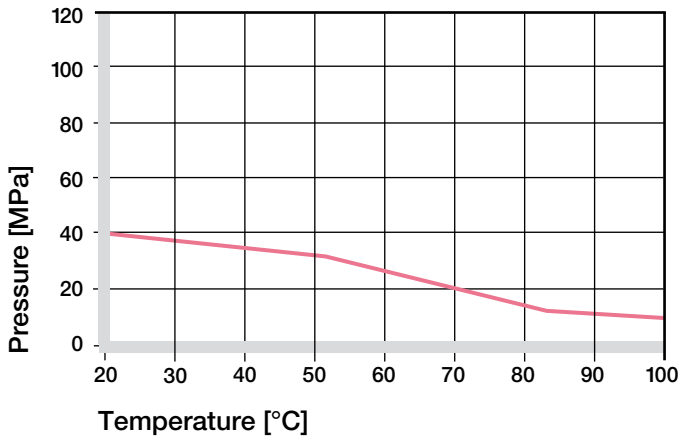
Tabelle 01: Material data



Graph 01: Permissible pv values for iglidur® B with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Mechanical Properties

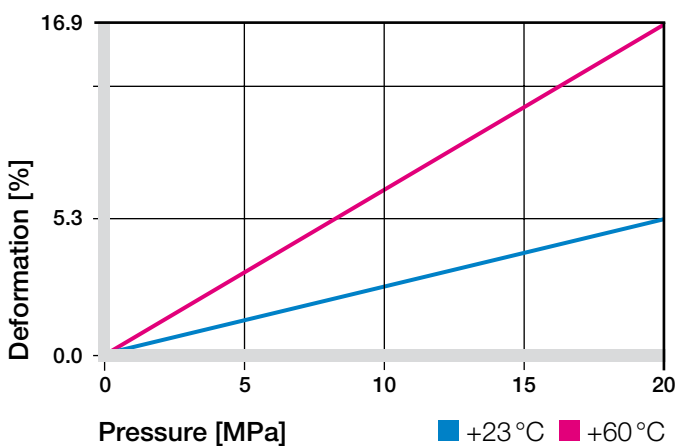
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® B plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +100°C the permissible surface pressure is almost 10 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

The compressive strength of the iglidur® B bearings is on the one hand low, but on the other, is an important property of the bearing. They are mainly used where vibration dampening and acoustic separation are required. The deformation at 40 MPa and under ambient temperature is 5.3% (Graph 03).

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

iglidur® B bearings can be continuously used up to 0.7 m/s. The frictional heat provides the speed limits. In practice, though, this temperature level is rarely reached, due to varying application conditions.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	0.7	0.5	2
Short term	1	0.7	3

Table 02: Maximum running speed

Temperatures

The operating temperature of the iglidur® B bearings is limited to +100°C. From +50°C onward, the very soft bearing should be mechanically fastened, so that the danger of bushings creeping out of the bores is avoided. The wear resistance too declines disproportionately from +70°C.

► Application Temperatures, page 46

iglidur® B	Application temperature
Minimum	-40 °C
Max. long term	+100 °C
Max. short term	+130 °C
Add. securing is required from	+50 °C

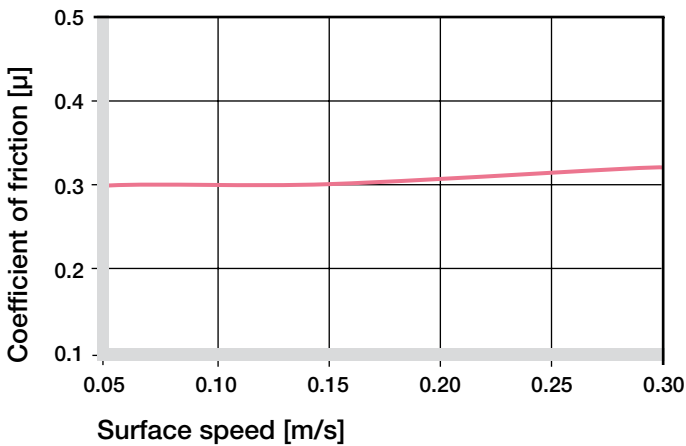
Table 03: Temperature limits

iglidur® B | Technical Data

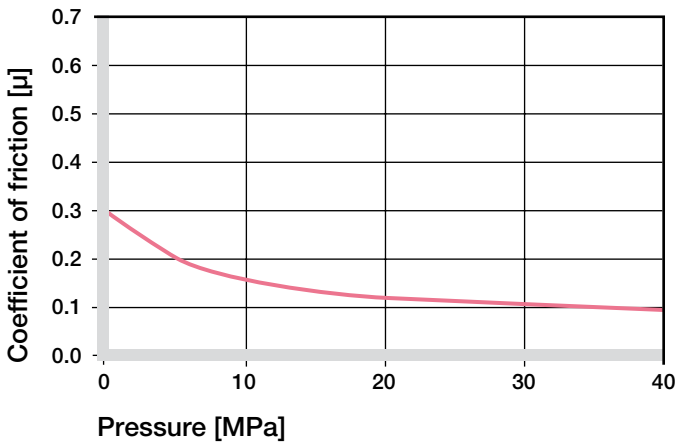
Friction and Wear

The coefficients of friction increase slightly with the speed and decrease with the load. Surface finishes of the shaft between 0.4 and 0.6 Ra are ideal. The iglidur® B bearings assume a center position in wear resistance. As far as the bearing load is not too high, the attained coefficients of wear are pretty good. An increase in load results in a disproportionate increase in abrasion.

- ▶ Coefficients of Friction and Surfaces, **page 48**
- ▶ Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



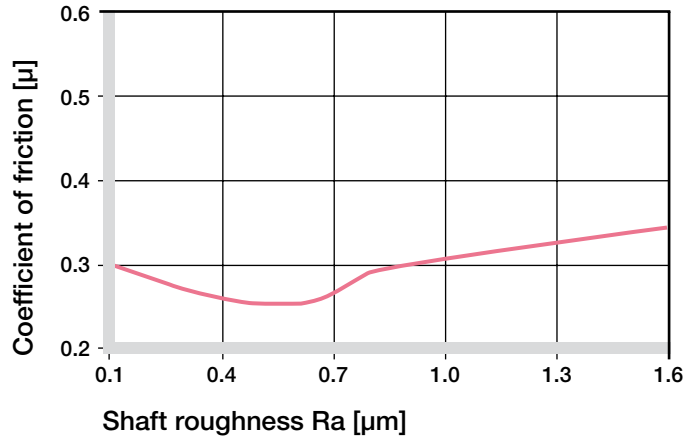
Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

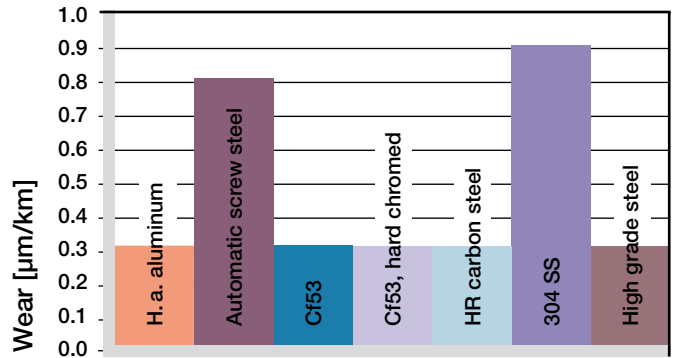
The influence of the shaft is not very large in wear resistance.

Graph 07 and 08 clarify that very similar wear data are attained with different shaft materials. If high operational performances are expected, the bearing load should not be too high.

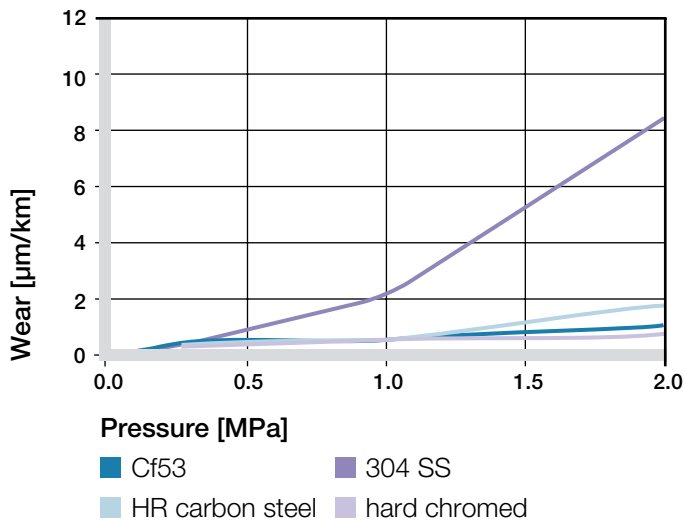
▶ Shaft Materials, **page 51**



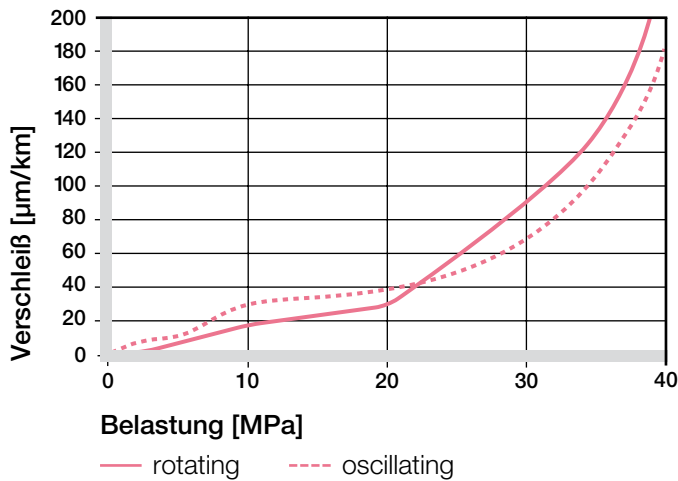
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® B	Dry	Greases	Oil	Water
C.o.f. μ	0.18–0.28	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® B plain bearings are not very resistant to chemicals. Where chemical resistance is required, other iglidur® materials featuring better characteristics should be used.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	–
Greases, oils without additives	–
Fuels	–
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	–
Strong alkalines	–

+ resistant 0 conditionally resistant – not resistant

All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® B are radiation resistant to a radiation intensity of $3 \cdot 10^2$ Gy.

UV Resistance

iglidur® B plain bearings are not resistant to the impact of UV radiation.

Vacuum

Use of iglidur® B plain bearings is limited in a vacuum. Only dehumidified bearings should be tested.

Electrical Properties

iglidur® B plain bearings are electrically insulating.

Volume resistance	$> 10^{10} \Omega\text{cm}$
Surface resistance	$> 10^9 \Omega 10$

iglidur® B | Technical Data

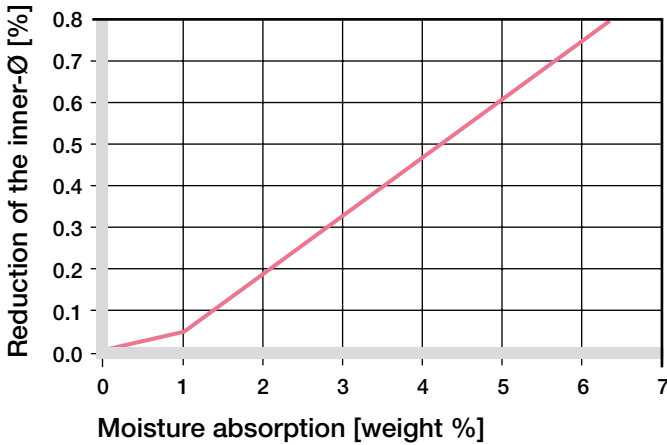
Moisture Absorption

The moisture absorption is relatively high and must be considered in the selection and design.

Maximum moisture absorption

At 2+3 °C/50 % r.h.	1.0 % weight
Max. moisture absorption	6.3 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® B plain bearings are standard bearings for shafts with a h tolerance (h9 recommended at least). The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter of the bearings is automatically adjusted to an E10 tolerance.

► Testing Methods, page 55

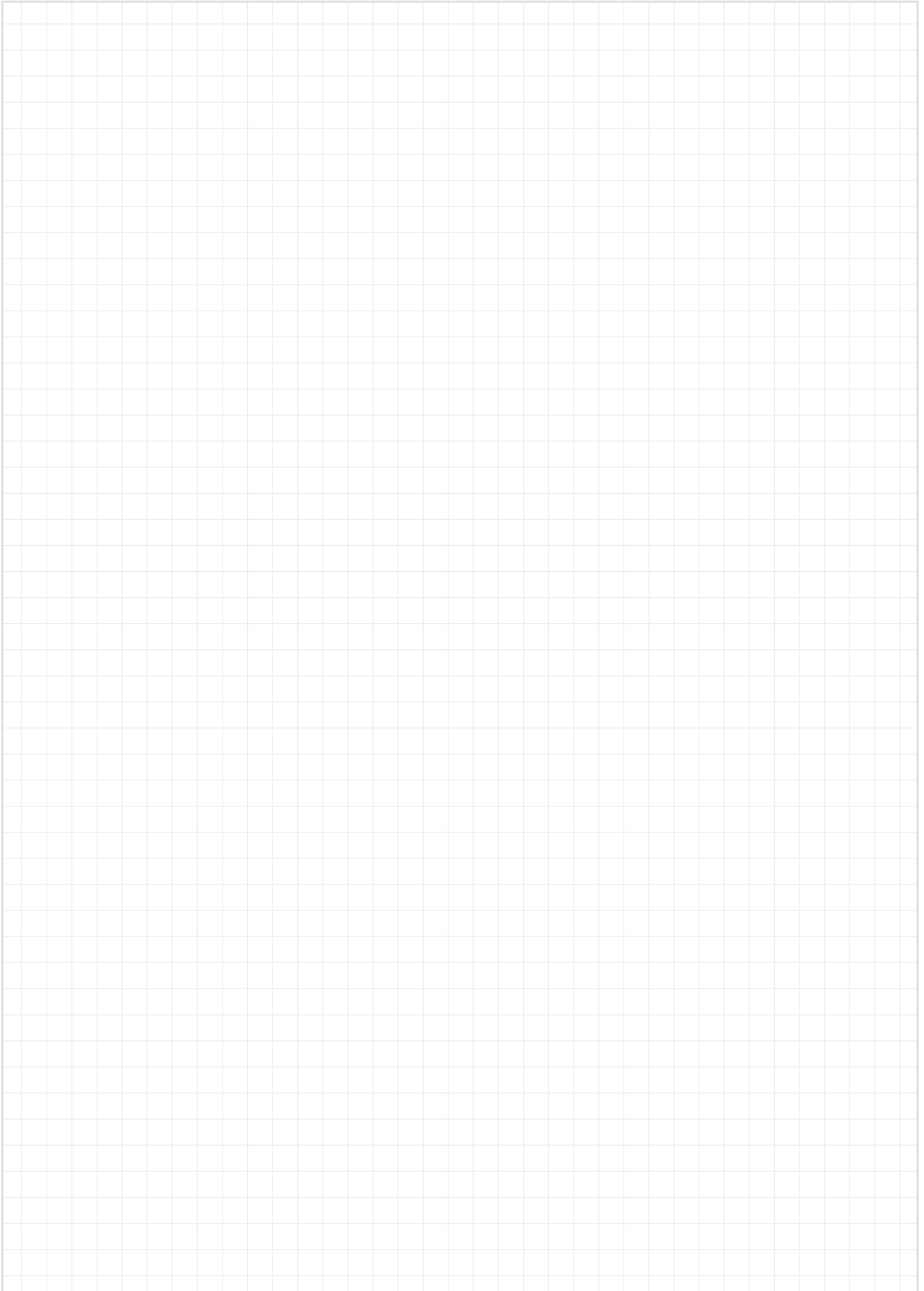
Diameter d1 [mm]	Shaft h9 [mm]	iglidur® B D11 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.020 +0.080	0 +0.010
> 3 to 6	0-0.030	+0.030 +0.105	0 +0.012
> 6 to 10	0-0.036	+0.040 +0.130	0 +0.015
> 10 to 18	0-0.043	+0.050 +0.160	0 +0.018
> 18 to 30	0-0.052	+0.065 +0.195	0 +0.021
> 30 to 50	0-0.062	+0.080 +0.240	0 +0.025
> 50 to 80	0-0.074	+0.100 +0.290	0 +0.030

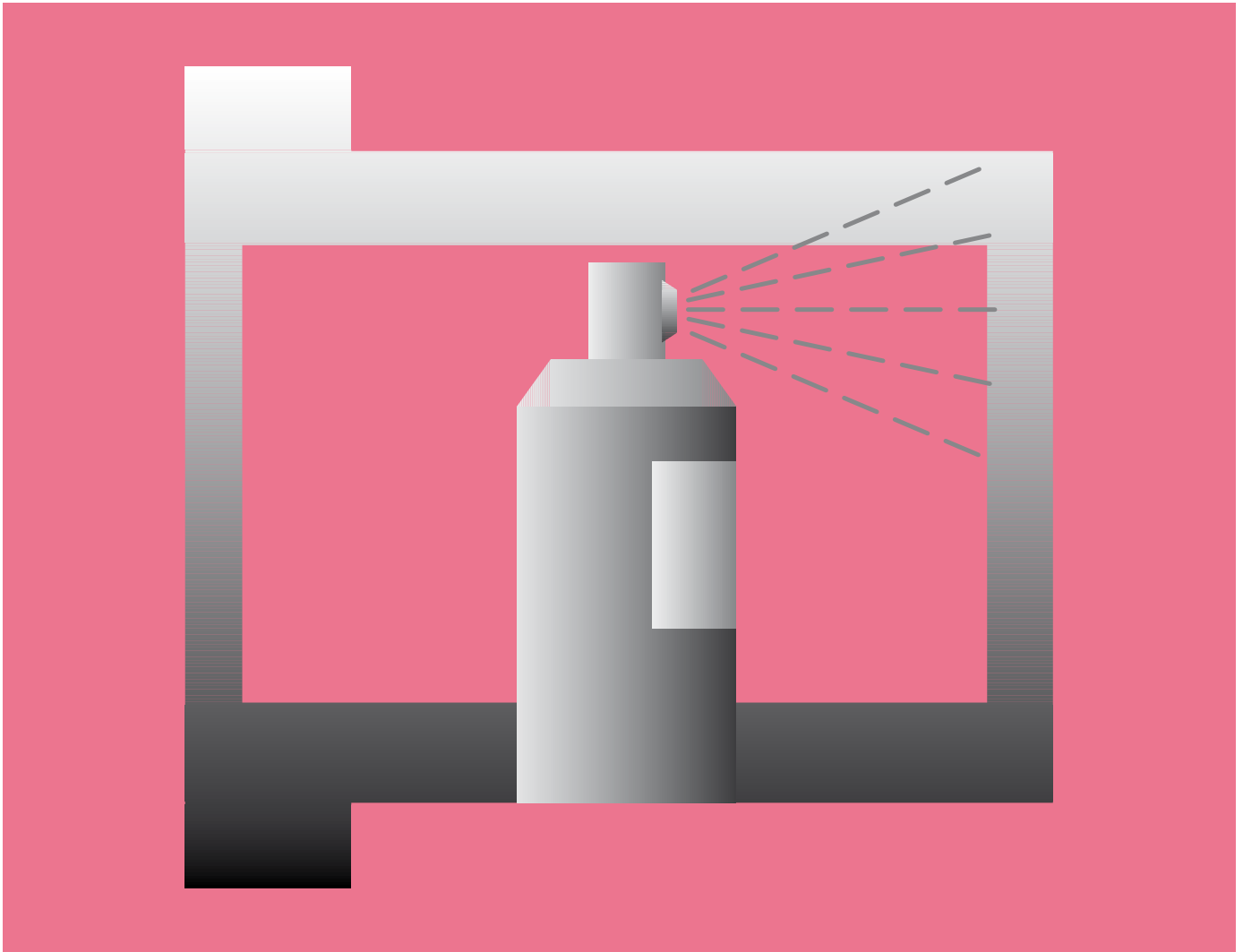
Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® B plain bearings are manufactured to special order.

My Sketches





iglidur® C – free from PTFE and silicone



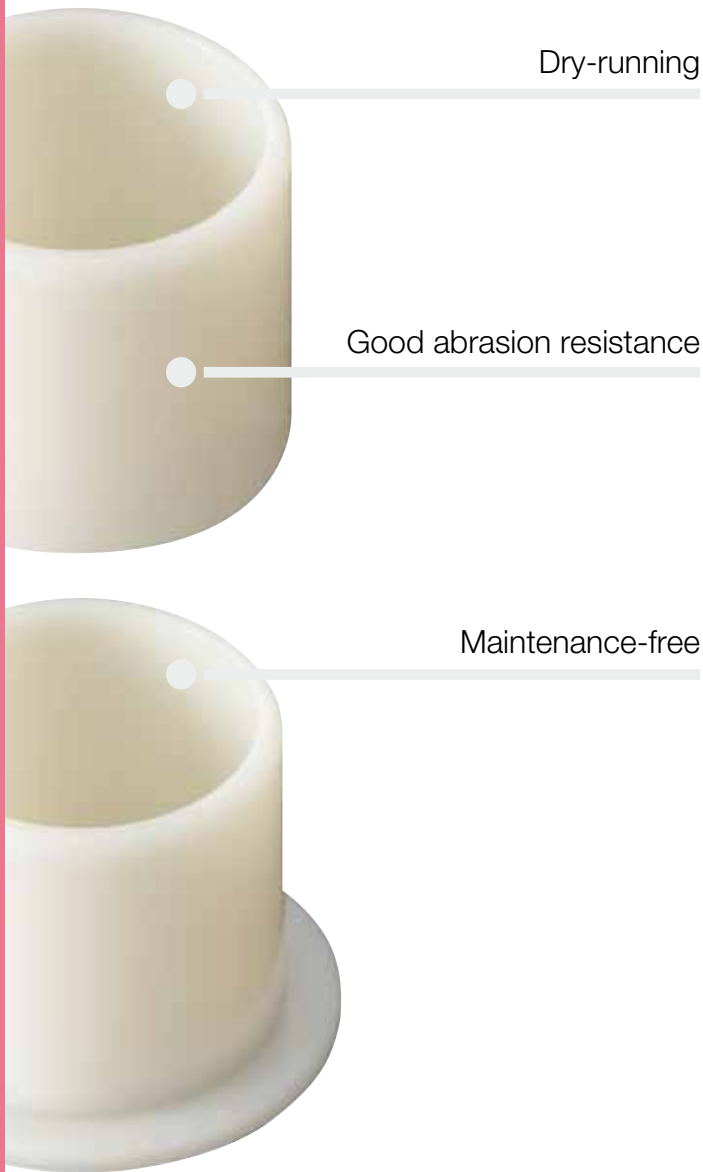
Dry-running

Good abrasion resistance

Maintenance-free

iglidur® C

Free from PTFE and silicone. In iglidur® C, the use of Teflon and silicone as lubricants is deliberately avoided. However the bearings display excellent wear resistance at low loads.



When to use it?

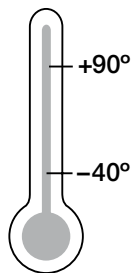
- When PTFE and silicone are not allowed in your application
- For applications with low speed
- If you need dirt-resistant bearings
- If you need maintenance-free, self-lubricating bearings



When not to use it?

- When highest wear resistance is required
▶ **iglidur® W300, page 131**
- When low coefficients of friction are required
▶ **iglidur® J, page 89**
▶ **iglidur® L250, page 239**
- If a cost-effective option is requested
▶ **iglidur® M250, page 107**
- When low moisture absorption is required
▶ **iglidur® R, page 249**

Temperature



Product range

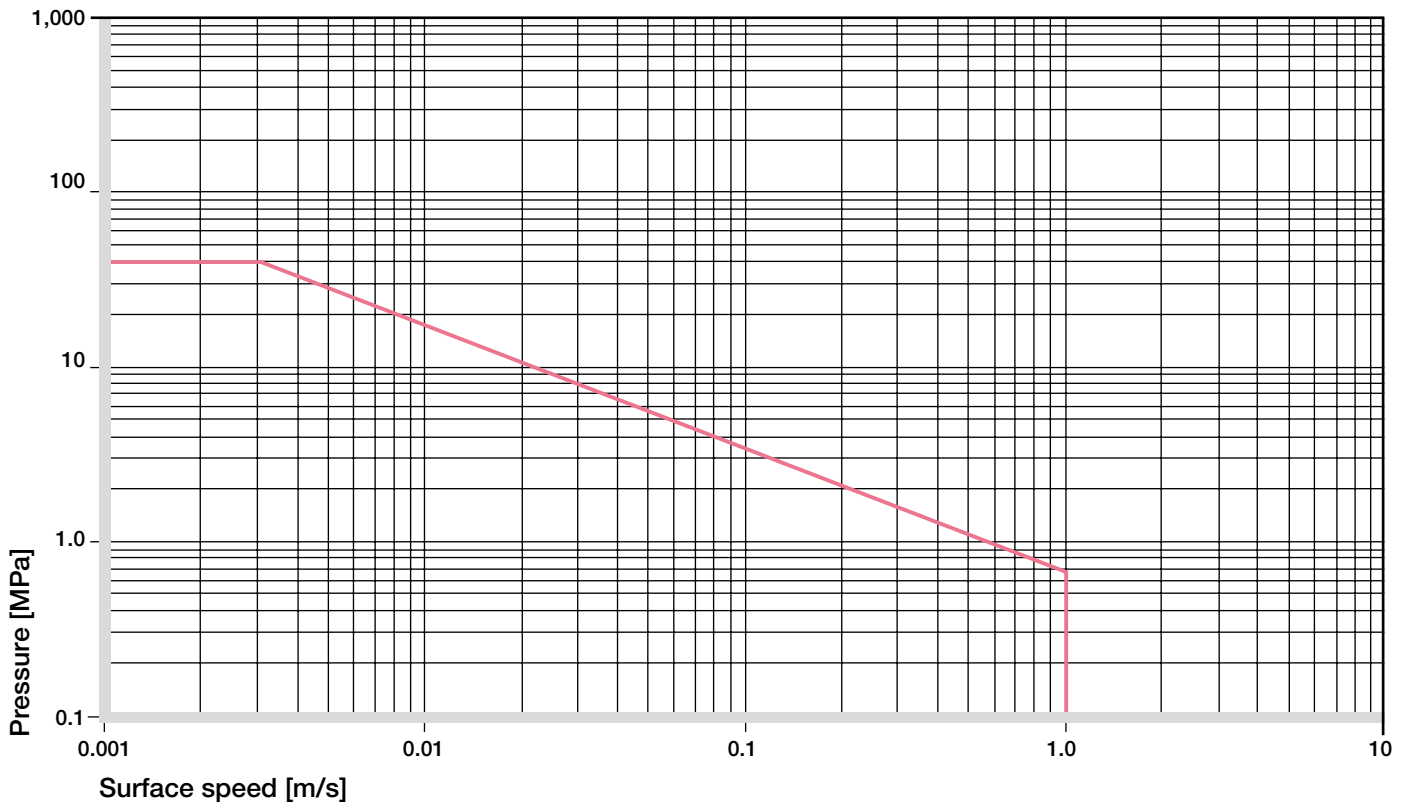
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Material data			
General properties	Unit	iglidur® C	Testing method
Density	g/cm ³	1.1	
Colour		off white	
Max. moisture absorption at +23 °C/50 % r.h.	% weight	1.0	DIN 53495
Max. moisture absorption	% weight	6.9	
Coefficient of sliding friction, dynamic against steel	μ	0.17–0.25	
pv value, max. (dry)	MPa · m/s	0.10	
Mechanical properties			
Modulus of elasticity	MPa	1,900	DIN 53457
Tensile strength at +20 °C	MPa	60	DIN 53452
Compressive strength	MPa	30	
Max. recommended surface pressure (+20 °C)	MPa	40	
Shore D hardness		72	DIN 53505
Physical and thermal properties			
Max. long term application temperature	°C	+90	
Max. short term application temperature	°C	+130	
Maximum short term ambient temperature ¹⁾	°C	+150	
Min. application temperature	°C	-40	
Thermal conductivity	W/m · K	0.24	ASTM C 177
Coefficient of thermal expansion (at +23 °C)	K ⁻¹ · 10 ⁻⁵	15	DIN 53752
Electrical properties			
Specific volume resistance	Ωcm	> 10 ¹⁰	DIN IEC 93
Surface resistance	Ω	> 10 ⁹	DIN 53482

¹⁾ Without additional load; no sliding movement; relaxation possible

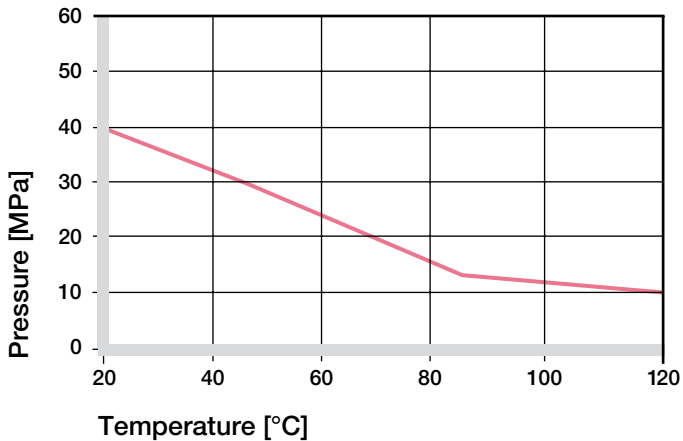
Table 01: Material data



Graph 01: Permissible pv values for iglidur® C with a wall thickness of 1 mm dry running against a steel shaft at +20 °C, mounted in a steel housing

Mechanical Properties

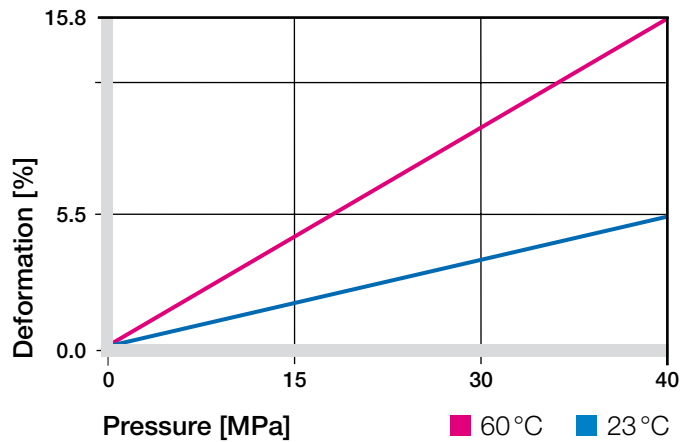
The recommended maximum surface pressure is a mechanical material parameter. No conclusions regarding the tribological properties can be drawn from this. With increasing temperatures, the compressive strength of iglidur® C plain bearings decreases. The Graph 02 shows this inverse relationship. However, at the longterm maximum temperature of +90 °C the permissible surface pressure is almost 10 MPa.



Graph 02: Recommended maximum surface pressure as a function of temperature (40 MPa at +20 °C)

Though iglidur® C is a very soft material, it also has a maximum surface pressure limit of 40 MPa. The high elasticity makes the bearing suitable for vibrations and edge loads.

► Surface Pressure, page 43



Graph 03: Deformation under pressure and temperature

Permissible Surface Speeds

Though important solid lubricants have been deliberately avoided in the development of the iglidur® C, the bearings are very wear resistant and for this reason suitable also for continuous movements at medium surface speeds. Though speeds up to 1.5 m/s can be achieved short term, for general long term applications the speeds should be below 0.5 m/s.

► Surface Speed, page 45

m/s	Rotating	Oscillating	Linear
Continuous	1	0.7	2
Short term	1.5	1.1	3

Table 02: Maximum running speed

Temperatures

The short-term maximum application temperature is +170 °C. However no real loads are possible at this temperature. Therefore it would be reasonable to limit the operating temperature to about +120 °C.

Note that the bearing should be mechanically secured in the housing from temperatures of +70 °C to prevent the bearing coming out of the housing.

► Application Temperatures, page 46

iglidur® C	Application temperature
Minimum	-40 °C
Max. long term	+90 °C
Max. short term	+130 °C
Add. securing is required from	+40 °C

Table 03: Temperature limits

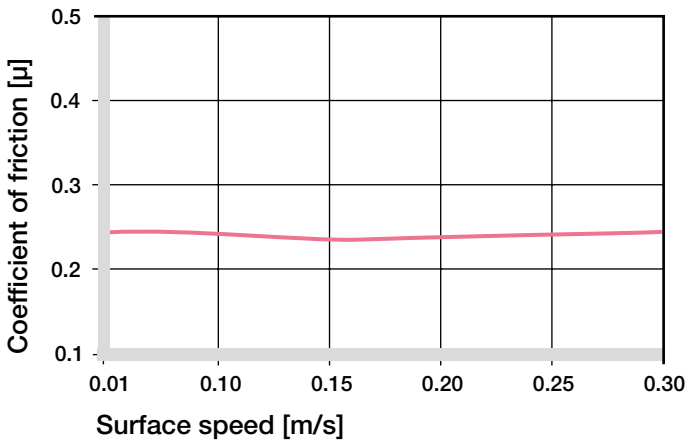
iglidur® C | Technical Data

Friction and Wear

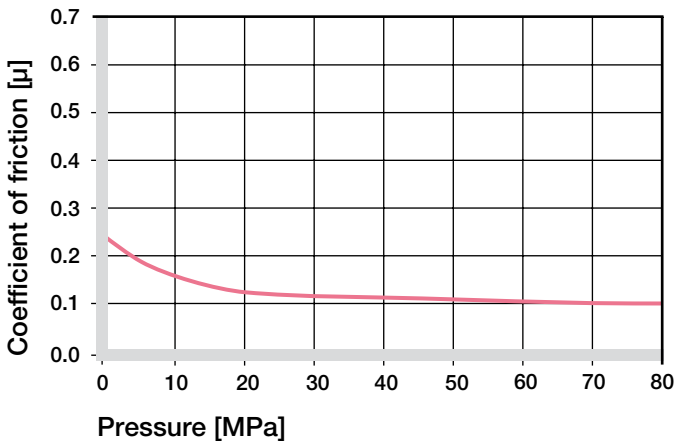
The coefficient of friction of the iglidur® C bearing is dependent to a large degree on the shaft surface finish. Even though PTFE and silicone have been designed out of this material, iglidur® C still gives very low coefficients of friction. Similarly the wear of the bearing is very good in applications with rotating or pivoting motions with low loads.

► Coefficients of Friction and Surfaces, **page 48**

► Wear Resistance, **page 49**



Graph 04: Coefficient of friction as a function of the running speed, $p = 0.75 \text{ MPa}$



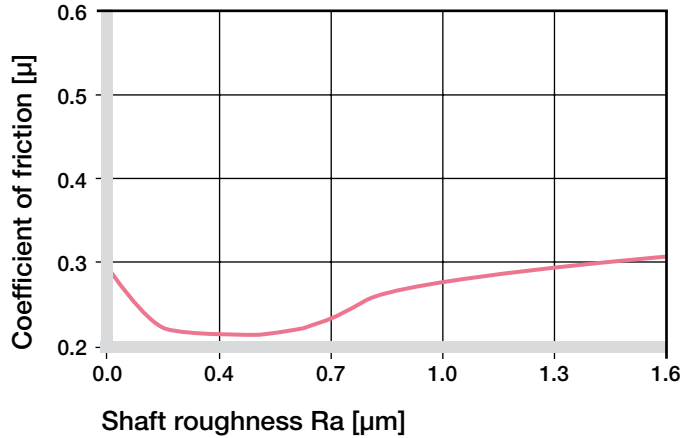
Graph 05: Coefficient of friction as a function of the pressure, $v = 0.01 \text{ m/s}$

Shaft Materials

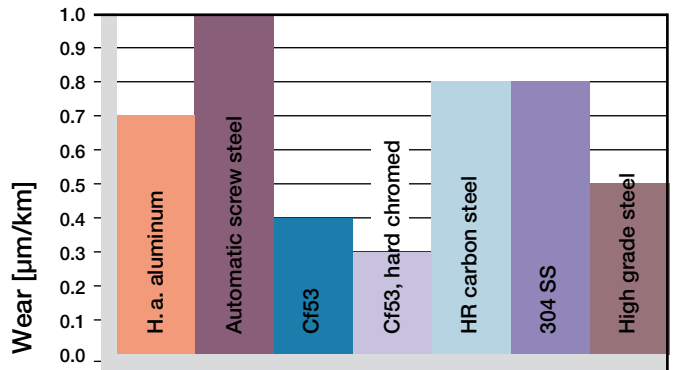
Graph 07 clearly shows how critical the choice of shaft material is. Though all results of this rotation test under the load of 0.75 MPa can be read as excellent, the difference is significant.

Graph 08 shows eventually that this difference rises still further with increasing loads.

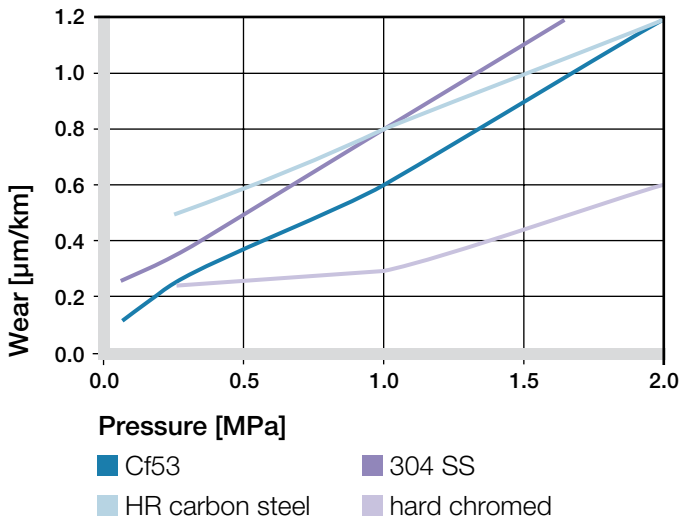
► Shaft Materials, **page 51**



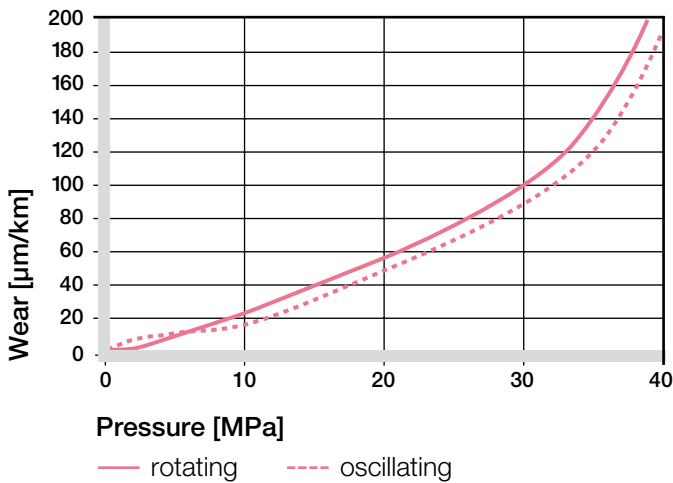
Graph 06: Coefficient of friction as function of the shaft surface (Cf53 hardened and ground steel)



Graph 07: Wear, rotating with different shaft materials, pressure, $p = 0.75 \text{ MPa}$, $v = 0.5 \text{ m/s}$



Graph 08: Wear with different shaft materials in rotational operation, as a function of the pressure



Graph 09: Wear for oscillating and rotating applications with shaft material Cf53 hardened and ground steel, as a function of the pressure

iglidur® C	Dry	Greases	Oil	Water
C. o. f. μ	0.17–0,25	0.09	0.04	0.04

Table 04: Coefficient of friction against steel (Ra = 1 µm, 50 HRC)

Additional Properties

Chemical Resistance

iglidur® C plain bearings are resistant to detergents, greases, oils, diluted alkalines and weak acids.

► Chemical Table, page 974

Medium	Resistance
Alcohol	+ to 0
Hydrocarbons	+
Greases, oils without additives	+
Fuels	+
Diluted acids	0 to –
Strong acids	–
Diluted alkalines	+
Strong alkalines	0

+ resistant 0 conditionally resistant – not resistant
All data given at room temperature [+20 °C]

Table 05: Chemical resistance

Radiation Resistance

Plain bearings of iglidur® C are radiation resistant up to a radiation intensity of $2 \cdot 10^4$ Gy. Higher radiation affects the material and can result in a loss of important mechanical characteristics.

UV Resistance

iglidur® C plain bearings are not resistant to UV radiation. For applications in outdoor areas, or in cases of other intensive radiation, adequate protection against direct radiation must be provided.

Vacuum

When used in a vacuum environment, the iglidur® C plain bearings release moisture as a vapour. Therefore, only dehumidified bearings are suitable in a vacuum environment.

Electrical Properties

iglidur® C plain bearings are electrically insulating.

Volume resistance	$> 10^{10} \Omega\text{cm}$
Surface resistance	$> 10^9 \Omega$

iglidur® C | Technical Data

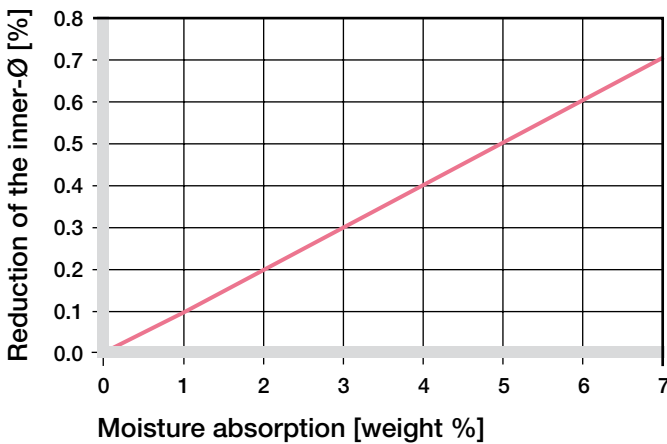
Moisture Absorption

The moisture absorption of iglidur® C plain bearings is approx. 7 % when saturated in water, and this needs to be taken into account if this material is to be used in wet environments.

Maximum moisture absorption

At +23 °C/50 % r.h.	1.0 % weight
Max. moisture absorption	6.9 % weight

Table 06: Moisture absorption



Graph 10: Effect of moisture absorption on plain bearings

Installation Tolerances

iglidur® C plain bearings are meant to be oversized before being pressfit. The bearings are designed for pressfit into a housing machined to a H7 tolerance. After being assembled into a nominal size housing, the inner diameter is adjusted to meet our specified tolerances.

► Testing Methods, page 55

Diameter d1 [mm]	Shaft h9 [mm]	iglidur® C D11 [mm]	Housing H7 [mm]
up to 3	0-0.025	+0.020 +0.080	0 +0.010
> 3 to 6	0-0.030	+0.030 +0.105	0 +0.012
> 6 to 10	0-0.036	+0.040 +0.130	0 +0.015
> 10 to 18	0-0.043	+0.050 +0.160	0 +0.018
> 18 to 30	0-0.052	+0.065 +0.195	0 +0.021
> 30 to 50	0-0.062	+0.080 +0.240	0 +0.025
> 50 to 80	0-0.074	+0.100 +0.290	0 +0.030

Table 07: Important tolerances for plain bearings according to ISO 3547-1 after pressfit

Product Range

iglidur® C plain bearings are produced to special order.

