Precision Bearing Solutions for Industrial Applications

SCHAEFFLER GROUP
AEROSPACE

Material Capabilities

Material	AMS	Application
52100	6440	Standard offering for Industrial applications.
M50	6491	High Temperature Aerospace to 900F.
M62	N/A	Primarily used to enable high wear resistance and high temperature. Commonly referred to as REX 20 or VimCru.
AISI 440C	5630	Moderately corrosive, dry environments.
M50NIL	6278	Primary advantage over M50 Vim-Var is its relatively high facture toughness Hot Hardness to 900F, carburizing grade of M50, suitable for thin sections of complex geometry.
Cronidur 30	5898	Primarily for bearing components and bearings, requiring resistance to both corrosion & wear with hardness not lower than 58HRc after hardening & tempering. Hot hardness to 600F, Harsh fluid pumps-super stainless, 3X fatigue life. (Schaeffler recommended replacement for BG42)
Ceramic Balls		60% lighter than steel balls, offer lower vibration levels, and increased fatigue life.
Duplex Hardening		Secondary hardening process for all M50 variants, hardness to RC78, superior wear resistant.
Stellite		Primarily used for extreme thermal environments and chemical processing.
Silver		Anti-Gall compound for high speed mating components. Used to plate high speed retainers or high temperature balls.
Dry Lube		Zero outgas properties for flow meters & optics. Examples of dry lube would be MoS2 and bartemp cage.
Copper		Anti-Fret compound for sliding & mating fits.
TiN (Titanium Nitride)		Used to harden and protect cutting and sliding surfaces for decorative purposes due to its gold appearance. It has a non-toxic exterior for medical implants.
TiC (Titanium Carbide)		Ceramic type coating on 440C core ball. Prevents adhesive wear between balls and races. Good corrosion resistance. Thermal expansion and elasticity are identical to core ball. Low noise/vibration.

Manufacturing Capabilities

The Barden Corporation possesses capabilities far beyond the realm of traditional, standard catalog product. Our ability to provide NDT (non destructive testing), ceramic balls and custom materials gives you solutions and opportunities that previously may not have been available. These capabilities can be passed on to your customers resulting in a higher impact to safety, decreased downtime and cost.

CAPABILITY

- Complete manufacture – ball bearings & precision cylindrical components
- Miniature & Instrument to industrial deep groove, and angular contact sizes.
- Specialty ball plant
- Make to print & design capability.

HEAT TREATMENT

- Vacuum, Atmospheric, Plasma Nitride, Carburization
- Standard, Custom & Contract
- Comprehensive metallurgical services

SPECIAL PROCESSES

- DFARS Compliant capable for U.S. government and military requirements
- Weld a wide variety of different materials using unique joints and TiG, laser, EB, friction methods
- Design and manufacture sub-assemblies and integrated bearing solutions.
- Complete refurbishment work in our licensed FAA repair station for any industry where regulatory approvals are high or where traceability of the bearings is required.

NON DESTRUCTIVE TESTING

- NADCAP Accreditation
- Eddy Current, Barkhausen, Magnetic Particle, Fluorescent Penetrant
- Proprietary Ultrasonic inspection for ceramic balls.
- Testing can identify flaws and imperfections in bearing components that otherwise may not be detected

ASSEMBLY & TEST

- Assemble, test, and package all components in clean room environments as low as class 100 as appropriate
- Functionally inspect bearings for vibration, torque (starting and running), and high speed performance
- Specialty lubricants – barrier coating, vacuum impregnation, centrifuge, high temp., cryogenic, low outgas and food grade.

GRINDING & SUPER FINISHING

- Short runs averaging 200p lot sizes to serial manufacture
- Shaft capability - grinding on centers
- Provide high accuracy shaft for precision bearing fit
- ABEC 7 and 9+ precision
- Finishes achieved: .000010 inches roundness with surfaces finishes less than 1 AA

Manufacturing Capabilities

Together with the Schaeffler Group companies, Barden is able to provide a wide range of products and services. Barden products have provided solutions for industrial applications including heavy industries, power transmission, medical products, power gen, oil and gas drilling, high speed motor spindles, and other consumer products.

- Engineered product solutions and custom manufacturing
- Precision manufacturing capabilities among the best in the world
- Aerospace developed technologies and materials to address applications that require bearings to operate with high reliability, within heavily contaminated or corrosive environments, withstand high temperatures and perform at very high speeds
- Total value for applications where no other products perform

High Reliability
Non destructive evaluations, ceramic balls, custom materials and special design

High impact to safety, down time, cost

- ❏ Aerospace / space
- ❏ Drilling
- ❏ Nuclear
- ❏ Wind
- ❏ Industrial
- ❏ Oil & gas
- ❏ Semiconductor
- ❏ Food Processing

Contaminated Environments
M50 & M50 NiL, duplex hardening, Cronidur 30, M62

Applications using grease, oil, poor lubricants, etc.

- ❏ Food processing
- ❏ Oil & gas drilling
- ❏ Medical Products
- ❏ All types

Corrosive Environments
Cronidur 30, 440C, stainless cages, ceramic balls

Water, LOX, hydraulic fluids, etc.

- ❏ Aerospace
- ❏ Turbo-pumps
- ❏ Drilling
- ❏ Fluid Pumps
- ❏ Hydraulic devices
- ❏ Food processing
- ❏ Semiconductor

High Temperatures
M62, M50, Cronidur 30, BG42, Titanium, etc.

Temperatures reaching over 800 degrees C

- ❏ Gas turbine engines
- ❏ Medical products
- ❏ High speed motors
- ❏ Turbo-charges
- ❏ Oil & gas drilling

High Speeds
Ceramic balls, high accuracy, custom preload

Over 300k rpm

- ❏ Turbine engines
- ❏ High speed motors, spindles
- ❏ Turbo-charges and turbo machinery
- ❏ Medical equipment

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