



BEARING INDUSTRY

Tubes

At BERAL we have invested in sophisticated facilities and developed specialized processes for the supply of bearing tubes. Apart from supplying tubes from standard bearing grade steels such as SAE 52100 and DIN 100 Cr6

The steel used for the manufacture of bearing tubes is produced exclusively through the electric arc furnace route, is ladle refined and is vacuum degassed. As a result, the steel is extremely clean ensuring a high fatigue life for the bearing.

BERAL supplies bearing tubes to the major bearing manufacturers throughout the world.

Tube Tolerances

Oxygen Content

Oxygen content < 15ppm. On specific request oxygen content < 10 ppm can be offered.

Inclusion Rating

The tubes are tested to ensure that the steel is free from injurious imperfections such as piping, cracks, porosity, segregation or injurious inclusions as referred to in ASTM-381. The inclusion rating is evaluated in accordance with Plate III of ASTM E-45 ensuring that the length of any inclusion does not exceed 0.65 mm and that the worst field of each inclusion type from each specimen does not exceed the limits given below.

Inclusion Rating Worst Field

A	B	C	D	Type
2.0	1.5	-	0.5	Thick
1.5	0.5	-	0.5	Thin

Heat Treatment / Microstructure

The tubes are spheroidized and annealed to ensure that the microstructure consists of spheroidized cementite in a ferrite matrix with carbide size conforming to Plates 2 to 4 as per IS 4398-1972

and CG 2.1 - 2.3 as per SEP 1520-78. We ensure that there is no carbide network and the structure is free from segregation of carbides in either streak or cluster form.

Hardness

Condition	Brinell Hardness
Hot finished, spheroidized	230 BHN max.
Hot finish, spheroidzed & peeled	230 BHN max.
Hot finished, spheroidzed & stress relieved	207 BHN max.
Spheroidized, cold pilgered / roto rolled	250-320 BHN

Decarburisation Depth

Hot finished: 0.50 mm max. per side

Cold finished: 0.20 mm max. per side

Dimensional Tolerances

Description	Size Range	Tolerance	
		OD (mm)	Wall t (%)
Hot rolled	38 - 75	+/- 0.4	+/- 5%
	> 75 - 100	+/- 0.5	+/- 5%
	> 100 - 125	+/- 0.6	+/- 5%
	> 125 - 200	+/- 1%	+/- 10%
Hot rolled and Peeled	> 36 - 120	+/- 0.40 - 0.00	+/- 10%
Cold pilgered / Roto rolled	19 - 80	+ 0.30 -0.00	+/- 5%
	> 80 - 91	+0.40 -0.00	+/- 5%

Eccentricity	
Hot finished & peeled	10% of wall thickness
All other tubes	OD < 125mm: 5% of wall thickness
	OD > 125mm: 10% of wall thickness

Straightness	
Cold pilgered / roto-rolled	1 : 1000
Hot finished / hot finished & peeled	1 : 600

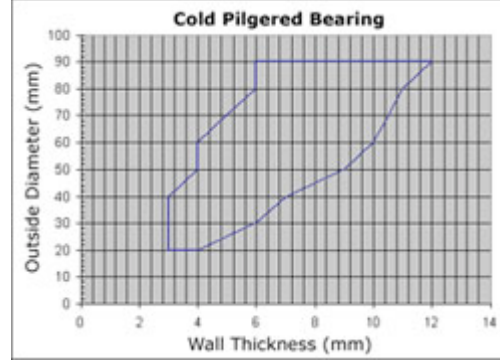
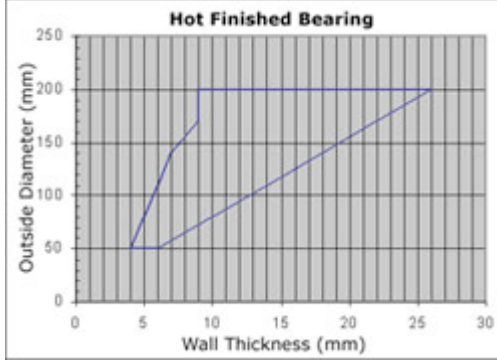
Lengths

Tubes are generally supplied in random lengths of 3 - 4.5 mts with 10% up to 2mts.

End Preparation

Square cut & one end chamfered.

Size Range



Rings

ISMT Limited is one of the few companies in the world to offer just-in-time delivery of hardened ring sets for the manufacture of bearing races, bearing bushes and sleeves for linear bearings. These rings are manufactured through a process of cold ring rolling (on Bad Deuben machines) and / or machining.



Applications

- Inner and outer races (with or without sealing groove for ball bearings)
- Angular contact ball bearings
- Needle roller bearings
- Cylindrical / spherical roller bearings
- Self aligning bearings

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