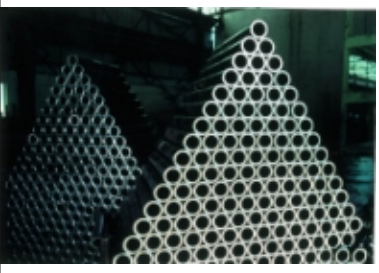
Tubes and Parts for the BEARING INDUSTRY



Tubes

At ISMT we have invested in sophisticated facilities and developed specialized process for the manucacture of bearing tubes. Apart form producing tubes from standard bearing grade steels such as SAE 52100, SAE 8620 and DIN 100Cr6, ISMT also produces tubes from tailor made steels made available by Indian Seamless Steels and Alloys Limited (ISSAL), a group company that specializes in the manufacture of alloy steels.

The steel used for the manufacture of bearing tubesis 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 fatighue life for the bearing.

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

Tube Tolerance

Oxygen Content

Oxygen content < 15 ppm. 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, segregations or injurious inclusions as referred to in ASTM-E381. 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 any 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 4389 -1972 and 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, spheroidized & peeled	230 BHN max.
Hot finished, spheroidized & stress relieved	207 BHN max.
Spheroidized, cold pelgered / toto 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	Tolerances	
	OD (mm)	OD (mm)	Wall t (mm)
Hot rolled	38-75 > 75 -100 > 100 - 125 > 125 - 273	+/- 0.40 +/- 0.50 +/- 0.60 +/- 1%	+/- 5% +/- 5% +/- 5% +/- 10%
Hot rolled and peeled	> 36 -120	+/- 0.40 - 0.00	+/- 10%
Cold pilgered / Roto Rolled	19 –80 > 80 - 91	+ 0.30 - 0.00 + 0.40 - 0.00	+/- 5% +/- 5%

** Note: Tighter tolerances can be offered on specific request.

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

Straightness	
Cold pilgered / roto Rolled	1:1000
Hot finished / hot finished and peeled	1:600

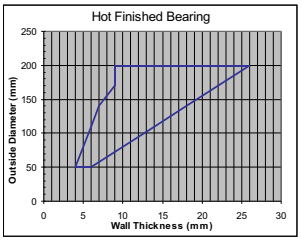
Lengths

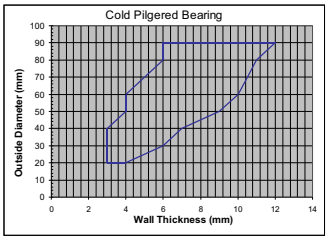
Tubes are generally supplied in random lengths of 3 - 4.5 mts. With 10% up to 2 mts.

End Preparation

Square cut and one end chamfered.

Size Range





Rings

ISMT is one of the few companies in the world of 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