

Product Data Sheet

Indus TMT:

Indus is involved in the manufacture of TMT bars. Technological advancements in the last decade saw the emergence of TMT bars. TMT or THERMO MECHANICAL TREATED bars are recognized throughout the world. They are produced, keeping in mind, energy and environmental conservation, which is a radically different approach to producing construction steel.

TMT bars are produced using the world's most advanced technology. The steel bars are at a high temperature when they leave the last rolling stand. They are immediately passed through a pre-determined quantity of a high-pressure water-cooling system. This instant cooling tempers the outer surface and it becomes very hard. The next phase involves cooling at an ambient temperature that allows the hot core to temper the surface through thermal exchange. This results in a unique tempered structure of martensite (outer) and a fine grain bainite-ferrite/pearlite (core) that is stronger, more flexible and far better suited for construction. This process imparts high yield strength to the bars along with better weldability, homogeneity and ductability.

- **Better fatigue strength 100% weldability**
- **Built-in high creep resistance through cold working**
- **Lesser crack width due to high bend**
- **20% higher factor of safety due to hyper resistance to plastic flow**
- **Indus steel also comes in customized lengths and quantity.**

Comparison of INDUS TMT BARS AND ISI standards

MECHANICAL PROPERTIES		IS:1786	INDUS
GRADE		Fe 500	Fe 500
Proof/Yield strength	N/mm ² (Min)	500	545
Tensile strength (8% more than proof strength subject to min. of)	N/mm ² (Min)	545	600
Elongation	% (Min)	12%	15%
Bend Test (No transverse crack at 180° bend around mandrel)	(upto 22mm)	4D	3D
	(above 22mm)	5D	4D
Re Bend Test (No transverse crack at 45° bend and reverse bend through 22.5° around mandrel)	(upto 10mm)	5D	5D
	(above 10mm)	7D	7D

SIZES AND OPTIMUM WEIGHT OF INDUS 500X TMT BARS

SECTION		BIS Standard	INDUS Standard
Size in mm	Area in cm ²	Kg/Mtr	Kg/Mtr
8	0.50	0.367 to 0.423	0.367 to 0.395
10	0.78	0.574 to 0.660	0.574 to 0.610
12	1.13	0.843 to 0.932	0.843 to 0.880
16	2.01	1.500 to 1.658	1.500 to 1.580
20	3.14	2.393 to 2.541	2.393 to 2.460
25	4.19	3.799 to 3.971	3.799 to 3.830

Indus X-Ribbed TMT:

Indus has pioneered in manufacturing a new dimensional TMT rods called Indus X ribbed TMT. These bars give Xtra strength and xtra safety to the construction. Since Indus X ribbed is a premium product, the customer will have the following benefits.

Why should Indus X-Ribbed TMT be used? - Besides the general advantages of TMT rods, INDUS X Ribbed TMT rods have the following advantages.

A) Xtra Bonding -The unique pattern of X – ribbed provide more ribbed area for concrete mixture to bond with the steel rod, enhancing the strength of the buildings.

B) Xtra Elongation - Indus X ribbed rods have the Xtra benefit because of higher **ductability** which will suit any kind of construction.

C) Xtra Savings- The weight of the rods are maintained at the optimum range of ISI standards which gives savings around Rs 700/- per tonne.

D) Xtra Safety - The added strength (**Proof strength and Ultimate Tensile strength**) to the steel rods helps in more safety for the buildings.

E) Xtra Life - The Xtra Intrinsic Corrosion Resistance property of these bars gives longer life to the structure.

GENERAL DATA					
Dia. (mm)	Area (cm ²)	Nominal			Nominal Length (meter per MT) (approx.)
		Minimum	Normal	Maximum	
6	0.28	0.206	0.222	0.238	4500
7	0.38	0.281	0.302	0.323	3300
8	0.50	0.367	0.395	0.423	2500
10	0.78	0.574	0.617	0.660	1600
12	1.13	0.843	0.888	0.932	1100
16	2.01	1.500	1.579	1.658	630
20	3.14	2.393	2.467	2.541	400
22	3.80	2.890	2.985	3.074	330
25	4.91	3.739	3.855	3.971	260
28	6.16	4.691	4.836	4.981	200
32	8.04	6.127	6.316	6.506	155

Product Details:

Indus is constantly updating the technological advancements happening in the industry and is one of the first manufacturers to introduce the latest products to the customers. The emergence of **Thermo Mechanically Treated Rods**, in the last decade has given a new dimension of manufacturing of steel. **TMT** rods are recognized throughout the world and are manufactured at Indus Using Advanced Technology

- **GENERAL DATA**
- **MECHANICAL PROPERTIES (FE – 415)**
- **CHEMICAL COMPOSITION**
- **TMT - MECHANICAL PROPERTIES (Fe-415) & CHEMICAL COMPOSITION TMT**

MECHANICAL PROPERTIES (Fe-500)	
0.2% Proof Stress/Yield Stress	500 N/mm ²
Elongation (Guage length 5d)	12% Min.
Tensile Strength	8% More than the actual 0.2% proof stress, subject to a min. of 545 N/mm ²
Bend Test	No transverse crack should be formed after bending through 180° around a mandrel diameter specified below: Bars up to and including 22mm diameter 4d Bars over 22mm diameter 5d
Re-bend Test	No transverse crack should be formed after bending through 45° & reverse bending the same through 22.5°, around the following mandrel diameter. Bars up to and including 10mm diameter 5d Bars over 10mm diameter 7d

Production Process:

Quenching and self-tempering of Indus TMT Rods: Indus products are rolled out of the world's proven nozzle system which is basic even for European "Tempcore" technology. The process involves three stages of Treatment viz., Self tempering and atmospheric cooling.

Stage I:

The first stage consists of a drastic cooling applied to the bar as it leaves the last finishing stand of the rolling mill.

Stage II:

In the second stage the rod leaves the rapid quenching water box and is exposed to air. The heat flux from the still red hot core re-heats the quenched surface by conduction and the martensite formed in the first stage is thus subjected to self-tempering, which ensures adequate ductility while maintaining high yield strength levels.

Stage III:

The third stage occurs on the cooling bed and it consists of a semi-isothermal transformation of the still un-transformed austenite in the core of the rod giving the rod high weldability and flexibility.

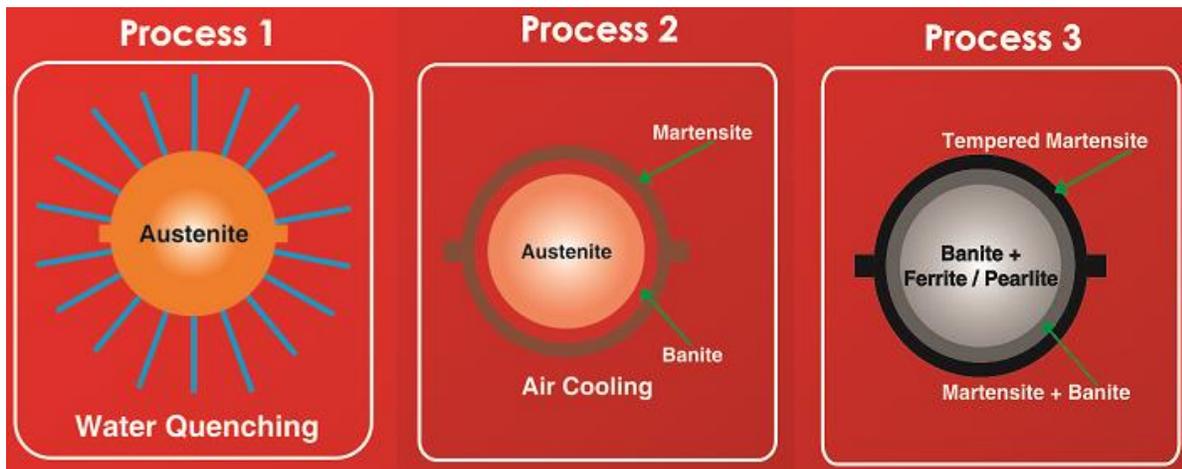
- **ISO 9002 Quality Certified**
- **Customized lengths and quantity**
- **Guaranteed service**
- **Door delivery**

INDUS

500X TMT

www.indussteels.com

An ISO 9001:2008 Company



MECHANICAL PROPERTIES & CHEMICAL COMPOSITION TMT

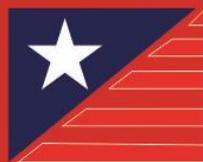
		TMT 415 grade	TMT 500 grade
CHEMISTRY	Carbon	0.30 Max	0.30 Max
	Sulphur	0.060% Max	0.055% Max
	Phosphorous	0.060% Max	0.055% Max
	Manganese	0.40% Min	0.65% Min
PROPERTIES	Yield stress N/mm ²	415 min.	500 min.
	Tensile Strength N/mm ²	485 min.	545 min.
	Elongation	14.5% min	12% min
	Bend upto & inclusive 22mm	3d	4d
	Rebend upto & inclusive 10mm	5d	5d
	Rebend over 10mm	7d	7d

IS 1786-08



CM/L 6410453

ISO 9001 : 2008



PERRY JOHNSON
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