



BEARING STEELS



Clean Steel

State of the Art Process Technology

Bearing Steels are special class of low alloy steels, typically with 1% Carbon and 1.4% Chromium. In special cases, Manganese and Molybdenum are also added. These steels find applications in automobiles, railways, earth moving, defence, aircraft, power generations, compressor and other moving machinery parts. In view of the continuous fatigue strain during service, this steel and its components demands high level of process discipline during manufacturing.

The components for these applications are manufactured either through hot forging route or through Spheroidized annealing followed by cold forging route. At Sunflag, all the necessary facilities for manufacturing and testing of bearing steel grades have been established. Various controls are exercised during manufacturing, right from selection of raw materials and ferro alloys required to meet the stringent quality parameter of various customer.

- **Fatigue Life**
- **Uniform heat treatment response**
- **Compact Structure with uniform grain flow and fine grain size imparting high impact toughness**

Inspection activities before dispatch are designed to address the verification of all the quality requirements of bearing steels. Any deviation observed during production process and quality testing is recorded and analysed for taking suitable corrective and preventive actions to meet the quality requirements of this critical steel grade.



SIZES AND CONDITION OF SUPPLY

No.	SIZE (mm)	SHAPE	SUPPLY CONDITION
1	15 to 160 dia.	Straight Length Round	Hot Rolled, Annealed
2	12 to 60 dia.	Straight Length Round	Stress Relief / Spherodised Annealed
3	10 to 56 dia.	Straight Length Round	Spherodised Annealed, Peeled and Ground
4	5.5 to 38 dia.	Wire Rod Rounds	Spherodised Annealed

More shapes, sizes with combination of different supply condition can be developed as per specific requirement by customers

INTERNATIONAL SPECIFICATIONS OF BALL BEARING STEELS

No.	Country	Grade		Chemistry					
				C	Mn	Si	P	S	Cr
1	U.S.A.	SAE 52100	Min	0.98	0.25	0.15	-	-	1.30
			Max	1.10	0.45	0.30	0.025	0.025	1.60
2	Germany	100Cr6	Min	0.95	0.25	0.15	-	-	1.30
			Max	1.10	0.45	0.30	0.030	0.030	1.60
3	India	103Cr2	Min	0.95	0.25	0.15	-	-	1.40
			Max	1.10	0.45	0.35	0.025	0.025	1.60
4	Japan	SUJ 2	Min	0.95	0.50	0.15	-	-	1.30
			Max	1.10	Max	0.35	0.025	0.025	1.60
5	Britain	EN31	Min	0.90	0.30	0.10	-	-	1.00
			Max	1.20	0.75	0.35	0.050	0.050	1.60

CERTIFICATION OF QUALITY

Following important quality features are tested and certified on all Bearing heats made at Sunflag.

• Chemistry	As per international standards with low tramp levels (low titanium)
• Gases	O ₂ , N ₂ and H ₂
• Internal Soundness	As per ASTM E-381
• Dimensional Tolerances	As per IS3739: Grade 1
• Decarburization Level	Less than 1% of diameter
• Surface quality	100% surface of bar inspected through automatic MFLT / MPI
• Non – Metallic Inclusions	As per ASTM E45 A and B: 1.0 (max), C: 0.0, D: 0.5 (max)
• Microstructure (Banding)	As per SEP-1520 DIN Standard Chart

Any other special testing requirement found desirable by the customer can be satisfied



BIS Approved
NABL Accredited Chem & Mech Labs
ISO 9001 & IATF 16949 Certified by UL DQS
ISO 14001 & ISO 45001 Certified by TUV Nord
AD 2000 Merkblatt WO /PED Certified by TUV Nord

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