

Barden Space Capabilities



The Barden Corporation

A Member of the Schaeffler Group

...Insist on Precision

The Barden Corporation has been dedicated to providing extremely precise, reliable ball bearings and components to the space industry for over 50 years.

Quality Certifications:

ISO 9001, ISO 14001, NADCAP, AS7114 for NDT, AS7108 for Chemical Processing (Nital Etch), FAA Part 145 Repair Station

Material Capabilities

Ring Materials:

- 52100
- 440C
- M50
- Cronidur 30
- BG-42
- VimCru 20
- T5
- TDC plated steel

Ball Materials:

- Any steel material
- Ceramic
- Coated Balls

Cage Materials:

- Stainless steel
- Phenolic
- Custom Phenolic
- Nylon
- Meldin
- Nysorb
- PEEK
- Vespel®
- BarTemp®
- Armalon
- Bronze (80-10-10)
- Silicon iron bronze
- Silver plated steel



BARDEN FACILITY:

- 18.5 acres
- 225,000 sq ft
- 20,000 Square feet of cleanroom
- Realtime monitoring of cleanliness using sniffer tubes
- Class 10,000 with class 1000 and 100 work benches



Dedicated Spaceflight Cleanroom Area and personnel.

Space Material Candidates

Ceramic Hybrid

- Reduce internal forces at high speed
- Ensure proper lubrication
- Improve bearing operating performance
- Reduce wear and vibration
- Extend lubricant life

Nysorb Porous Retainers

- Manufactured at Barden including material
- Sintered Nylon base material
- Holds up to 25% volume of oil
- Temperature range of -400 to +600F

TiC (Titanium Carbide) Coated Balls

- Ceramic type coating on 440C core ball
- Coating Thickness - ~.000080 inches
- Coating Hardness - HV 3500 (~150 Rc)
- Surface Finish - ~.0000005 inches AA
- Temperature Range - ~-350 to ~450 deg. F

VimCru 20 Tool Steel

- Vacuum melted, cobalt free super high speed tool steel.
- Fine grain structure and high hardness make it an excellent material for CMGs

Cronidur 30

- Hardenable > 58 HRC
- Corrosion resistant
- Acceptable hot hardness
- High contamination resistance
- Low sensitivity to mixed lubrication
- Fine grain structure~similar to 52100 steel.

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TYPICAL SPACEFLIGHT REQUIREMENTS INCLUDE:

- Full lot traceability
- DFARS compliance, if necessary
- ITAR regulations
- Various levels of configuration and process control
- First article or 100% dimensional documentation
- Performance characteristics testing
- Customer source inspection available

CAPABILITY

- Complete manufacture – Precision ABEC 9 ball bearings & precision cylindrical components
- Wide range of sizes (Outer diameter: less than 0.25 inches to approx. 12 inches)
- Specialty ball plant within Barden organization
- Make to print & design capability

NON DESTRUCTIVE TESTING

- NADCAP Accreditation
- Eddy Current, Barkhausen, Magnetic Particle, Fluorescent Penetrant
- Ultrasonic inspection for ceramic balls.

ASSEMBLY & TEST

- Assemble, test, and package all components in clean room environments as low as class 100.
- Functional testing for vibration, torque (starting and running), and high speed performance
- Specialty lubricants – barrier coating, vacuum impregnation, centrifuge, high temp., cryogenic, and low outgas
- State of the art cleaning technologies



For consultation or more information contact:
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Cronidur 30~ in the turbopumps of the Space Shuttle

HEAT TREATMENT

- Vacuum, Atmospheric
- Standard, Custom & Contract
- Comprehensive metallurgical services

GRINDING & SUPER FINISHING

- Short runs averaging 20p lot sizes.
- Shaft capability - grinding on centers (Length less than 0.25 to approx. 32in) (Outer diameters less than 0.25 to approx. 12 in)
- ABEC 7 and 9+ precision
- Finishes achieved: .000010 inches roundness with surfaces finishes less than 1 AA

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 provide kits