



## High Strength Reinforcement Steel

*Forget the Stone Age steel bars . . . . .  
think about the Space age ones.*

# PREMIUM

PREMIUM  
FERRO ALLOYS  
LIMITED





## About Us

"Premium Ferro Alloys Ltd", an ISO 9001-2008 certified company, has the most modern Steel Melting and Rolling equipments using the latest technologies available in the Industry. The policy of the company is to continuously improve the quality of our product for the satisfaction of our esteemed customers. The company is managed by Industrialists, who are also closely associated with many other projects and are fully dedicated to the stratagems of the company. "Premium Ferro Alloys Ltd" has been selected as a "Model Unit" under the United Nations Development Programme implemented by the Ministry of Steel in India.





# Technology

## -TMT-Thermo Mechanical Treatment

This is a special heat treatment process, wherein the heat treatment is done from the heat of the rolling process itself. Ingots/Billets which are heated in a re-heating furnace, are rolled through a series of rolling stands, and progressively reduced to the final size and shape of the Rebar. As the hot rolled Rebar emerges from the finishing stand of the Bar Mill, it is rapidly cooled. This quenching process by a special water spray system converts the surface layer of the bar to a hardened structure called 'Martensite' while the core remains 'Austenitic'.

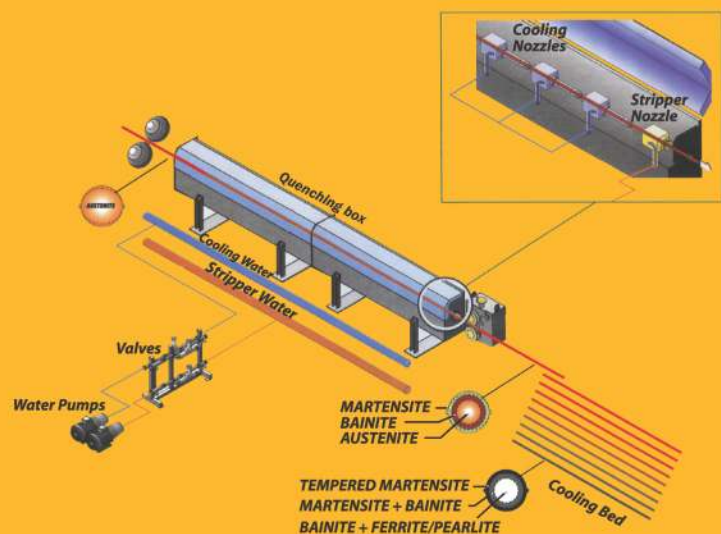
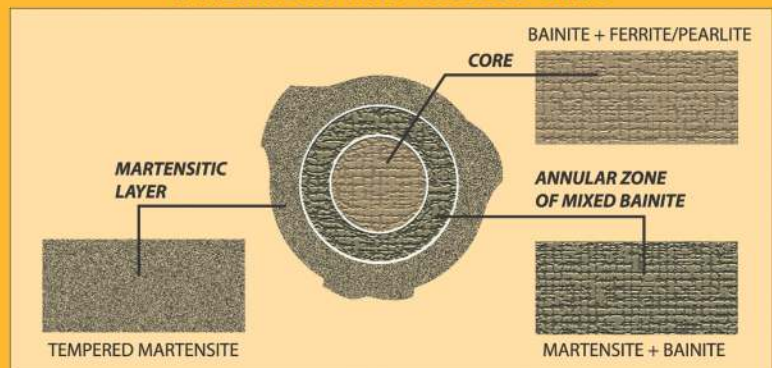


## PREMIUM TMT RIBBED BAR

The second stage of 'tempering' begins as the bar leaves the water cooling section. In this stage, the heat flows from the core to the surface layer, transforming it into a structure called 'Tempered Martensite', while the core continues to stay 'Austenitic'.

The third and final stage takes place on the cooling bed. Here the Austenitic core is transformed to ductile 'Ferrite-Pearlite' core. The finished bar has a micro structure comprising a tough outer layer of 'Tempered Martensite' and a ductile core of 'Ferrite - Pearlite'.

This composite structure gives excellent yield strength to the bar along with superior ductility and weldability.





# Quality

"Premium Ferro Alloys Ltd" has world class Chemical & Physical Laboratories, which apart from testing the product are also used for Research and Development. Well qualified and experienced professionals handle the Quality control efficiently. Each and every batch undergoes very tough Quality control and comes out with very high strength. "**PREMIUM**" Reinforcement Steel is ISI Certified ( IS: 1786-2008 & IS: 2831-2001) by Bureau of Indian Standards. "PREMIUM" Reinforcement Steel is light weight due to negative dimensional tolerance and hence gives overall economy. "PREMIUM" Reinforcement Steel is exported frequently with specifications as per American Standard (ASTM A615) and British Standard (BS 4449) which itself speaks about the superior quality of the product.

**High Strength** 

**Cost Saving**   
\* Upto 25%

**Weld Ability** 

**Light Weight** 

**FIRE**  Resistance  
\* Upto 600°C

**BEND**  Properties

**Superior**   
Bonding with Concrete

**Earthquake**  Resistance

**Corrosion**  Resistance



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## ENVIRONMENT FRIENDLY STEEL

The environment friendly production process employed in our Steel Plant is non-polluting and saves almost 75% energy compared to the traditional production process used by most Steel Mills. This helps in substantial savings of our natural resources and keeps the beauty of our planet intact.

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## READY TO USE STEEL

Ready to use steel is "Premium" Reinforcement bars that have been cut and bent according to customer specific needs.

### Benefits of Ready To Use Steel

- Complete size mix of rebars available on demand
- Cut and bent to exact specifications for quick onsite installation
- Quick response time and just-in-time delivery
- Relieve site congestion and reduce storage cost
- Better onsite logistical planning
- Control material wastage
- Reduce site labour needed



## Mechanical Properties

Grade	IS 1786-2008 Fe-415	PREMIUM Fe-415	IS 1786-2008 Fe-415D	PREMIUM Fe-415D	IS 1786-2008 Fe-415S	PREMIUM Fe-415S	IS 1786-2008 Fe-500	PREMIUM Fe-500	IS 1786-2008 Fe-500D	PREMIUM Fe-500D	IS 1786-2008 Fe-500S	PREMIUM Fe-500S	IS 1786-2008 Fe-550	PREMIUM Fe-550	IS 1786-2008 Fe-550D	PREMIUM Fe-550D
Yield Stress in N/mm <sup>2</sup> (min)	415	465	415	465	415	465	500	530	500	530	500	530	550	580	550	580
Yield Stress in N/mm <sup>2</sup> (max)	N/A	N/A	N/A	N/A	540	510	N/A	N/A	N/A	N/A	625	595	N/A	N/A	N/A	N/A
Tensile Stress in N/mm <sup>2</sup>	485	535	500	545		585	545	600	565	610		690	585	645	600	655
TS/YS Ratio Min	1.1	1.15	1.12	1.17	1.25	1.3	1.08	1.13	1.1	1.15	1.25	1.3	1.06	1.11	1.08	1.13
Elongation in %	14.5	20	18	22	20	22	12	16	16	20	18	22	10	14	14.5	16
Bend test upto and including 20 mm	3D	2D	2D	2D	2D	2D	4D	3D	3D	2D	3D	2D	5D	4D	4D	3D
Re bend test upto and including 10 mm	5D	4D	4D	3D	4D	3D	5D	4D	4D	3D	4D	3D	7D	6D	6D	5D
Re bend test over 10 mm	7D	6D	6D	5D	6D	5D	7D	6D	6D	5D	6D	5D	8D	7D	7D	6D

## Chemical Composition(% Max)


Grade	IS 1786-2008 Fe-415	PREMIUM Fe-415	IS 1786-2008 Fe-415D	PREMIUM Fe-415D	IS 1786-2008 Fe-415S	PREMIUM Fe-415S	IS 1786-2008 Fe-500	PREMIUM Fe-500	IS 1786-2008 Fe-500D	PREMIUM Fe-500D	IS 1786-2008 Fe-500S	PREMIUM Fe-500S	IS 1786-2008 Fe-550	PREMIUM Fe-550	IS 1786-2008 Fe-550D	PREMIUM Fe-550D
Carbon	0.300	0.250	0.250	0.230	0.250	0.230	0.300	0.250	0.250	0.220	0.250	0.220	0.300	0.220	0.250	0.220
Sulphur	0.060	0.050	0.045	0.040	0.045	0.040	0.055	0.050	0.040	0.035	0.040	0.035	0.055	0.045	0.040	0.035
Phosphorus	0.060	0.050	0.045	0.040	0.045	0.040	0.055	0.050	0.040	0.035	0.040	0.035	0.050	0.045	0.040	0.035
Sulphur Phosphorus	0.110	0.095	0.085	0.075	0.085	0.075	0.105	0.095	0.075	0.065	0.075	0.065	0.100	0.085	0.075	0.065

## Weight Table of Rebars

Diameter in mm	Nominal Mass kg / mtr	IS 1786-2008 Min	IS 1786-2008 Max	PREMIUM Min	PREMIUM Max	Nominal Length Mtr / MT
8	0.395	0.367	0.395	0.370	0.385	2700
10	0.617	0.574	0.617	0.580	0.610	1720
12	0.888	0.844	0.888	0.844	0.870	1185
16	1.58	1.501	1.58	1.501	1.540	665
20	2.47	2.39	2.47	2.420	2.450	415

Customer Specific Dia & Length can also be manufactured

## Identification

HSD Bars have embossing of "PREMIUM TMT  " at every meter and every bundle has "PREMIUM" tags







**PREMIUM HIGH STRENGTH REINFORCEMENT STEEL** is the new generation high strength ribbed reinforcement bar. It is manufactured in state of art - of - the - art plant using the latest Thermo Mechanical Treatment technology available worldwide which results in excellent ductility, high bendability, better corrosion resistance, superior weldability and stronger bonding with concrete. **PREMIUM HIGH STRENGTH REINFORCEMENT STEEL** is exported to various countries around the globe.

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