



**Stay 
strong
inside.**

PRINCE TMT[®]

/////// STEEL BARS ///

Stay strong inside.

A dark industrial setting, likely a steel mill, with glowing orange molten metal being processed by machinery. The scene is dimly lit, with the primary light source being the intense heat of the molten metal, which creates bright orange and yellow streaks and pools. The machinery is dark and complex, with various pipes, beams, and structural elements visible. The overall atmosphere is one of intense heat and industrial activity.

**THE PROMISE OF
STRONGER DREAMS AND
HAPPIER HOMES**

THE FACE OF STRENGTH

ABOUT PRINCE TMT

Founded in 1990, Prince Group of Companies has been growing in strength, power and stature, adding steadily to the development of the country through its diversified offerings in steel, food products and retails.

Prince TMT Steels Pvt.Ltd., the prestigious venture of Prince Group is a dedicated facility for manufacturing TMT steel bars using German technology. Prince Alloys Pvt Ltd & Prince Rollings Pvt Ltd - divisions of Prince Group ensure consistency in quality of raw material. The steel bars manufactured here maintains higher side of the standards set by BIS - Bureau of Indian Standards.

Prince TMT has established excellence at every stage of production by adopting advanced technology and expertise, all under the highest ecological standards.

**Prince TMT is committed to strengthening
your dream home with high-quality TMT steel bars.**





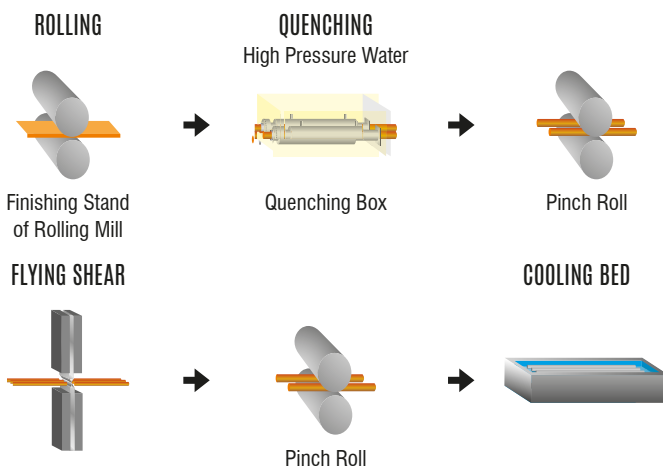
FROM STEEL TO STRENGTH

THE MANUFACTURING PROCESS

TMT TECHNOLOGY

The TMT (Thermo Mechanical Treatment) process is a sophisticated and precise technology that has been developed after years of continuous research. They are extra high strength reinforcement bars.

THE PROCESS



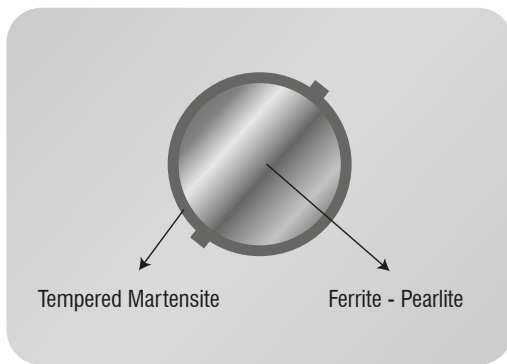


PROCESS ROUTE

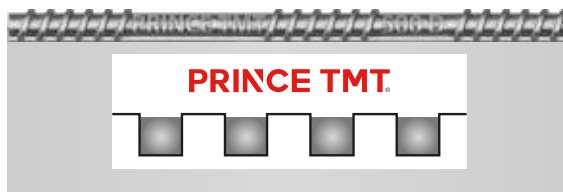
TMT is a special heat treatment process where the bar is subjected to three successive stages:

Quenching - The hot rolled bar leaving the final mill stand is rapidly quenched by a special water spray system. This hardens the surface of the bar to a depth optimised for each section through the formation of the martensitic rim while the core remains hot and austenitic.

Self Tempering - When the bar leaves the quenching box, the core remains hot compared to the surface, allowing heat to flow from the core to the surface, causing tempering of the outer martensitic layer into a structure called 'Tempered Martensite'. The core still remains austenitic at this stage.



Atmospheric Cooling - This takes place on the cooling bed where the austenitic core is transformed into a ductile ferrite-pearlite structure. Thus, the final structure consists of an optimum combination of a strong outer layer (tempered martensite) with a ductile core (ferrite-pearlite). This gives Prince TMT steel bars its unique combination of higher strength and ductility.



Excellent rib pattern for quality bonding.





KNOW THE PRINCE STRENGTH

THE CHEMISTRY, ADVANTAGES AND APPLICATIONS

PHYSICAL PROPERTIES

Element	IS 1786-2008 Fe 500	IS 1786-2008 Fe 500 D	UK BS 4449/2005 500 B	UK BS 4449/2005 500 C	Aus /NZ 500 E	Aus /NZ 500 N	Prince TMT Fe 500 D
YS (N/mm ²)	500 min	500 min	500-650	500	500-600	500-650	520-650
TS (N/mm ²)	545 min	565 min	N. S.	N. S.	N. S.	N.S.	600 min
TS / YS min	1.08	1.10	1.08	1.15 - 1.35	1.15 - 1.40	1.08	1.15
% Elongation	12	16	N.S.	N.S.	N.S.	N.S.	18
% Uniform elongation at max stress	N.S.	5	5	7.5	10	5	6
Applications	General	Seismic	General	Seismic	Seismic	General	Seismic

CHEMICAL PROPERTIES

Element	IS 1786-2008 Fe 500	IS 1786-2008 Fe 500 D	UK BS 4449/2005 500 B	UK BS 4449/2005 500 C	Aus /NZ 500 E	Aus /NZ 500 N	Prince TMT Fe 500 D
% C max	0.30	0.25	0.22	0.22	0.22	0.22	0.25
% C.E. max	0.42	0.42	0.50	0.50	0.44	0.49	0.38
% S max	0.055	0.040	0.050	0.050	0.050	0.050	0.040
% P max	0.055	0.040	0.050	0.050	0.050	0.050	0.040
% (S+P) max	0.105	0.075	N.S.	N.S.	N.S.	N.S.	0.075

MECHANICAL PROPERTIES

Yield Strength (M/mm ²)	520 Min
Tensile strength (N/mm ²)	600 Min
Elongation (%)	18
Ratio of Tensile Strength to Yield Strength	1.15

PRODUCT RANGE

Grades: Fe 500 & Fe 500 D as per IS: 1786 / 2008

Diameters available (in mm):
8, 10, 12, 16, 20, 25

Available in fixed length of 12 metres

Special lengths and straps can also be supplied as per the customer's specifications

STANDARD: As per IS 1786:2008



DIMENSIONAL TOLERANCE

Sizes	IS 1786-2008 Specifications		Prince TMT	
	Positive Tolerances	Negative Tolerances	Positive Tolerances	Negative Tolerances
8, 10 mm	+7%	-7%	0%	-7%
12, 16 mm	+5%	-5%	0%	-5%
20 to 25 mm	+3%	-3%	0%	-3%

SECTIONAL WEIGHT

Diameter (mm)	Nominal Weight (Kg/metre)
8	0.367 - 0.390
10	0.574 - 0.600
12	0.844 - 0.880
16	1.500 - 1.570
20	2.400 - 2.460
25	3.750 - 3.850

Prince TMT bars are comparable to American, British and Australian standard TMT bars.



THE ROLE OF DUCTILITY IN STEEL BARS

The geography of India is divided into 4 seismic zones, II, III, VI and V, in the earthquake zoning map, of which Zone V is the highest and Zone II is the lowest level for seismic activity. Only buildings with high ductility are able to withstand seismic activity and maintain their structure. It is the TMT steel bars used in construction that give buildings this feature.

Compared to normal grade TMT steel bars, Prince TMT- XD (Extra Ductile Steel Bars) are able to withstand the seismic forces of earthquakes, ensuring better strength and security.



APPLICATIONS OF PRINCE TMT STEEL BARS

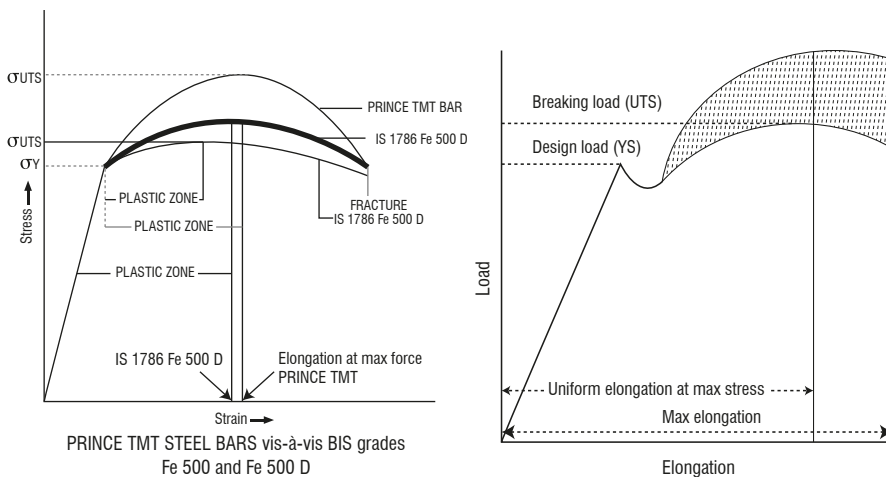
- General purpose concrete reinforcement structures
- Coastal and marine environments which are susceptible to corrosion
- Bridges
- Flyovers
- Dams
- Industrial structures
- High-rise buildings
- Thermal and Hydel power plants

HIGHLIGHTS OF PRINCE TMT STEEL BARS

- Higher strength
- Higher UTS / Yield ratio (enhanced elongation)
- Higher fatigue strength
- Higher resistance to heat
- Higher resistance to corrosion
- Higher seismic resistance
- Excellent weldability
- Excellent ductility

QUALITY IMPLEMENTATION

- Strict adherence to sampling and testing of steel chemistry
- Detailed sampling of finished products
- Advance products through technological upgrades
- Ensuring systematic working procedure
- Strict adherence to BIS standards and procedures





CERTIFICATES

IIT
INDIAN INSTITUTE OF TECHNOLOGY
MADRAS, CHENNAI - 600036
STRUCTURAL ENGINEERING LABORATORY DEPARTMENT OF CIVIL ENGINEERING

REPORT ON TESTING OF REINFORCEMENT STEEL

CLIENT : **PRINCE TMT STEELS PRIVATE LIMITED**

Table 1 - Weight of Steel Specimens

Sl. No.	Dia. mm	Length mm	Actual Weight per m (kg)	Min. Weight per m (kg)	Tolerance Limit (weight per m) kg
1	16	1000	1.581	1.580	1.485
2	16	1000	1.572	1.580	1.485

Table 2 - Yield Strength of steel

Sl. No.	Dia. mm	Cross Sec. Area mm ²	Load at Yield kg	Actual Yield Strength N/mm ²	Minimum Yield Strength N/mm ²
1	16	201.06	10550	523.20	500
2	16	201.06	11000	546.70	500

Table 3 - Ultimate Tensile Strength of steel

Sl. No.	Dia. mm	Cross Sec. Area mm ²	Load at Ultimate kg	Actual Ultimate Strength N/mm ²	Minimum Ultimate Strength N/mm ²
1	16	201.06	13256	660.78	545
2	16	201.06	13769	678.80	545

Table 4 - Percentage of Elongation

Sl. No.	Dia. mm	Initial Gauge Length mm	Final Gauge Length mm	Elongation (%)	Min. Elongation (%)
1	16	80	94.60	17.11	12.00
2	16	80	96.00	21.25	12.00

Table 5 - Chemical Test Report

Dia. mm	Carbon (%)	Sulphur (%)	Phosphorus (%)	Sulphur + Phosphorus (%)
16	0.20	0.027	0.021	0.048

Certificate No. & Date :
CC00153-12014 & 20/10/2016
Date: 01.11.2016

DR. S. NAGESWARA RAO
Department of Civil Engineering
Indian Institute of Technology Madras
Chennai - 600 036, India

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E-mail: bis@bis.org.in
Web: http://www.bis.org.in

ATTACHMENT TO LICENCE NO. CM/L- 497495

CM/L NO	NAME OF THE LICENSEE WITH ADDRESS	PRODUCT	IS NO
497495	PRINCE TMT STEELS (P) LIMITED BLOCK NO.34, KINRA WISE PARK KANJIKODEGAST DISTT : PALAKKAD KERALA-67821	High strength deformed steel bars and wires for concrete reinforcement	IS 1786-2008

ENDORSEMENT NO. 9 Dated: 09.06.2011

The following additional (size/type/grades etc.) has (have) been included in Column(2) of the first schedule and column (1) of the Second Schedule of the Licence alongwith the Standard Mark in Column (1) of First Schedule with effect from Eighteen June Two Thousand and Fifteen.

GROUP OF VALUES	IS	Mean Name to be Used	TMT
Group of strength Grade	5	Fe 500/550	Bars
Group of strength Grade	6	Fe 500/550	Bars

Other terms and conditions of Licence remain the same.

SRI KANAR VEERULA
Sd/B

Government of India
Ministry of Steel, Coal & Light Metals
CHENNAI-600 032

Test report for:
TMT Bar
Report No: 14164166
Date: 28.11.2014
Page: 4 of 4

CHENNAI TESTING CENTRE
MSME TESTING CENTRE
CHENNAI-600 032

Description of Sample / Material: **TMT Bar 25 mm**
Brand Name: **PRINCE**
Testing Equipment Used: **Optical Emission Spectrometer**

TEST RESULTS

Chemical Composition	Specified value as per IS 1786-2008, Fe 500/550	Observed Value
Carbon	0.25 % (Max)	0.17 %
Sulphur	0.045 % (Max)	0.007%
Phosphorus	0.045 % (Max)	0.007%
Sulphur + Phosphorus	0.075 % (Max)	0.008%
Manganese	-	0.74 %
Copper	-	0.023 %
Nickel	-	0.008%
Chromium	-	0.08%
Molybdenum	-	0.002%
Vanadium	-	0.008%
Barium	-	ND
Aluminum	0.012 % (Max)	ND
Carbon Equivalent	0.53 % (Max)	0.31 %

BSI, India
Date of Test: 21.10.2014
Environmental Condition: -
Temperature: 23.5° C
Humidity (RH): 45%
Type of Test: Determination of Chemical Composition
Procedure Followed: S. 8811-1998
Test done by: S. V. Ramamurthy
Checked by: C. Siva Subbaraj

S. V. RAMAMURTHY
Assistant Director (Chem)
Authorized Signatory

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E-mail: bis@bis.org.in
Web: http://www.bis.org.in

ATTACHMENT TO LICENCE NO. CM/L- 6597495

CM/L NO	NAME OF THE LICENSEE WITH ADDRESS	PRODUCT	IS NO
6597495	PRINCE TMT STEELS (P) LIMITED BLOCK NO.34, KINRA WISE PARK KANJIKODEGAST DISTT : PALAKKAD KERALA-67821	HIGH STRENGTH DEFORMED STEEL BARS AND WIRES FOR CONCRETE REINFORCEMENT	IS 1786 : 2008

ENDORSEMENT NO. 8 Dated: 08.12.2014

The following additional (size/type/grades etc.) has (have) been included in Column(2) of the first schedule and column (1) of the Second Schedule of the Licence alongwith the Standard Mark in Column (1) of First Schedule with effect from Fifteenth December Two Thousand and Fourteen

HIGH STRENGTH DEFORMED STEEL BARS AND WIRES FOR CONCRETE REINFORCEMENT

STRENGTH GRADE II	SIZE GROUP II
Fe 500	20mm & 25mm
Fe 500 D & Fe 500S	8mm To 25mm

Other terms and conditions of the licence remain the same.

K. KADIRVEL
(K. KADIRVEL)
SCIENTIST F & HEAD

Government of India
Ministry of Steel, Coal & Light Metals
CHENNAI-600 032

Test Report for:
TMT Bar 25mm dia
Report No: 14164166
Date: 28.11.2014
Page: 3 Total No of Page: 4

CHENNAI TESTING CENTRE
MSME TESTING CENTRE
CHENNAI-600 032

Description of Sample / Material: **TMT Bar 25mm dia (Fe - 500S)**
Specification: -
Testing Equipment Used: **UTM 400 KN, Load gauge (0.5mm), Vickers & Rockwell**
Traceability: **C.764 1776-181708-A-2010, CEI, no: 18-10-2014, C.764 3023 (Edition: 30-09-2014), No:34/17819A, Ed on: 23.08.2014**

CHARACTERIZATION OF TEST

1) **UTM-OUT TEST** Class: 5.3

Age of Specimen	Plain Steel bar	TMT Bar
(1) Tensile strength of concrete cube (Average of 3 samples)	38.80 MPa	38.80 MPa
(2) Average load at a slip of 0.025 mm at the Row end	1400 N	1390 N
(3) Average load at a slip of 0.25 mm at the Row end	1390 N	1380 N
(4) Average maximum load of failure	70,800 N	67,600 N

5) Type of failure: **TMT bars and plain steel bar have been pulled out from the concrete cube without the bars are the concrete cube were broken**

Date of Test: 21-10-2014 to 26-11-2014
Environmental Condition: Ambient
Temperature: Ambient
Humidity: Ambient
Type of Test: Pull-Out Test
Procedure Followed: IS 1786-2008 & IS 2176 (part 1) -1987
Test done by: S. Subramanian

S. V. RAMAMURTHY
Assistant Director (Chem)

Government of India
Ministry of Steel, Coal & Light Metals
CHENNAI-600 032

Test Report for:
TMT Bar
Report No: 14164166
Date: 28.11.2014
Page: 04 of 04

CHENNAI TESTING CENTRE
MSME TESTING CENTRE
CHENNAI-600 032

Description of Sample / Material: **TMT Bar 25 mm Dia**
Brand Name: **PRINCE TMT**
Testing Equipment Used: **Optical Emission Spectrometer**

TEST RESULTS

Chemical Composition	Specified value as per IS 1786-2008, Fe 500/550	Observed Value
Carbon	0.25 % (Max)	0.18 %
Sulphur	0.045 % (Max)	0.028 %
Phosphorus	0.045 % (Max)	0.028 %
Sulphur + Phosphorus	0.075 % (Max)	0.038 %
Manganese	-	0.582 %
Copper	-	ND (DL-0.10%)
Nickel	-	ND (DL-0.10%)
Chromium	-	ND (DL-0.10%)
Molybdenum	-	ND (DL-0.005%)
Vanadium	-	ND (DL-0.005%)
Barium	-	ND
Aluminum	0.012 % (Max)	0.010 %
Carbon Equivalent	0.42 % (Max)	0.26 %

BSI, India
Date of Test: 22.04.2016
Environmental Condition: -
Temperature: 23.5° C
Humidity (RH): 45%
Type of Test: Determination of Chemical Composition
Procedure Followed: S. 8811-1998
Test done by: S. V. Ramamurthy
Checked by: C. Siva Subbaraj

S. V. RAMAMURTHY
Assistant Director (Chem)
Authorized Signatory



XD
Extra Ductile

- ✓ Manufactured at a plant designed exclusively for TMT process
- ✓ Quality is certified by IIT
- ✓ The best range specified by BIS
- ✓ Superior corrosion and seismic resistance properties

Selection of TMT Steel bars are the most important decision in any construction, as once used they cannot be changed.



PRINCE TMT STEELS PVT. LTD.

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