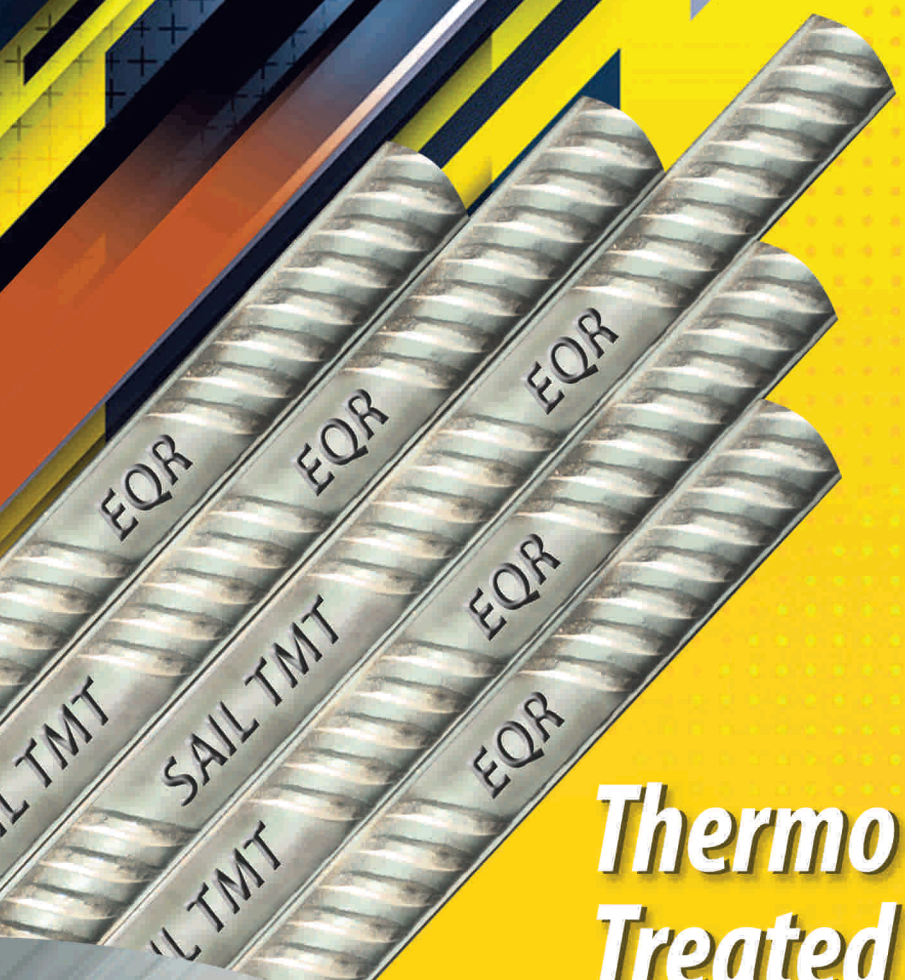
सेल SAIL



Thermo Mechanically Treated Bars (TMT) from SAIL

Thermo-mechanically Treated Bars
(TMT Reinforcement Bars)

Rationalised sizes

Nominal Diameter (mm)	Weight (kg/m)	Plant	Mill
6	0.222	ISP	WRM
8	0.395	BSP / ISP	WRM & BRM / WRM & BM
10	0.617	BSP / ISP	WRM & BRM / WRM & BM
12	0.888	BSP / ISP	WRM & BRM / BM
16	1.58	BSP / ISP	BRM / BM
20	2.47	BSP / ISP / DSP	BRM / BM / MM
22	2.98	ISP / DSP	BM / MM
25	3.85	BSP / ISP / DSP	BRM & MM / BM / MM
28	4.83	BSP / ISP	BRM & MM / BM
32	6.31	BSP / ISP	BRM & MM / BM
36	7.99	BSP / ISP	BRM & MM / BM
40	9.85	BSP / ISP	BRM & MM / BM

6 / 8 / 10 mm can also be supplied in coil form

Supplied in standard length of 12 meters, however specific lengths can be supplied with mutual agreement.

20 mm can also be supplied for Roof-Bolt applications

Abbreviations used : WRM - Wire Rod Mill, MM - Merchant Mill, BM - Bar Mill, BRM - Bar & Rod Mill, ISP - IISCO Steel Plant, Burnpur, West Bengal, DSP - Durgapur Steel Plant, Durgapur, West Bengal, BSP - Bhilai Steel Plant, Bhilai, Chattisgarh

Common Grades: IS 1786 : 2008.

Other Grades which can be supplied : BS4449 Grade B500B ,CS2 Grade 500B, S560 Grade B500B, ASTM-A615 Grade 40 (for TMT Wire Rods) and ASTM-A 615 Grade 40/Grade 60 (for TMT bars), if sufficient orders are there.

Chemical Composition SAIL TMT (IS 1786 : 2008)

Grade	% C max	% S max	% P max	S+P max
Fe 500D EQR	0.25	0.040	0.040	0.075
Fe 550D EQR	0.25	0.040	0.040	0.075
Fe 600	0.30	0.040	0.040	0.075
Fe 500D HCR*	0.25	0.040	0.040	0.075
Fe 550D HCR*	0.25	0.040	0.040	0.075
Fe 600 HCR*	0.30	0.040	0.040	0.075
Fe 500S	0.25	0.040	0.040	0.075

Carbon Equivalent max.

- Tolerances on Length, Nominal Mass and Carbon Equivalent as per IS 1786 : 2008

* In case of Cu-Cr grade HCR TMT, Total Cu+Cr is 0.75% min.

When Micro Alloying Elements like Nb, V, Ti, B added, shall be 0.3% max. either singly or in combine.

Mechanical Properties of SAIL TMT (IS 1786 : 2008 Amendment-3)

Grade	Yield Strength (MPa)	Ultimate Tensile Strength min. (MPa)	UTS/YS* min.	% Elongation min.	% Uniform Elongation# min
Fe 500D EQR	500 (Min.)	565	1.10	16.0	5.0
Fe 550D EQR	550 (Min.)	600	1.08	14.5	5.0
Fe 600	600 (Min.)	660	1.06	10.0	-
Fe 500D HCR	500 (Min.)	565	1.10	16.0	5.0
Fe 550D HCR	550 (Min.)	600	1.08	14.5	5.0
Fe 600 HCR	600 (Min.)	660	1.06	10.0	-
Fe 500S	500 (Min.) 650 (Max.)	1.25 times YS	1.25	18.0	8.0

Bend and re-bend properties as per IS 1786 : 2008 Amendment-3

With mutual consent

- Packaging & Bundling : ISP -Strapped with wire in bundles of 2.5 to 3.5 tonnes
  DSP- Strapping in bundles of about 5.0 tonnes
  BSP- Strapping in bundles of about 5.0 tonnes

Mechanical Properties of SAIL TMT Rock/Roof Bolt

Grade	Yield Strength (MPa)	Ultimate Tensile Strength min. (MPa)	UTS/YS* min.	% Elongation min.
Fe 600	600	660	1.1	10.0

*UTS/YS refers to ratio of Ultimate Tensile Strength to the 0.2% proof stress or Yield Strength of the test piece.

Applications

Grade	Application	Special Qualities
SAIL TMT EQR	Reinforced Concrete Construction (RCC) in buildings, bridges and other concrete structures. Particularly suitable for earthquake prone zone	It has high ductility (UTS/YS ratio), higher elongation, uniform elongation and narrow range of YS. In addition it has excellent bendability, good weldability, and high fatigue resistance on dynamic loading.
SAIL TMT HCR	RCC Construction exposed to coastal, marine, industrial corrosion or underground environment	In addition to SAIL TMT EQR, it possesses high corrosion resistance properties
SAIL TMT Fe500S	Suitable for high earthquake prone zones particularly Zone -IV and V	It has very high ductility (UTS/YS ratio) , high elongation and high uniform elongation all of which are very much required for high earth quake prone areas
SAIL TMT Rock/ Roofbolt	Underground mine and tunnel roof support, Slope stabilisation in hills and Soil nailing/anchoring	High strength, better toughness and excellent bond properties grouting materials due to its modified rib design.

स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED