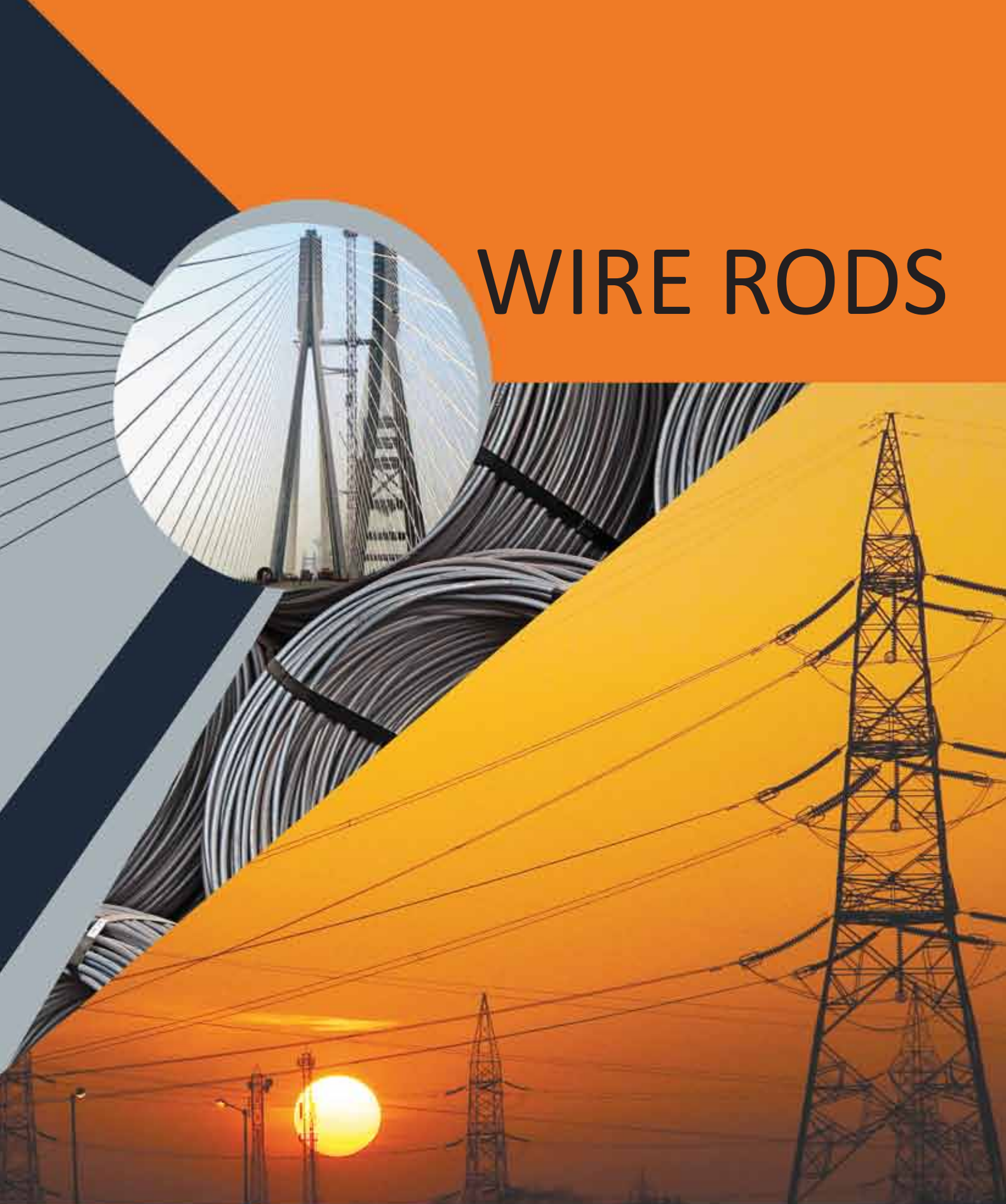


WIRE RODS



JINDAL 
STEEL & POWER



ABOUT JINDAL STEEL AND POWER LIMITED

Jindal Steel and Power Limited (JSPL) is one of India's primary & integrated steel producers with a significant presence in sectors like Mining, Power Generation and Infrastructure.

With an annual turnover of over US\$ 3.6 billion, JSPL is a part of the about US\$ 18 billion diversified O. P. Jindal Group and is consistently tapping new opportunities by increasing production capacity, diversifying investments, and leveraging its core capabilities to venture into new businesses. The company has committed investments exceeding US\$ 30 billion in the future and has several business initiatives running simultaneously across continents.

From the widest flat products to a whole range of long products, JSPL today sports a product portfolio that caters to varied needs in the steel market. The company also has the distinction of producing the world's longest 121 metre rails and introducing large size parallel flange beams in India.

JSPL operates the largest coal-based sponge iron plant in the world and has an installed capacity of 3 MTPA of crude steel at Raigarh, Chhattisgarh.

The company has an installed capacity of

- 0.75 MTPA Rail and Universal Beam Mill at Raigarh, Chhattisgarh
- 0.6 MTPA Medium and Light Structural Mill and 1.0M TPA Plate Mill at Raigarh, Chhattisgarh and
- 1.5 MTPA Plate Mill producing up to 5 meter wide plates at Angul, Odisha
- 0.6 MTPA Wire Rod Mill and 1.0 MTPA TMT Rebar Mill at Patratu, Jharkhand

The company aims for a fast-paced growth so as to contribute substantially to India's long term prosperity.

An enterprising spirit and the ability to discern future trends have been the driving force behind the company's remarkable growth story. The company has scaled new heights with the combined force of innovation, adaptation of new technologies and the collective skills of its 15,000 strong, committed workforce.

JSPL endeavors to strengthen India's industrial base by aiding infrastructural development, through sustainable development approaches and inclusive growth. The company deploys its resources to improve infrastructure, education, health, water, sanitation, environment etc. in the areas it operates in. The company has won several awards for its innovative business practices.

As JSPL contributes to India's growth, it has also set in place a global expansion plan in order to become one of the most prestigious and dynamic business groups of the country. The future is studded with challenges and JSPL is taking them on with vigor and courage.

MORGAN WIRE ROD MILL

Located at Patratu, Jharkhand, the mill has production capacity of 0.6 MTPA of wire rods, and is amongst the top wire rod producers in the country. Designed and supplied by the world renowned Morgan Construction Company of USA, JSPL wire rod mill is equipped with the latest technologies for producing high quality wire rods.

The Mill is specially developed to roll wire rods at a maximum speed of 110 metres-per-second. The wire rods comply with domestic and international standards and specific customer needs.

The reheating furnace has been designed by Fives Stein, France – a globally reputed name in the industry. The Mill is designed to address different post rolling treatment regimes, (accelerated cooling with STELMOR technology, retarded cooling and slow cooling) required for the entire range of wire rods.

JSPL wire rods have close dimensional tolerance, ovality and good surface finish for improved die life during drawing and an enhanced surface finish of drawn wires. With superior maintenance practices for all critical equipments and testing devices, quality performance of products is assured.





MORGAN WIRE ROD MILL - EQUIPMENT AND FEATURES

- **30 rolling stand mill** facilitates large reduction ratios and produces wire rods with diameters from 5.2mm to 22mm.
- **Digitally controlled reheating furnace** ensures optimized heating arrangement which promotes uniform mechanical properties in the wire rods and enables very low scale formation.
- **Alternate horizontal & vertical rolling stands** for controlled rod movement during rolling prevents detrimental surface defects like rolling laps and stickers in the final product. Final product conforms to close dimensional tolerances due to less stress generation during rolling.
- **Breakdown mill** before the continuous rolling stands improves product quality as increased number of passes minimizes segregation, porosity and inclusions.
- **Insulated roller table** minimizes temperature loss of billets during rolling thus producing homogenous sections.
- **Hard and wear resistant tungsten carbide** rings in the rolls of finishing and pre-finishing blocks and twist free rolling technology ensure excellent surface finish and narrow dimensional tolerances.
- **No Twist Mill (NTM)**, designed for controlled temperature rolling to produce superior grain structure and more uniform ovality, ensures high dimensional accuracy at high speeds.
- **Reducing and Sizing Mill (RSM)** ensures high dimensional accuracy in smaller size wire rods.
- **High speed stands** of NTM & RSM are equipped with entry guides which eliminates scratching on the rod surface by accurately directing oval sections into round passes.
- **Post rolling controlled cooling** through water boxes and variable speed conveyor is done to attain superior micro structure for consistent mechanical properties. Thermomechanical cooling process produces high precision wire rods with a fine grain structure which eliminates the requirement for further heat treatment, while the cooling process ensures minimal surface scale generation.



MORGAN WIRE ROD MILL - EQUIPMENT AND FEATURES

- **Crop Shears** at various points in the line to remove front and tail ends, ensure that the split ends of the billets do not propagate and affect the quality of the wire rod.
- **On-line rod gauges** installed at various points enable active monitoring and control of the sectional dimensions for a close dimensional tolerance range.
- **Morgan enhanced water cooling system** encourages uniform cooling of the rods enabling uniform mechanical properties.
- **High speed laying head with tail end control** and equipped with ring distributor in the coil collection system improves coil shape, to ensure smooth pay-off during wire drawing stage.
- **Stelmor conveyor** promotes uniformity of coil cooling with use of Optimesh or Optiflex system, leading to superior metallurgical and mechanical product properties for all steel grades.
- **Reform tub used** for stacking up the coils delivers up to 20% shorter and denser coil stacks thus reducing handling and storage costs.
- **Automatic compacting system** is used for compaction and tying of coils at four locations after inspection and sampling. The unique compactor design guarantees equal press-force distribution throughout the coil.
- **Electronic weighing machines** for accurate weighing of coils with special bar coding to ensure the complete traceability and dispatch of coils to the designated customers.



ADVANTAGES OF NO TWIST MILL (NTM)

- **Increases productivity** – allows to roll at rates up to 150 tons/hr
- **Designed for controlled temperature rolling** to produce superior grain structure and more uniform scale
- **More dimensional accuracy**
- **Rapid commissioning and start-up**
- **Easily integrates** with present or future process control systems
- **Lowers maintenance costs**
- **Reduces roll change time**



ADVANTAGES OF REDUCING & SIZING MILL (RSM)

- **Higher productivity** – Productivity on smaller sizes can be increased up to 60%
- **Single family rolling** – A single pass design from stand 1 to the last stand of the finishing block
- **Expanded size range** – Product size range from 5.2 mm to 22 mm
- **Patented roll pass design** – Unique (Oval-Round-Oval-Round) pass sequence, for close tolerance of roundness
- **Precision tolerances** – All sizes can be produced to ultra precision tolerances
- **Thermo-Mechanical Rolling** – Water cooling and equalization zones provide proper rolling condition leading to fine grain structure without annealing processes
- **Reduced inventory** – Reductions in the rolling cycle are achieved while maintaining a high level of mill utilization
- **By-Pass troughs** – Patented built-in feature provides immediate set-up for dummie trough
- **Compact drive** – Patented combination drive unit provides compact footprint for tight installation conditions
- **Guideless rolling** – Guideless rolling for quick and efficient roll parting



PROCESS FLOW

Iron and Steel Making

JSPL has its own steel making unit producing steel through the EAF-LRF-VD-CCM route with fully automated control system backed by computerized level II process models. These models ensure that steel is always produced within consistent composition band. Steelmaking at JSPL is supported by two Blast Furnaces with 1.60 million tonnes per annum of hot metal capacity and DRI (Sponge Iron) plant of 1.37 million tonnes per annum capacity.

JSPL's steel melting facility is equipped with three Electric Arc Furnaces (EAF) of 100 tonnes capacity each. Equipped with Supersonic Lance and Carbjet facilities, the furnaces have eccentric bottom tapping feature which ensures slag free tapping of steel. Owing to usage of metallics based on virgin iron ore from captive mines and only plant return scrap (no outside scrap), very low level of inclusion and tramp elements are achieved, thus generating high quality clean steel. Steelmaking facilities have 4x100 MT Ladle Refining Furnaces (LRF), used for carrying out the steel refining operations including desulphurisation. Ferro-alloys are added to meet the chemistry as per requirement and Argon gas is rinsed through the steel bath to homogenise the composition and temperature. The furnaces are capable of making wide ranging grades of alloy steel in superior quality as per customer's requirements. For special and alloy grade steels, Vacuum Degasser (VD) capable of producing vacuum level of less than 1 mbar for achieving very low levels of hydrogen and oxygen is used, thus, effectively degassing the steel before casting.

Continuously cast square billets of 165mm size are used for wire rod rolling, which are cast in a six strand billet caster.

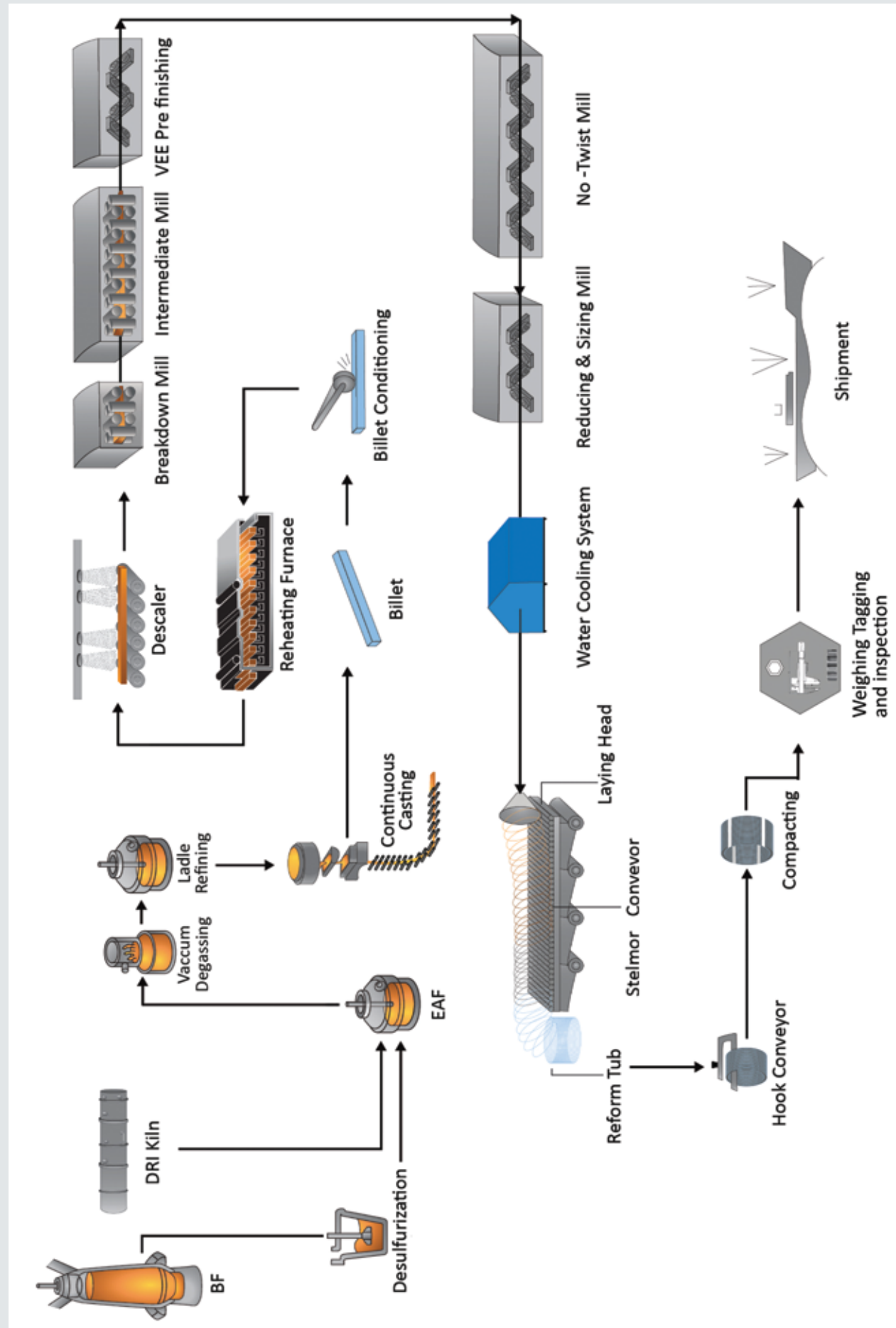
The caster is equipped with Electromagnetic Stirring (EMS) facility which minimises centre line segregation and thus ensures uniform properties in wire rods as well as in the finished wires.

Rolling

Further billets are rolled at 0.6 MTPA Morgan Wire Rod mill. This mill is equipped with advanced rolling equipments to meet the processing requirements of various grades of Carbon and Alloy steel. The latest technology that comes with Morgan mill assures high degree of thermo mechanical properties along with dimensional accuracy of highest precision, providing consistency of properties within a coil and from coil to coil. Wire Rod mill at Patratu produces Low carbon, Medium carbon, High carbon and other special grades that include Cold Heading Quality (CHQ), electrode quality, high carbon wire rods for spring steel, spoke wire, pre-stressed concrete, tyre bead & ACSR, etc.



PROCESS FLOW



WHY JSPL WIRE RODS ?

JSPL wire rods have become a product of choice among wire drawers across the country due to the aforesaid advantages. We continue to improve and innovate to produce the best of quality, and develop systems that can deliver our products at your doorstep in excellent condition.

JSPL Wire Rods comes with a promise of:-

- **High quality and dimensional precision**
- **Latest technology** comes with Morgan Wire Rod Mill assuring high degree of thermo-mechanical properties along with unparalleled dimensional accuracy
- **New age Reducing & Sizing Mill (RSM)** ensuring excellent product tolerance and ovality. This in conjunction with the Morgan Enhanced Temperature Control System (METCS), provides consistency in mechanical properties within a coil and from a coil to another coil
- **Coil reforming technology** ensuring coils are shipped with adequate care and reaches the customer with excellent coil stability without any damage
- **Highly automated production** facility and cotinuous checks at every level to produce the best quality wire rods
- **Quality assurance system**, equipped with modern equipments and best of the skilled force constantly strive to get the best of products by controlling the entire process at every vital point.
- **Commitment towards complete customer satisfaction** with respect to quality, delivery and technical services, and the belief that regular feedback from our widespread network of customers' is the only way for getting valuable insights for continuous improvement of our products and services





PRODUCT RANGE

Key Mill Features

Annual Production Capacity	0.6 MTPA
Input Feedstock	
Size Range	5.2 mm, 5.5 – 22.0mm (in 0.5mm increments)
Coil Weight	2,480 kg (nominal)
Coil Outside Diameter	1250 mm
Coil Inside Diameter	850 mm
Rolling Mill Strand:	Strand
	30
	Type
	Vertical and Horizontal and blocks
	Pass
	Tungsten Carbide Ring from Std- 15 to 30
	Line Speed
	110 M/Sec.
Reheating Furnace:	Capacity(T/hr)
	160
	Type
	Walking Beam
Cooling Equipments	Stelmor conveyor with cover (Hood) & Blower

Supply Conditions

Supply Condition	As per Mutually agreed TDC (Technical Delivery Conditions)
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Dimensional Tolerance

Sizes (mm)	Tolerance (mm)	Maximum Ovality (mm)
5.2 – 8.5	±0.20	0.30
9.0 – 14.0	±0.25	0.40
14.5 – 22.0	±0.30	0.50

Special Features Of JSPL Wire Rods

Product Category	Special Features	Benefits to Customer
Low Carbon and Mild Steel Wire Rods	<ul style="list-style-type: none"> * Very low content of tramp elements * Low N2 content 	<ul style="list-style-type: none"> * Smooth drawing at high drawing speed * Very good surface quality
Medium and High Carbon Wire Rods	<ul style="list-style-type: none"> * Very low content of tramp elements * Low N2 content * Consistent microstructure from undesirable hard phases (Free from harmful internal segregation) * Tensile property variation within a ring restricted to 3 kg/mm², which is at par with international norms * High reduction in area (%RA) of wire rods * Suitable for both pickling as well as mechanical de-scaling practices 	<ul style="list-style-type: none"> * Smooth drawing at high drawing speeds * Consistent property of the drawn wire * Ease of scale removal by mechanical descaling * Customised grades suited to varied end application needs * Very good surface quality
Low Carbon Wire Rods for Stick Electrodes	<ul style="list-style-type: none"> * Very low content of tramp elements * Low tensile strengths with high reduction in area * Low N2 content 	<ul style="list-style-type: none"> * Superior property of weldment * Superior drawability even at high speeds * Certified by BIS
Wire Rods for Continuous Electrodes	<ul style="list-style-type: none"> * Wire rod surface free from harmful defects * Low content of sulphur and phosphorus. * High degree of cleanliness * Control of chemical composition within a very close Band (Low Decrab Level) 	<ul style="list-style-type: none"> * Consistent level of tensile strength and reduction in area in the wire rods. * Very good surface quality
Cold Heading Quality Wire Rods	<ul style="list-style-type: none"> * Very low content of tramp elements * Low N2, H2, O2 content * Wire rod surface free from harmful defects * Low content of sulphur and phosphorus. * Control of chemical composition within a very close band * Uniform austenitic grain size * Very good content of tramp elements * Low Decrab Level 	<ul style="list-style-type: none"> * To enhance better response to heat treatment for uniform mechanical properties * Very good surface quality * Very good upsetability
Alloy Steel Wire Rods	<ul style="list-style-type: none"> * Very low content of tramp elements * Low N2, H2, O2 content * Wire rod surface free from harmful defects * Low content of sulphur and phosphorus. * Control of chemical composition within a very close band * Uniform austenitic grain size * Very good content of tramp elements * Low Decrab Level * Very good cleanliness 	<ul style="list-style-type: none"> * To enhance better response to heat treatment for uniform mechanical properties * Very good surface quality * Very good forgeability * Very good Impact Toughness

PRODUCT SPECIFICATION

Low Carbon Steel Wire Rods – for general engineering applications										
Grade	Dimension	Chemical Composition					UTS	%RA	Applications	
	Scope (mm)	%C	%Mn	%Si	%P	%S	(Mpa) Max	Min		
SAE1006/CAQ	5.2 - 22	0.04 - 0.08	0.30 - 0.60	0.10 - Max	0.025 - Max	0.015 - Max	290 - 375	70	Cable amour wire, drawing, construction	
SWR10 (SAE1008)	5.2 - 22	0.10 - Max	0.30 - 0.60	0.10 - Max	0.025 - Max	0.015 - Max	300 - 430	70	Steel Decoration product, Binding wires, nails, U bolt, J Bolt etc.	
SWR14 (SAE1010)	5.2 - 22	0.08 - 0.13	0.03 - 0.60	0.10 - 0.30	0.025 - Max	0.015 - Max	320 - 450	70	Wire conductor in transport & telegraphy holding & binding wires	
SAE1020/1018	5.2 - 22	0.16 - 0.20	0.60 - 0.90	0.10 - Max	0.025 - Max	0.015 - Max	490 - Max	40	Fencing wire, binding wire, net, nail, small shaped product, wire net, screw, rivet, spoke, mesh etc.	
SAE1020	5.2 - 22	0.18 - 0.23	0.30 - 0.60	0.10 - Max	0.025 - Max	0.015 - Max	420 - 530	60		
SAE1025	5.2 - 22	0.22 - 0.28	0.30 - 0.60	0.15 - 0.35	0.025 - Max	0.025 - Max	400 - 520	50	Machine parts like nut, bolt, fasteners by hot & cold forging	
C18MMn	5.2 - 22	0.17 - 0.21	0.75 - 0.85	0.15 - 0.30	0.03 - Max	0.03 - Max	460 - 560	55	Nails	

Medium Carbon Steel Wire Rods - for general engineering applications										
Grade	Dimension	Chemical Composition					UTS	%RA	Applications	
	Scope (mm)	%C	%Mn	%Si	%P	%S	(Mpa) Max	Min		
SAE1030	5.2 - 22	0.28 - 0.34	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.015 - Max	450 - 500	50	Fasteners, rivets etc.	
SAE1038	5.2 - 22	0.35 - 0.42	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.015 - Max	460 - 500	55	Nuts, bolt, axle, connecting rod etc.	
SAE1040	5.2 - 22	0.37 - 0.44	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.025 - Max	550 - 680	50	Chain for Cranes to lift weight, binding, suspension ropws, wire for lifts mine cages, cable ways	
SAE1541	5.2 - 22	0.36 - 0.44	0.60 - 0.90	0.10 - 0.30	0.025 - Max	0.015 - Max	706 - Max	50	Nut, bolt, fasteners for automobile and bridge industries	
EN8D	5.2 - 22	0.40 - 0.45	0.70 - 0.90	0.15 - 0.25	0.025 - Max	0.015 - Max	706 - Max	50		
EN8A	5.2 - 22	0.33 - 0.38	0.70 - 0.90	0.15 - 0.25	0.025 - Max	0.015 - Max	687 - Max	45	High tensile fasteners	

High Carbon Steel Wire Rods – for cold drawing applications										
Grade	Dimension	Chemical Composition					UTS	%RA	Applications	
	Scope (mm)	%C	%Mn	%Si	%P	%S	(Mpa) Max	Min		
C80	5.2 - 16	0.80 - 0.85	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.020 - Max	1175 - 1275	30	wires for concrete reinforcement, springs	
HC 36/40	5.2 - 22	0.36 - 0.40	0.50 - 0.60	0.10 - Max	0.025 - Max	0.020 - Max	628 - 706	40	Earth and stay wires	
HC 41/45	5.2 - 13	0.41 - 0.45	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.020 - Max	695 - 785	40	Umbrella ribs, cycle spokes	
HC 51/55	5.2 - 13	0.51 - 0.55	0.60 - 0.90	0.15 - 0.30	0.025 - Max	0.020 - Max	814 - 903	40	Grade II spring used in machines tools, forming machines, hydraulic machines etc.	
HC 56/60	5.2 - 13	0.56 - 0.60	0.60 - 0.80	0.15 - 0.25	0.025 - Max	0.020 - Max	853 - 942	40	Wires for rope and other noncritical and misc. wire application	
HC 61/65	5.2 - 13	0.61 - 0.65	0.60 - 0.80	0.15 - 0.25	0.025 - Max	0.020 - Max	922 - 1010	40	Grade II spring used in machines tools, forming machines, hydraulic machines etc.	
HC 66/70	5.2 - 13	0.66 - 0.70	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.020 - Max	991 - 1069	40	Wires for tyre bead and spring application	
HC 71/75	5.2 - 13	0.71 - 0.75	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.020 - Max	1040 - 1128	36	Rope, binding & holding automobile tire, conveyor wires, tire cord to reinforced belt, pressure hoses, chisel etc.	
HC76/80	5.2 - 13	0.76 - 0.80	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.020 - Max	1099 - 1177	35	Reinforcement for railway sleepers, bridges	
HC81/85	5.2 - 13	0.81 - 0.85	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.020 - Max	1138 - 1236	30	Reinforcement for railway sleepers, bridges, needle wire etc. Rope, binding & holding wires, tire cord to	
PSC116	5.2 - 13	0.77 - 0.82	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.020 - Max	1138 - 1236	36	reinforced automobile tire, conveyor belt, pressure hoses, chisel etc.	
TB68	5.2 - 13	0.66 - 0.70	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.020 - Max	965 - 1030	40	Wires for tyre bead and spring application	

High Carbon Steel Wire Rods – for spring applications										
Grade	Dimension	Chemical Composition					UTS	%RA	Applications	
	Scope (mm)	%C	%Mn	%Si	%P	%S	(Mpa) Max	Min		
SWRH 52-A	5.2 - 13	0.51 - 0.55	0.30 - 0.60	0.15 - 0.25	0.025 - Max	0.030 - Max	765 - 853	40	Wires for spring application	
SWRH 62-A	5.2 - 13	0.60 - 0.65	0.30 - 0.60	0.15 - 0.25	0.03 - Max	0.030 - Max	893 - 981	40	Grade II spring used in machines tools, forming machines, hydraulic machines etc.	
SWRH72A	5.5 - 10	0.69 - 0.72	0.30 - 0.60	0.15 - 0.25	0.025 - Max	0.020 - Max	940 - 10.40	40	Spring Application	

High Carbon Steel Wire Rods – for spring applications										
Grade	Dimension	Chemical Composition					UTS	%RA	Applications	
	Scope (mm)	%C	%Mn	%Si	%P	%S	(Mpa) Max	Min		
SWRH 82-A	5.2 - 13	0.80 - 0.85	0.30 - 0.60	0.15 - 0.25	0.03 - Max.	0.030 - Max.	1090 - 1160			Wires for spring application
SWRH82B	5.5 - 15	0.81 - 0.84	0.60 - 0.90	0.15 - 0.25	0.020 - Max.	0.025 - Max.	1285 - Max.	30		Wires for spring application Pre-stresses concrete and Spring Application
SRWH 82-V	5.2 - 15	0.81 - 0.86	0.60 - 0.90	0.15 - 0.25	0.025 - Max.	0.020 - Max.	1175 - 1275	30		Spring Application
SWRH 82BCr	5.2 - 15	0.81 - 0.85	0.60 - 0.90	0.15 - 0.25	0.020 - Max.	0.020 - Max.	1160 -1246	30		
SWRH 82B-Boron	5.2 - 15	0.81 - 0.85	0.60 - 0.90	0.15 - 0.25	0.025 -Max.	0.020 - Max	1187 - 1285	30		Wires for spring application

Alloy Steel Wire Rods – for heat treating applications										
Grade	Dimension	Chemical Composition					UTS	%RA	Applications	
	Scope (mm)	%C	%Mn	%Si	%P	%S	(Mpa) Max	Min		
EN18P	5.2 - 22	0.38 - 0.44	0.65 - 0.90	0.15 - 0.25	0.15 - 0.25	0.015 - Max	756 - Max	50		Forging
42CrMo4	5.2 - 22	0.38 - 0.45	0.60 - 0.90	0.15 - 0.25	0.15 - 0.25	0.015 - Max	500 - 600	50		
16MnCr5	5.2 - 22	0.14 - 0.19	1.00 - 1.30	0.15 - 0.35	0.025 - Max	0.015 - Max	500 - 600	50		
20MnCr5	5.2 - 22	0.17 - 0.22	1.10 - 1.40	0.15 - 0.25	0.020 - Max	0.030 - Max	550 - 650	50		
SCM 415H	5.2 - 22	0.13 - 0.18	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.025 - Max	500 - 600	50		Case hardening of automobile & machines
SCM 420H	5.2 - 22	0.18 - 0.23	0.60 - 0.85	0.15 - 0.25	0.025 - Max	0.030 - Max	570 - Max	50		parts like connecting rod
SAE8620	5.2 - 22	0.18 - 0.23	0.70 - 0.90	0.15 - 0.30	0.025 - Max	0.030 -Max	500 - 600	50		Case hardening of automobile and machines parts like gear
SAE4135	5.2 - 22	0.33 - 0.38	0.70 - 0.90	0.15 - 0.30	0.03 - Max	0.030 - Max	932 - 1080	50		
SAE4140	5.2 - 22	0.38 - 0.43	0.75 - 1.00	0.15 - 0.30	0.03 - Max	0.030 - Max	932 - 1030	40		For high tensile fasteners
SCM 435	5.2 - 22	0.33 - 0.38	0.60 - 0.90	0.15 - 0.25	0.025 - Max	0.015 - Max	932 - 1080	50		

Electrode Steel Wire Rods – for welding applications										
Grade	Dimension	Chemical Composition					UTS	%RA	Applications	
	Scope (mm)	%C	%Mn	%Si	%P	%S	(Mpa) Max	Min		
EWNr	5.2 - 9	0.10 - Max	0.38 - 0.62	0.03 - Max	0.02 - Max	0.015 - Max	420 - Max	70		Welding electrode
EH10K	5.2 - 9	0.09 - 0.14	1.40 - 1.65	0.07 - 0.23	0.015 - Max	0.07 - 0.23	530 - 650	70		
ER70SG	5.2 - 9	0.07 - Max	0.90 - 1.40	0.40 - 0.70	0.020 - Max	0.020 - Max	480 - Min	50		
EA2	5.2 - 9	0.05 - 0.16	1.00 - 1.30		0.020 - Max	0.020 - Max	490 - 680	50		
JSPL weld (MIG)	5.2 - 9	0.062 - 0.16	1.42 - 1.80	0.80 - 1.15		0.015 - Max	525 - Max	80		Co2 Welding Electrode
JSPL Weld (M) Mod	5.2 - 9	0.06 - 0.08	1.87 - 1.95	0.88 - 0.95		0.015 - Max	525 - Max	80		

Wire Rods for Ball Bearings										
Grade	Dimension	Chemical Composition					UTS	%RA	Applications	
	Scope (mm)	%C	%Mn	%Si	%P	%S	(Mpa) Max	Min		
En31	5.2 - 22	0.95 - 1.05	0.35 - 0.45	0.20 - 0.02	0.020 - Max	0.015 - Max	1079 - 1177	25		For roller and ball bearing applications
SAE52100	5.2 - 22	0.98 - 1.10	0.25 - 0.45	0.15 - 0.30	0.020 - Max	0.015 -Max	1079 - 1177	25		Bearings

Free Cutting Steel Wire Rods – for machining applications										
Grade	Dimension	Chemical Composition					UTS	%RA	Applications	
	Scope (mm)	%C	%Mn	%Si	%P	%S	(Mpa) Max	Min		
SAE 12L14	5.2 - 22	0.07 - 0.15	0.85 - 1.20	0.05 - Max	0.06 - Max	0.20 - 0.30	350 - 450	60		
EN 1A	5.2 - 22	0.07 - 0.15	0.80 - 1.20	0.05 - Max	0.06 - Max	0.20 - 0.30	350 - 450	60		Machined parts like engine shaft, connecting rod, spindles, gears,
EN 8M	5.2 - 22	0.35 - 0.45	1.00 - 1.30	0.25 - Max	0.06 - Max	0.12 - 0.20	569 - Max	50		fateners, hydraulic hose end fittings, etc.
EN 15AM	5.2 - 22	0.30 - 0.40	1.30 - 1.70	0.25 - Max	0.05 - Max	0.12 - 0.20	600 - 750	30		

Cold Heading Quality Grade Wire Rods – for general engineering applications										
Grade	Dimension	Chemical Composition					UTS	%RA	Applications	
	Scope (mm)	%C	%Mn	%Si	%P	%S	(Mpa) Max	Min		
SAE1006	5.2 - 22	0.04 - 0.08	0.25 - 0.40	0.08 - Max	0.025 - Max	0.020 - Max	290 - 400	50		Automobile and Machines Parts, like screw, Fasteners, Bush, Spline, Socket, Connecting Rod, Shaft, Gear, Quarter, Nails, Rivets, etc.
SAE1008	5.2 - 22	0.10 - Max	0.30 - 0.60	0.10 - Max	0.025 - Max	0.020 - Max	300 - 420	50		
SAE1010	5.2 - 22	0.08 - 0.13	0.30 - 0.60	0.10 - Max	0.025 - Max	0.020 - Max	320 - 430	50		
SAE1012	5.2 - 22	0.10 - 0.15	0.30 - 0.60	0.10 - Max	0.025 - Max	0.020 - Max	330 - 440	50		
SAE1015	5.2 - 22	0.13 - 0.18	0.30 - 0.60	0.10 - Max	0.025 - Max	0.020 - Max	340 - 450	50		
SAE1018	5.2 - 22	0.15 - 0.20	0.60 - 0.90	0.10 - Max	0.025 - Max	0.020 - Max	400 - 500	50		
SAE1020	5.2 - 22	0.18 - 0.23	0.60 - 0.90	0.10 - Max	0.025 - Max	0.020 -Max	420 - 530	45		
SAE10B21	5.2 - 22	0.18 - 0.23	0.80 - 1.10	0.10 - Max	0.025 - Max	0.020 - Max	445 - 570			
SAE15B25	5.2 - 22	0.23 - 0.28	0.90 - 1.20	0.10 - 0.20	0.025 - Max	0.025 - Max	495 - 615			
SAE19MnB4	5.2 - 22	0.20 - 0.25	0.80 - 1.10	0.10 - 0.30	0.025 - Max	0.02 - Max	495 - 620			
SAE10B35	8 - 22	0.32 - 0.38	0.80 - 0.10	0.15 - 0.25	0.02 - Max	0.015 - Max	608 - Max	50		High Tensile Fasteners
SAE10B38	8 - 22	0.35 - 0.45	0.60 - 0.90	0.15 - 0.25	0.02 - Max	0.015 - Max	568 - Max	50		

QUALITY ASSURANCE PROCESSES

The quality department of Wire Rod Mill at JSPL Patratu is focused and dedicated to achieving the rigorous zero defects and zero failures standard.

An integral part of the steelmaking and rolling complex, the metallurgical laboratory, i.e. Central Lab is fully equipped to test variations in steel structure from centre to surface, distribution and size of non-metallic inclusions and the nature and depth of surface imperfections.

Microstructure of different samples is observed to ensure minimal decarburisation level (1% of the wire rod diameter or as mandated by the customer), presence of inclusions, and grain size measurement.

JSPL's lab is Equipped with

- Optical Microscope
- Spectroscope
- Micro-Polisher
- Jominy Quench Tester and other equipments.

Two quality labs – the Main Central Lab and the Express Lab set at the shop floor, work in tandem with customers requirement, to continuously fine tune our products- resulting in productivity improvement at the customer end.

Commitment to quality starts right from the raw material. The billets at the billet yard are first physically inspected to ensure their dimensional tolerance, surface defect and then spectro tested to ensure their chemical composition. The spectrometer is fully computerized and can analyze a steel sample for 23 different elements in less than 20 seconds. It provides precision analysis for the full range of steel grades produced in the plant. The facilities present at our online express lab are tensile testing, hardness testing and upset test for the finished coils ranging from 5.2 mm to 22 mm diameter. JSPL Conducts Hardenability test for alloy steel grades.



PACKING AND DELIVERY

Each wire rod coil is strapped using an automatic compacter with steel straps and is provided with computer printed tags carrying size/heat no/weight/ production date and bar coding, allowing it to be traced right from the steel making stage to the finished product.

JSPL ensures that the wire rods are delivered in prime condition to customers through rake or by road within the shortest time period. We have a wide distribution network, carefully nurtured over the last few years, with stockyards at various locations across India. JSPL can offer our products from plant or stockyards as per convenience of our customers.



APPLICATIONS

JSPL Wire Rods due to its aforesaid advantages is prominently being used in various applications like:

- General purpose Wires, Industrial wires, Agriculture Wires, Bush Wires, Chain Rivet Wires, Detonator Wire, Umbrella Ribs, Upholstery Wires, Cycle Spokes, Heald Wires, Stapler Pin Wires, Needle Wires, Safety Pin Wires, Card Clothing Wires, Vineyard Wires, Earth wires etc.
- For production of automobile components like Screws, Fasteners, Bush, Spline, Socket, Connecting Rod, Gear, Engine Shaft, Connecting Rod, Spindles
- Fasteners, Bolts, Rivets, Screws for general applications
- Electrode Wires
- CAQ, ACSR wires
- Tyre and Hose Reinforcement Wires
- Pre-stressed Concrete Wire
- Coil Springs
- Wire Ropes
- Ball Bearing Balls



CERTIFICATES



ISO - 14001 : 2004 Environment Management System



ISO - 9001 : 2008 Quality Management System



OHSAS - 15001 : 2007 Occupational Health & Safety Management System



PGCIL Approval for HTGS Coil Wire



PGCIL Approval for Manufacture Earthwire



PGCIL Approval for Nut & Bolt

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