ENGINEERING DATA

Plastic Race Radial Ball Bearings
Tolerances for Mounting & Interference Fits

BORE		
MINIMUM	MAXIMUM	GENERAL TOLERANCE
0.000"	0.750"	+.003", -.0"
0.751"	1.250"	+.004", -.0"

WIDTH	
MAXIMUM DIAMETER	GERNERAL TOLERANCE
3.000"	+/- .005"
4.000"	+/- .008"
5.000"	+/- .010"

OUTSIDE DIAMETER		
MINIMUM	MAXIMUM	GENERAL TOLERANCE
0.000"	1.000"	+.0", -.003"
1.001"	1.625"	+.0", -.004"
1.626"	2.000"	+.0", -.005"
2.001"	3.000"	+.0", -.006"

DIAMETRIC CLEARANCE "radial play"		
BORE (Maximum)	OUTSIDE DIAMETER (Maximum)	GENERAL TOLERANCE
0.187"	1.000"	free turning to .008"
0.500"	1.625"	free turning to .009"
0.750"	2.000"	free turning to .010"
1.250"	3.000"	free turning to .012"

MOUNTING PRACTICE

PLASTIC RING CHARACTERISTICS

Plastic will expand and contract in proportion to the amount of interference pressure. Any press fit to the rings will reduce the diametric clearance in proportion to the amount of the interference fit. The maximum amount for overall interference fit for general practice should not exceed 1/2 of the nominal radial play dimension.

INTERFERENCE FITS

A typical application would be a press fit to one ring and a slip fit to the other. Using the above criteria, a bearing with .008" radial play would allow you to apply a maximum of .003" press fit to one ring and maximum of .001" slip fit the other. It is recommended that the customer measure the actual bearing to be used for calculating shaft and housing fits.

NOTE: These are general manufacturing tolerances. They may vary depending on material type and bearing design. For diameters larger than listed please contact KMS for engineering data and availability.

ENGINEERING DATA

Chemical Compatibility

	ACETAL (POM)	POLYPRO-PYLENE	KYNAR® (PVDF)	VALOX® (PBT)	NYLON	PEEK®	TORLON®	VESPEL®	UHMW-PE
ACIDS WEAK 73 degrees	A	A	A	A	A	A	A	A	A
ACIDS STRONG 73 degrees	U	A	A	L	U	L	L	L	L
ALKALIES, WEAK 73 degrees	A	A	A	L	A	A	L	A	A
ALKALIES, STRONG 73 degrees	U	A	L	A	A	A	L	A	A
HYDROCARBONS	A	A	A	L	A	A	A	A	L
KETONES	A	A	U	L	A	A	A	A	A
ETHERS	A	-	A	-	A	-	A	-	A
ESTERS	A	L	A	A	A	A	A	-	A
ALCOHOLS	A	A	L	L	A	-	L	-	A

A = ACCEPTABLE
L = LIMITED
U = UNACCEPTABLE
- = NO RATING

This chart is for reference only, KMS recommends testing in actual chemical concentrations to be encountered. Information presented is believed to be accurate at the time of publication but is subject to change without notice.

ENGINEERING DATA

316 Stainless Race Radial Ball Bearings
Tolerances for Mounting & Interference Fits

BORE		
MINIMUM	**MAXIMUM**	**GENERAL TOLERANCE**
0.000"	1.250"	+.003", -.0"

WIDTH	
MAXIMUM DIAMETER	**GERNERAL TOLERANCE**
2.500"	+/- .005"

OUTSIDE DIAMETER		
MINIMUM	**MAXIMUM**	**GENERAL TOLERANCE**
0.000"	2.500"	+.0", -.003"

DIAMETRIC CLEARANCE "radial play"		
BORE (Maximum)	**OUTSIDE DIAMETER (Maximum)**	**GENERAL TOLERANCE**
0.250"	1.000"	free turning to .007"
0.500"	2.000"	free turning to .008"
0.750"	2.500"	free turning to .010"

MOUNTING PRACTICE

316 STAINLESS RING CHARACTERISTICS

AISI 316 stainless steel is a non hardenable food and medical grade stainless. KMS 316 stainless raceways are semi-precision machined rings from solid rod stock. This practice produces true running concentric bearings. Due to the tolerance range of a semi-precision bearing ring, it is recommended that the customer measure the actual bearing to be used for calculating shaft and housing fits.

INTERFERENCE FITS

A typical application would be a press fit to one ring and a slip fit to the other. The maximum press fit would be .001 and a slip fit would be maximum of a line to line fit to the actual dimension. For example, using the above criteria, a bearing with a 1/2" bore and a outside diameter of 1-3/8" would have a bore tolerance of +.003, -.0 and an outside diameter tolerance of +.0, -.003. The actual dimension of the inner ring is .501 and the outer ring is 1.374. To achieve a slip fit on the inner ring the shaft would have to be .500 to .501 and a press fit to the outer ring would require the housing to be 1.374 to 1.373.

NOTE: These are general manufacturing tolerances, They may vary depending on bearing design.

ENGINEERING DATA

Corrosion Resistance for 316 Stainless

	MATERIALS:	316 STAINLESS	440C STAINLESS*	CHROME STEEL*
WATER	Stream	A	B	--
	Domestic Water	A	B	D
	Sea Water	A	--	D
FOOD	Food Products	A	B	--
	Fruit & Veg. Juices	A	B	--
	Dairy Products	A	C	--
LIQUOR	Hot Sulfite	B	--	--
	Dye	D	D	--
DILUTE ACIDS	HCL	--	--	--
	H_2SO_4	B	--	--
	HNO_2	A	A	--
	Phosphoric	B	--	--
ACIDS	H_2SO_4	A	--	--
	HNO_2	--	--	--
	Phosphoric	A	--	--
	Industrial Atmospheres	B	B	C
	Salt Air	A	C	C
	Ammonia	A	C	B
	Alkaline Salts	B	B	C

A = excellent, B = good, C = fair, D = poor, -- = Will not withstand conditions

* Please note that KMS does not manufacture bearings made from either 440c or Chrome steel. They are listed for comparison to 316 stainless only.

MATERIAL COMPOSITION* 316 STAINLESS

Carbon.....Maximum of 0.080%
Manganese.....Maximum of 2.00%
Phosphorus .....Maximum of 0.045%
Sulfur .....Maximum of 0.030%
Silicon.....Maximum of 1.00%
Chromium.....16.00% to 18.00%

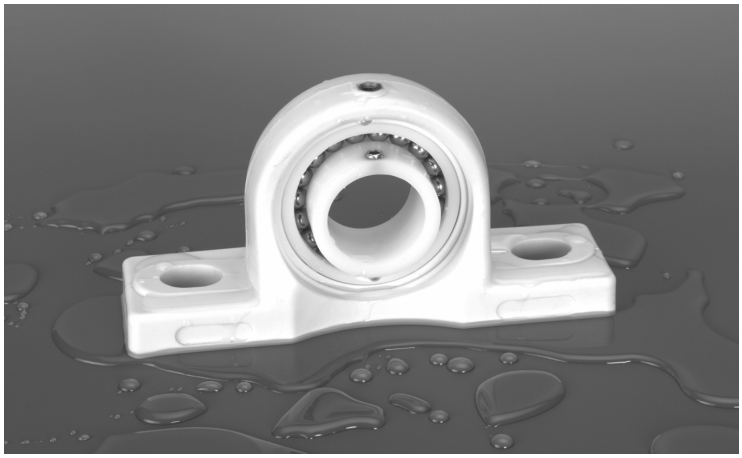
Nickel.....10.00% to 14.00%
Nitrogen.....Maximum of 0.010%
Molybdenum.....2.00% to 3.00%

*ref per ASTM A276-89a

Material Conversion

	(AGENCY)				
Material	AISI	Federal	ASTM	UNS	AMS
316 Stainless	Type 316	QQ-S-763E	A276-89a	S31603	5648G

ENGINEERING DATA - PBT PLASTIC BLOCKS



- **Bakery Equipment**
- **Wash Down Conveyor**
- **Car Washes**
- **Marine**
- **Farming Equipment**
- **Swimming Pool Equipment**
- **Food Processing**

PROPERTIES OF PBT

Properties	Unit	Test Method	
Mechanical			-
Tensile strength at yield	N/mm^2	ASTM D 638	115
at break	N/mm^2	ASTM D 638	-
Elongation at yield	%	ASTM D 638	3
at break	%	ASTM D 638	
Tensile modulus	N/mm^2	ASTM D 638	8000
Flexural yield strength	N/mm^2	ASTM D 790	-
Flexural yield strength	N/mm^2	ASTM D 790	170
Flexural modulus	N/mm^2	ASTM D 790	7000
Notched impact strength Charpy	K/m^2	DIN 53453	12
Notched impact strength IZOD	J/m	ASTM D 256	100
Hardness, H358/10	N/mm^2	DIN 53456	104
H358/60	N/mm^2	DIN 53456	101
Rockwell	—	ASTM D 785	L102
Thermal			
Oxygen index*	%	ASTM D 2863	19
Flame retardancy*	—	UL stand 94	94HB
(1/6 mm thickness)			
Heat resistance: Vicat, method B	°C	ASTM D 1525	210-215
Thermal conductivity	W/m^2C	ASTM C 177	0.19
Mould shrinkage flow	%	ASTM D 1299	0.4-0.6
Cross flow direction	%	ASTM D 1299	0.6-0.8
Physical	—		
Water absorption		ASTM D 570	
24 Hrs, 23°C	%		0.06

CHEMICAL RESISTANCE OF PBT

Chemical Media	°C	Immulation % Days	% Retention of strength
Acids			
10% Hydrochloric	23	30	89
	23	90	85
	23	180	82
10% Sulfuric	23	30	97
	23	90	94
	23	180	90
35% Sulfuric (battery)	23	30	97
	23	180	96
	66	30	84
	66	180	35
10% Acetic	23	30	89
	23	180	88
Bases			
5% Potassium Hydroxide	23	30	83
	23	90	10
10% Sodium Hydroxide	23	30	2
	23	180	-
10% Ammonium Hydroxide	23	30	90
	23	90	87
	23	180	58
Organic Solvents			
Ethyl Alcohol	23	30	99
	23	180	94
Methyl Alcohol	23	30	91
	23	180	76
Isopropyl-Alcohol	23	30	100
	23	180	100
Isopropyl-Alcohol & Water (50:50)	23	30	93
	23	180	96
Turpentine	23	180	92
	23	30	66
Acetone	23	180	63
	23	30	90