

Strength for  
Long Life



**JINDAL NSPL**

JINDAL NSPL 415, 500, 550 D

415, 500

**550D**



**NALWA STEEL AND POWER LTD**

An O.P. JINDAL GROUP CO.

An ISO 9001:2008 & 14001 : 2004 Certified Company

**BUILDING NEW INDIA**



## Vision

Our vision is to be the most admired steel and power company which will continue to feel concerned about environment, continue value creation, employees care and community welfare.



## Mission

We will facilitate a high performance, seamless and empowered organisation where the potential of all employees is realized to add value to self and the organisation

## Quality Policy

We are committed to achieve total customer satisfaction by providing products and services that meet or exceed customer expectation based on agreed specifications.

All employees of our organisation be committed to excellence & involvement in achieving quality objectives.

This shall be achieved by building quality into all our operations and continually improving the effectiveness of our quality management system to ensure the quality of our products and services and thereby achieve excellence in organisational performances.



## The Group

Founded by the great visionary Shri O.P. Jindal in 1952 the group has emerged as one of the largest Steel producer in the country and has been the symbol of innovativeness, excellence right from its nascent stage. It has taken over the pole position in the modern day steel manufacturing. It is a multi location, multi product group with diverse interest in Mining, Steels, Coal, Diamond, Oil and Power. The group has established its plants at Raigarh, Badbil, Patratu, Angul, The home town at Hissar, Jajpur, JSW at Bellary and Mumbai, Saw Pipes Ltd at Kosi and Mundra in Gujrat and acquired the development rights for 20 Million tonnes of EL Mutun Iron Ore Reserves in Bolivia, South America. This is the largest investment by an Indian company in Latin America and also the largest foreign investment in a single project in Bolivia. The company will invest US \$2.1 billion over next 8 years for mining and setting up of an integrated steel pant with the capacity of 1.7 million tones per annum.

Nalwa Steel And Power Ltd. a blue chip unit of the group Jindal Steel And Power Ltd. is in full fledged production at Raigarh (C.G.). The unit basically a long product manufacturer has pioneered several technological trends in the Indian Steel Industries, be it Sponge Iron Plant through direct reduction process, Power Plant, Steel Melting Shop with Continuous Casting Machine and Ladle Refining Furnace, Rolling Mills of Wire Rods and T.M.T. with Stelmor and Tempcore processes.



NSPL has 6 coal based kilns wherein quality product of sponge iron is being produced with Fe metallic of more than 80% since it uses its own iron ore and coal. Steel making division consists of 4 medium frequency Induction Furnaces of 12MT each. It has LRF facility to refine the metal. We have 3 strands continuous casting machine with the capacity to produce billets of 100mm to 120mm.

The unit's relentless effort in technological up gradation, seamless integration in facilities and processes has enabled it to produce a wide range of grades in diverse shapes like TMT Bars from 8.0mm to 32.0mm in Fe 415, Fe 500, Fe 550 and Fe 415D, Fe



500D, Fe 550D grades; Wire Rod coils of multiple grades conforming to the national and international standards meeting the stringent demands of the discerning customers.

Complemented by the well qualified long experienced, young and vibrant work force with a passion to excel and powered by creativity Nalwa Steel And Power Ltd. is the most sought after steel maker and all set to conquer new horizons by addition of New Blast Furnace, Sintering Plant, Electric Arc Furnace, Continuous Casting, L.R.F., VOD, Light Medium Structural Mill to cater mainly to the transmission towers manufacturing in the country, coal gasification plant. Majority of the billets are being supplied by its sister company JSPL - situated at Raigarh. It is an integrated steel plant of 3.0 MTPA of which expansion is in progress and at the anvil to have 6.0MTPA. The



steel making from where we are getting the billets is equipped with the following facility.

3x100 tons UHP-EBT Electric Arc Furnace with supersonic lance and carbjet facilities have eccentric bottom tapping feature which ensures slag free tapping of steel.

3x100 tons capacity LRF facility is used to carry out the steel refining and desulphurization. It has also facility of RH Degasser.

It has vacuum tank degassing with the capability to generate vacuum level of 1mbar.

There are 3- strand beam blank -cum bloom- cum round caster facility, 6 strands billet cum round caster, single strand slab caster with a max casting width of 2600mm.

NSPLS deep commitment to Customer delight, Quality, health Safety and Environment is reiterated by being accredited with the prestigious ISO 9001-2000, ISO 14001 standards.

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# Certificates



**भारतीय मानक ब्यूरो**  
**BUREAU OF INDIAN STANDARDS**

Bhopal Branch Office

Address: Commercial-cum-office Complex, E-5  
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0755-2423451  
Fax : bplb@bis.org.in  
E-Mail : bplb@bis.org.in  
web : http://www.bis.org.in

ATTACHMENT TO LICENCE NO. CML- 8942294

CML/NO	NAME OF THE LICENSEE WITH THE ADDRESS	NAME OF THE PRODUCT	IS NO.
8942294	M/s Nalwa Steel and Power Limited Taramal, Gharghoda Road, Raigarh - 496001 Chhattisgarh.	High strength deformed steel bars and wires for concrete reinforcement.	IS 1786 : 2008

ENDORSEMENT NO. 4      DATED 1<sup>st</sup> 04, 2010

The following additional varieties 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 1<sup>st</sup> 04, 2010.

High Strength Deformed Steel Bar & wire for concrete Reinforcement, Grades : Fe 41SD, Fe550D  
TMT Bars Size : 8,10,12,16,20,25,28,32mm.

Other terms and conditions of Licence remain the same.

  
**SCIENTIST-'F' & HEAD,**  
**BIS, BHOPAL**  
  
 एच.एल. उपेंदर  
**H. L. UPENDAR**  
 भारतीय मानक ब्यूरो का प्रमुख  
 S. Scientist 'F' (Production) & HEAD  
 भारतीय मानक ब्यूरो, भोपाल  
 (Bureau of Indian Standards, Bhopal)

## Certificate of Registration

By  
AQR International, Inc.  
Ann Arbor, Michigan USA

### NALWA STEEL AND POWER LIMITED

Gharghoda Road, Taramal, Raigarh  
Chhattisgarh, PIN - 496001  
India

Has successfully implemented an Environmental Management System which  
has been registered by AQR International, Inc.  
**ISO 14001:2004**

Scope: The manufacture of sponge iron, billets (MS & LC) & Wire Rod And Generation of Power.  
Related activities include but are not limited to: coal grading, washing, handling, feeding, iron ore  
preparation and feeding, Direct Reduced Iron (DRI) process, packing, sponge iron and scrap feeding,  
melting, heating, rolling, turbine and boiler operation.

IAF Accreditation Scope Category: 07\_25  
NAE Codes Applicable: 0J271, E401

  
  
Accreditation No. 13102007

Certificate Number: 7200  
Initial Registration Date: October 13, 2007  
Registration Period: October 13, 2007 to October 12, 2010  
Revision Date: October 13, 2007

  
Joseph Macko  
President

## ABS Quality Evaluations

### CERTIFICATE OF CONFORMANCE

This is to certify that the Quality Management System of:  
**Nalwa Steel And Power Ltd.**

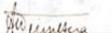
Gharghoda Road, Taramal  
Raigarh, Chhattisgarh  
India

has been assessed by ABS Quality Evaluations, Inc. and found to be in conformance with the requirements set forth by:  
**ISO 9001:2008**  
The Quality Management System is applicable to:

MANUFACTURE OF SPONGE IRON, STEEL BILLETS, TMT BAR, WIRE RODS, GENERATION OF POWER &  
PRODUCER GAS PLANT

Certificate No: 43562  
Effective Date: 06 July 2009  
Expiration Date: 05 July 2012  
Issue Date: 12 August 2009


  
Alex Weisselberg, President

Validity of this certificate is based on periodic audits of the management system defined by the above scope and is contingent upon prompt, written notification to ABS Quality Evaluations, Inc. of significant changes to the management system or components thereof.

ABS Quality Evaluations, Inc. 16855 Northchase Drive, Houston, TX 77060, U.S.A.  
Validity of this certificate may be confirmed at [www.abs-qe.com/verif\\_validation](http://www.abs-qe.com/verif_validation)

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Bhopal Branch Office

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Fax : 0755-2423451  
E-mail : bplb@bis.org.in  
Web : http://www.bis.org.in

ATTACHMENT TO LICENCE NO. CML/- 8942294

CML/NO	NAME OF THE LICENSEE WITH ADDRESS	PRODUCT	IS NO
8942294	M/s NALWA STEEL AND POWER LIMITED, TARAMAL, GHARGHODA ROAD, RAIGARH - 496001. (CHHATTISGARH).	High strength deformed steel bars and wires for concrete reinforcement.	IS 1786 : 2008

ENDORSEMENT NO. 03      Dated: -02-2010.

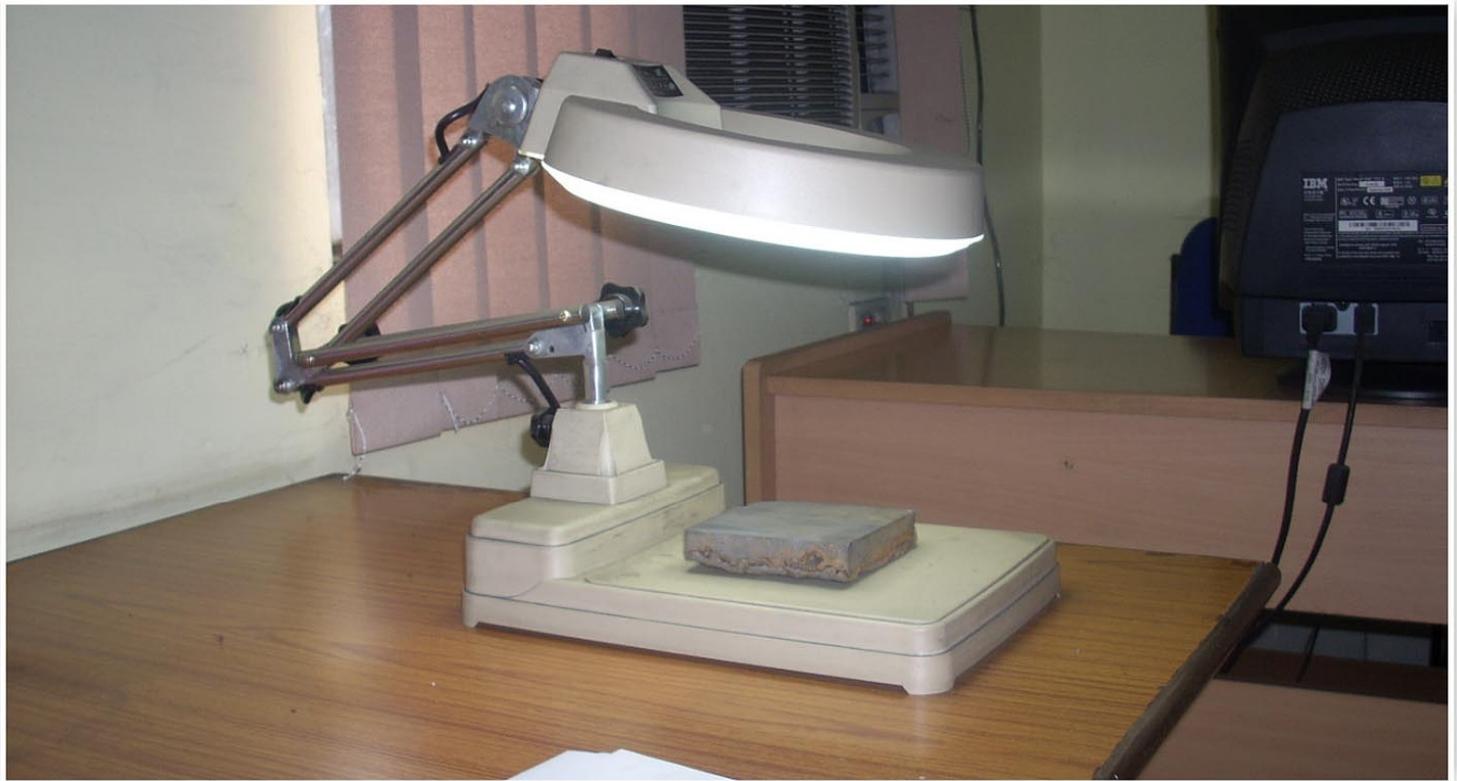
The following additional varieties have been included in Columns(2) of the first schedule and column (1) of the Second Schedule of the Licence alongwith the Standard Mark in Column (1) of First Schedule with effect from: -02-2010.

Inclusion of New Variety of High Strength Deformed Steel Bars and Wire for  
Concrete Reinforcement for Grade : Fe 500D Sizes : 08,10,12,16,20,28 & 32mm (TMT)

Other terms and conditions of Licence remain the same.

  
**SCIENTIST-'F' & HEAD, BIS, BHOPAL**  
  
 एच.एल. उपेंदर  
**H. L. UPENDAR**  
 भारतीय मानक ब्यूरो का प्रमुख  
 S. Scientist 'F' (Production) & HEAD  
 भारतीय मानक ब्यूरो, भोपाल  
 (Bureau of Indian Standards, Bhopal)

**Quality Assurance**



**Magnifier**



**Metallurgical Microscope**



**Universal Testing Machine**



**Satmagan Analyser**

## Quality Control and R & D



The process control of Sponge Iron, Steel making and Rolling is well established by the highly experienced and qualified, dedicated people in quality assurance department. The laboratory is equipped by the modern equipments as enlisted below for quick and correct analysis,

- a) Metallurgical Microscope.
- b) Fully computerized Universal Testing Machine with capacity of 20 Ton and 100 Ton.
- c) Digitalized hardness tester.
- d) Satmagan Analyzer.
- e) Magnifier.
- f) Computerised Spectrometer
- g) Drop weight tear test machine.
- h) Fully equipped sample preparation workshop.

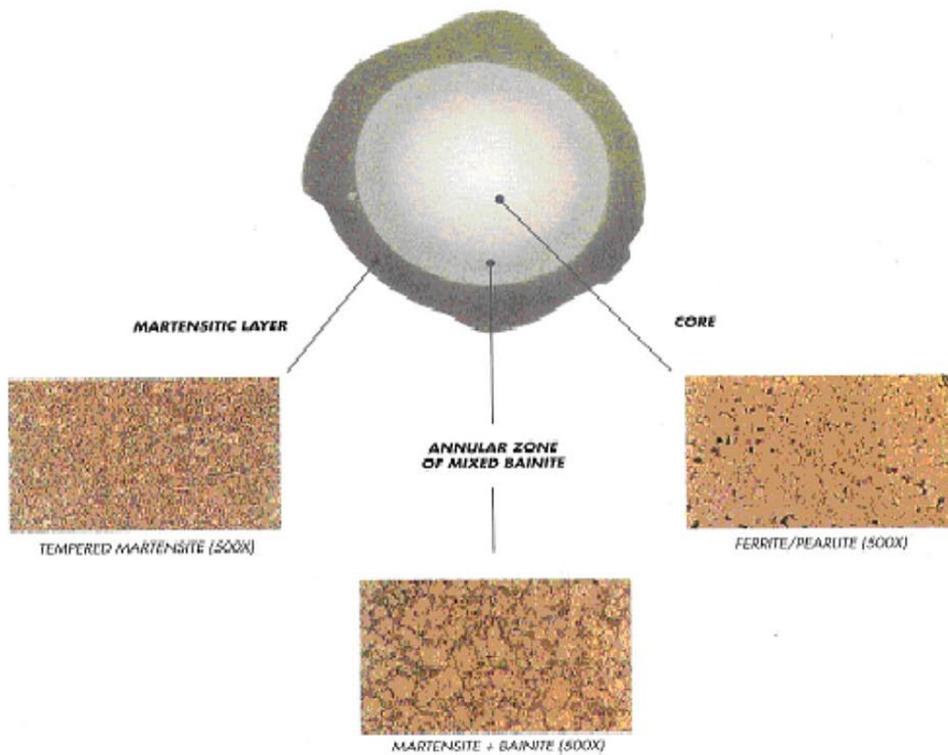
It has been entrusted with a mission of developing:

- New products
- Estabilisation of the process to ensure quality through statistical process control
- Consistent development of TEMPCORE the best process for the production of high quality Re bars conforming to DIN 3488IVS, BS 4449-97, BIS 1786-2008
- Development and diversification of grades in Wire Rods: Low Carbon, Wire Drawing, Electrode Quality, Cold Heading, Tyre- Bead and Hi Carbon grades

## Finished Products

Thermomechanical treatment (TMT) is a combination of Plastic deformation of steel in austenitic stage followed by quenching and further tempering. In this process the structure of hardened and tempered steel is formed under conditions of high dislocation density due to strain hardening.

Thermomechanical Treatment provides a large margin of ductility and better structural strength. It raises the impact strength at room and low temperature and lowers the cold shortness threshold, susceptibility to temper brittleness. The dislocation formed in austenite during mechanical working in its austenitic state is inherited after hardening too in martensite.



**Process-** TEMPCORE (CRM-Belgium)  
**Size-** Round 8.0mm ,10.0mm,12.0mm,16.0mm,20.0 mm, 25.0mm,28.0mm,32.0mm  
**Grade-** 1786-2008

The ladle analysis of TMT billets are as per IS 228 and shall have maximum permissible percentage of constituents as follows:

Constituent	Percent Maximum						
	Fe415	Fe415D	Fe500	Fe500D	Fe550	Fe550D	Fe600
Carbon	0.30	0.25	0.30	0.25	0.30	0.25	0.30
Sulphur	0.060	0.045	0.055	0.040	0.055	0.040	0.040
Phosphorus	0.060	0.045	0.055	0.040	0.055	0.040	0.040
S+P	0.110	0.085	0.105	0.075	0.100	0.075	0.075

For guaranteed weldability, the carbon equivalent, CE using the formula

## Finished Products

$CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$  shall not be more than 0.53%, when micro alloys/ low alloys are used. When micro alloys/ low alloys are not used, carbon equivalent using the formula

$CE = C + Mn/6$  Shall not be more than 0.42%

Nitrogen content of steel is restricted to maximum percentage of 0.012 and it is ensured regularly by check analysis.

In case of product analysis, the permissible variation from the limits specified in above table shall be as follows:

Constituent	Variation, over specified maximum limit, percent. Max.
Carbon	0.02
Sulphur	0.005
Phosphorus	0.005
Sulphur and phosphorus	0.010

### Mechanical Properties:-

Sl. No.	Property	Fe415	Fe415D	Fe500	Fe500D	Fe550	Fe550D	Fe600
1	0.2% proof Stress/yield stress, Min. N/mm <sup>2</sup>	415.0	415.0	500.0	500.0	550.0	550.0	600.0
2	Elongation, percent, Min. on gauge length $5.65 \times \text{sq. root A}$ , where A is the cross sectional area of the test piece.	14.5	18.0	12.0	16.0	10.0	14.5	10.0
3	Tensile strength, Min	10 percent more than the actual 0.2 percent proof stress/ yield stress but not less than 485.0 N/mm <sup>2</sup> .	12 percent more than the actual 0.2 percent proof stress/ yield stress but not less than 500.0 N/mm <sup>2</sup>	8 percent more than the actual 0.2 percent proof stress/ yield stress but not less than 545.0 N/mm <sup>2</sup>	10 percent more than the actual 0.2 percent proof stress/ yield stress but not less than 565.0 N/mm <sup>2</sup>	6 percent more than the actual 0.2 percent proof stress/ yield stress but not less than 585.0 N/mm <sup>2</sup>	8 percent more than the actual 0.2 percent proof stress/ yield stress but not less than 600.0 N/mm <sup>2</sup>	6 percent more than the actual 0.2 percent proof stress/ yield stress but not less than 660.0 N/mm <sup>2</sup>
4	Total elongation at maximum force, percent, Min on gauge length $5.65 \times \text{sq. root A}$ , where A is the cross sectional area of the test piece.	-	5	-	5	-	5	-

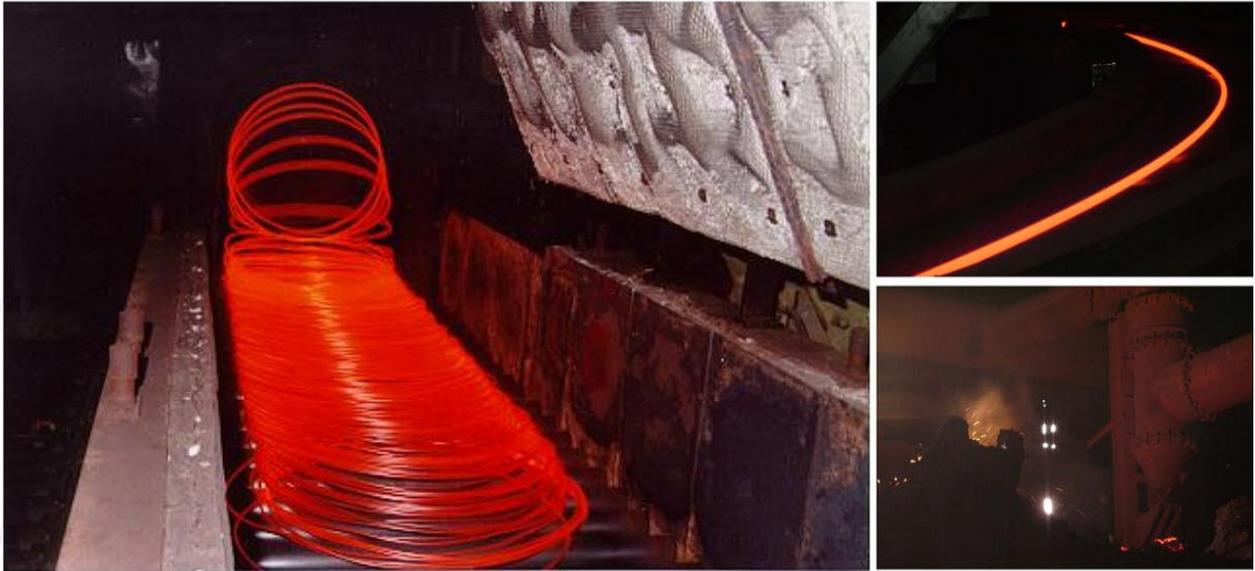
### Section Weight:

S.No	Nominal Size (mm)	Cross-Section Area (mm <sup>2</sup> )	Mass per Meter (Kg)
1	8	50.3	0.395
2	10	78.6	0.617
3	12	113.1	0.888
4	16	201.2	1.58
5	20	314.3	2.47
6	25	491.1	3.58
7	28	615.8	4.83
8	32	804.6	6.31

## Finished Products

### Wire Rods-

- Product size range 5.5, 6.0, 6.5, 7.0, 8.0, 10.0, 11.0, 12.0mm
- Tolerance – As per Indian Standards IS: 1832
- Controlled Cooling through STELMOR Process.



Standard	C	Mn	P(max)	S(max)	Si	Al	UTS	Elongation
SAE1008	0.10 max	0.3-	0.04	0.04	0.15-0.35	.02		
SAE1010	.08-.13	0.3-0.6	.04	.04	.15-.35	.02		
SAE1010W	.08-.12	.70-.90	.04	.04	.30max	.02		
SAE1012	.10-.15	.30-.60	.04	.04	.15-.35	.02		
SAE1015	.13-.18	.30-.60	.04	.04	.15-.35	.02		
SAE1016	.13-.18	.60-.90	.04	.04	.15-.30	.02		
SAE1018	.15-.20	.60-.90	.04	.04	.15-.30	.02		
EW-NR	.10max	.38-.62	.025	.025	.03max			
EQ- NR	.10max	.38-.62	.03	.03	.03max			
CAQ	.07max	.50max	.035	.035	.05max			
EN8D	.40-.45	.70-.90	.04	.04	.05-.35			
EN8	.35-.45	.60-1.00	.04	.04	.05-.35			
EN8M	.35-.45	1.00-1.30	0.06	0.12-0.2	0.25max		55	20%
EN1A	.07-.15	0.9-1.3	0.07	0.2-0.3	0.1max		40	20%
EN1A Pb	.07-.15	.85-1.3	0.07	0.2-0.3	0.1max			
SAE1541	.36-.44	1.35-1.65	.04	.04	.15-.35			
SAE4140	.38-.43	.70-.90	.04	.04	.20			
HC51-55	.51-.55	.50-.80	.035	.035	.15-.35		85-95	15%
HC61-65	.61-.65	.50-.80	.035	.035	.15-.35		95-105	13%
HC55-60	.56-.60	.50-.80	.035	.035	.15-.35		90-100	15%
HC65-70.	.65-.70	.50-.80	.035	.035	.15-.35		100-110	13%

## Products

### Sponge Iron

There are six Rotary Kilns each having 100 Tons per day (TPD) capacity. Iron ore, coal and dolomite are the main raw materials. Iron ore is directly reduced to sponge iron in solid state with 88% Metallization by reducing gas CO (generated from coal). Maximum 1100 degree temperature can be attained. Dolomite acts as flux. Char is the by-product of Sponge Iron.



As per IS: 10812 : 1992

Properties	
Fe ( M )	: 78 - 84 %
Fe ( T )	: 89 - 93 %
Metallization	: 86 -90 %

Chemistry	
C	: 0.1 to 0.3 %
S	: 0.04 % Max
P	: 0.06 % Max



Mix	
Fine ( 0-6mm )	50 %
Lump( 6 - 20mm)	50 %

### Billets

The steel melting shop is equipped with 4 Nos Induction Furnaces each having 12 MT capacity, LRF for desulphurisation and refining. The installed capacity is 14500 MT per month. The main raw material are in-house Sponge Iron along with pig iron and steel scrap. The product is Low carbon and Mild Steel Billets in sizes of 100x100mm square and 120x120mm square. These billets are used in our in-house Wire Rod Mill as well as sold to outside customers.



### Size Range (mm)

Length	: In the length of 6000 or 9000. Rolling Tolerance as per IS : 2830/1992 with following tolerance
Dimension	: + / - 2mm
Diagonal	
Difference	: + 5mm( Max)
Length	: + 100 / 400 mm( Max)

### Specification

	LC	MS
C	0.1 - 0.15	0.15 - 0.30
Mn	0.4 - 0.6	0.40 - 0.6
Si	0.15-0.3	0.15 - 0.30
S	0.04 -0.06	0.04 -0.06
P	0.09 max	0.09 max



**NALWA STEEL AND POWER LTD**

CONTACT

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e-mail:marketing@jindalsteel.com

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E-mail: jsplchennai@airtelbroadband.in

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Phone: +91 22 66241000; Fax: +91 22 66241020

E-mail: marketing@jindalsteel.com

**Process-** TEMPCORE (CRM-Belgium)  
**Size-** Round 8.0mm ,10.0mm,12.0mm,16.0mm,20.0 mm, 25.0mm,28.0mm,32.0mm  
**Grade-** 1786-2008

The ladle analysis of TMT billets are as per IS 228 and shall have maximum permissible percentage of constituents as follows:

Constituent	Percent Maximum						
	Fe415	Fe415D	Fe500	Fe500D	Fe550	Fe550D	Fe600
Carbon	0.30	0.25	0.30	0.25	0.30	0.25	0.30
Sulphur	0.060	0.045	0.055	0.040	0.055	0.040	0.040
Phosphorus	0.060	0.045	0.055	0.040	0.055	0.040	0.040
S+P	0.110	0.085	0.105	0.075	0.100	0.075	0.075

For guaranteed weldability, the carbon equivalent, CE using the formula

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Sl. No.	Property	Fe415	Fe415D	Fe500	Fe500D	Fe550	Fe550D	Fe600
1	0.2% proof Stress/yield stress, Min. N/mm <sup>2</sup>	415.0	415.0	500.0	500.0	550.0	550.0	600.0
2	Elongation, percent, Min. on gauge length 5.65 x sq. root A, where A is the cross sectional area of the test piece.	14.5	18.0	12.0	16.0	10.0	14.5	10.0
3	Tensile strength, Min	10percent more than the actual 0.2 percent proof stress/ yield stress but not less than 485.0 N/mm <sup>2</sup> .	12percent more than the actual 0.2 percent proof stress/ yield stress but not less than 500.0 N/mm <sup>2</sup>	8percent more than the actual 0.2 percent proof stress/ yield stress but not less than 545.0 N/mm <sup>2</sup>	10percent more than the actual 0.2 percent proof stress/ yield stress but not less than 565.0 N/mm <sup>2</sup>	6percent more than the actual 0.2 percent proof stress/ yield stress but not less than 585.0 N/mm <sup>2</sup>	8percent more than the actual 0.2 percent proof stress/ yield stress but not less than 600.0 N/mm <sup>2</sup>	6percent more than the actual 0.2 percent proof stress/ yield stress but not less than 660.0 N/mm <sup>2</sup>
4	Total elongation at maximum force, percent, Min on gauge length 5.65 x sq. root A, where A is the cross sectional area of the test piece.	-	5	-	5	-	5	-

### Section Weight:

S.No	Nominal Size (mm)	Cross-Section Area (mm <sup>2</sup> )	Mass per Meter (Kg)
1	8	50.3	0.395
2	10	78.6	0.617
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**415**

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**JINDAL NSPL 415, 500, 550 D**

An ISO 9001:2008 & 14001 : 2004 Certified Company

Highrise Buildings,  
Industrial structure, Flyovers,  
Bridges, Dams etc

**JINDAL NSPL**

JINDAL NSPL 500 D

**500D**