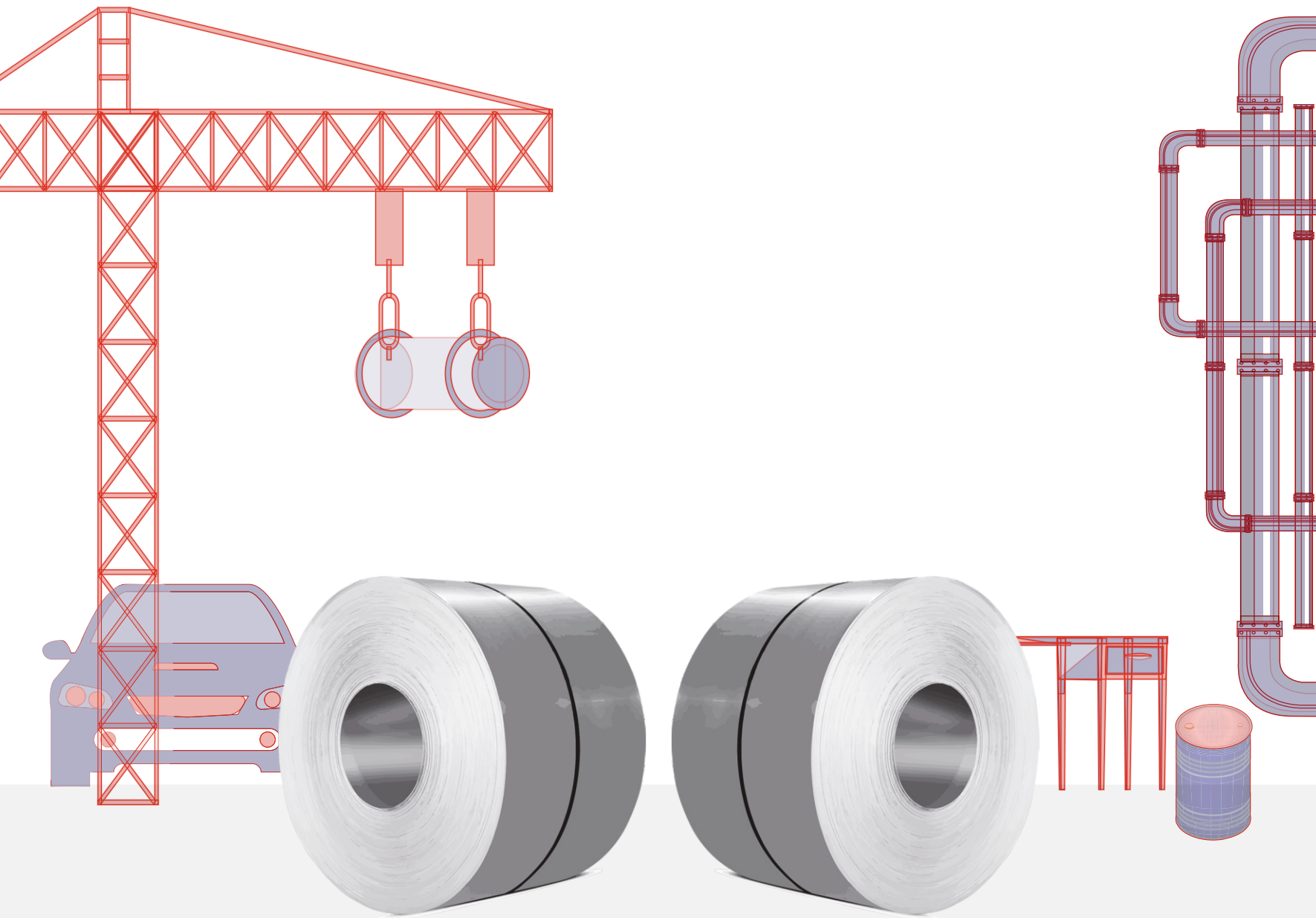
JSW Cold Rolled Steel



JSW Steel Plant, Vijayanagar Works, Karnataka
India's leading integrated steel company

Content

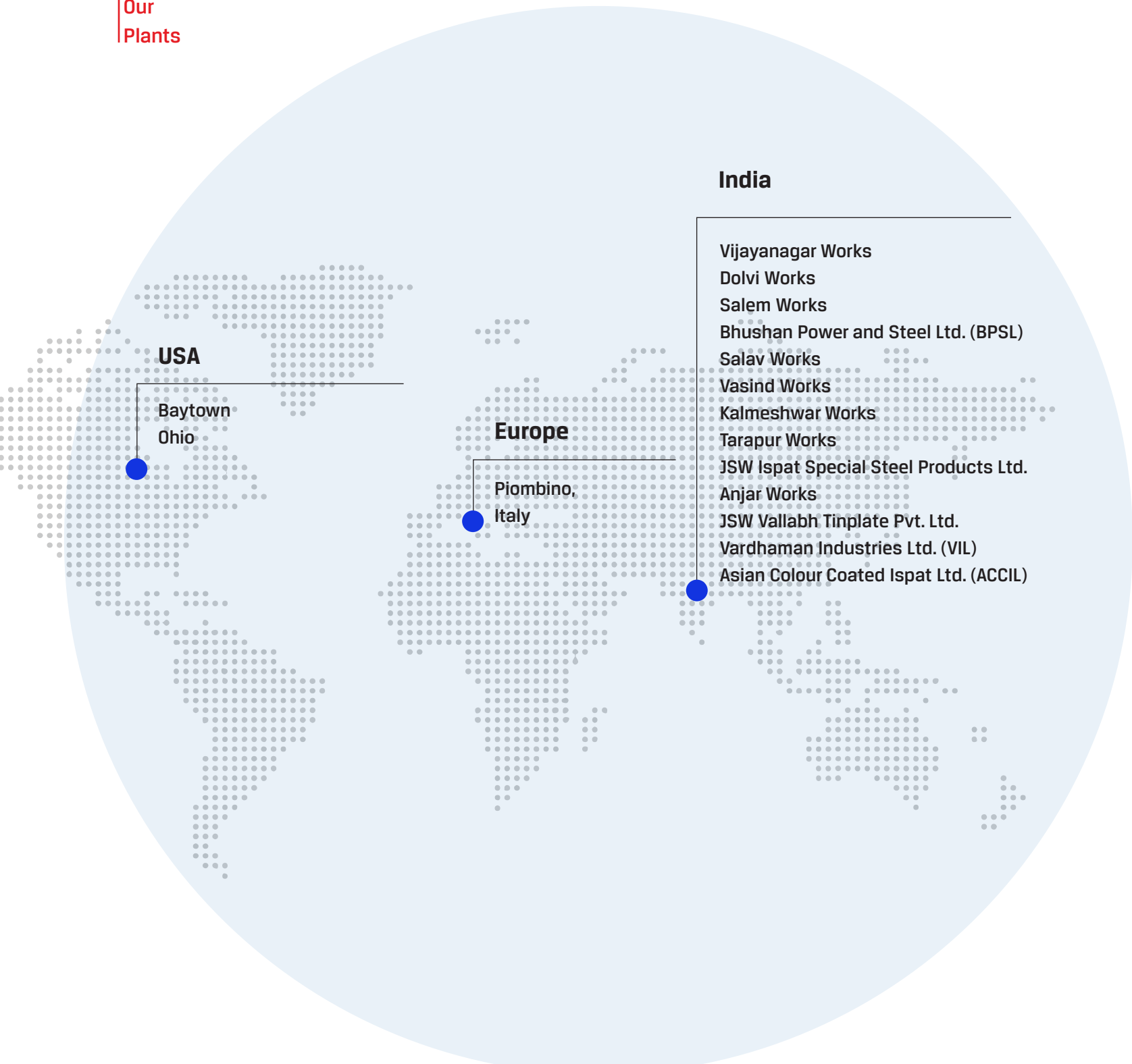
Meet JSW

The US$ 24 billion JSW Group is ranked among India's leading business houses. JSW's innovative and sustainable presence in various sectors including Steel, Energy, Infrastructure, Cement, Paints, Venture Capital and Sports is helping the Group play an important role in driving India's economic growth. The Group strives for excellence by leveraging its strengths & capabilities including a successful track-record of executing large capital-intensive & technically complex projects, differentiated product-mix, state-of-the-art manufacturing facilities and greater focus on pursuing sustainable growth.

It also has a strong social development focus aimed at empowering local communities residing around its Plant & Port locations. JSW Group is known to create value for all its stakeholders by combining its growth roadmap, superior execution capabilities and a relentless drive to be **#BetterEveryday.**

40000+	People
300+	Offices
16	Plants
4	Continents

Our Plants


India
Vijayanagar Works
Dolvi Works
Salem Works
Bhushan Power and Steel Ltd. (BPSL)
Salav Works
Vasind Works
Kalmeshwar Works
Tarapur Works
JSW Ispat Special Steel Products Ltd.
Anjar Works
JSW Vallabh Tinplate Pvt. Ltd.
Vardhaman Industries Ltd. (VIL)
Asian Colour Coated Ispat Ltd. (ACCIL)
USA
Baytown
Ohio
Europe
Piombino,
Italy

Meet JSW Steel

JSW Steel is the flagship business of the diversified, US$ 24 billion JSW Group. As one of India's leading business houses, JSW Group also has interests in energy, infrastructure, cement, paints, realty, e-platforms, mobility, defence, sports, and venture capital. Over the last three decades, JSW Steel has grown from a single manufacturing unit to become India's leading integrated steel company with a capacity of 35.7 MTPA in India and the USA (including 6 MTPA under commissioning in India). Its next phase of growth will take its total capacity to 43.5 MTPA by September 2027. The Company's plant in Vijayanagar, Karnataka is the largest single-location steel-producing facility in India with current capacity of 17.5 MTPA (including 5 MTPA under commissioning).

JSW Steel has always been at the forefront of research and innovation. It has a strategic collaboration with JFE Steel of Japan, enabling JSW to access new and state-of-the-art technologies to produce and offer high-value special steel products to its customers. These products are extensively used across industries and applications including construction, infrastructure, automobile, electrical applications, and appliances.

JSW Steel is widely recognized for its excellence in business and sustainability practices. Some of these recognitions include World Steel Association's Steel Sustainability Champion (consecutively from 2019 to 2024), Leadership Rating (A-) in CDP climate change disclosure and A in CDP Water Disclosure (2023), Deming Prize for TQM for its facilities at Vijayanagar (2018), and Salem (2019). It is part of the Dow Jones World and Emerging Markets Sustainability Indices (DJSI), and included in S&P Global's Sustainability Yearbook (consecutively from 2020 to 2023). JSW Steel is ranked 8th among the top 35 world-class steelmakers, according to the 'World-Class Steelmaker Rankings' by World Steel Dynamics (WSD), based on a variety of factors

As a responsible corporate citizen, JSW Steel's CO2 emission reduction goals are aligned with India's Climate Change commitments under the Paris Accord. JSW Steel aims to reduce its CO2 emissions by 42% from its steel-making operations by 2030 and has committed to achieve net neutral in carbon emission for all operations under its direct control by 2050. Other sustainability targets include achieving no net-loss in biodiversity at the operating sites by 2030, substantially improving air quality, reducing water consumption in all operations and maintaining Zero Liquid Discharge.

JSW Steel Plant, Vijayanagar Works, Karnataka


Total Quality Management (TQM)
is a set of systematic activities carried out by the entire
tively and efficiently achieve the organization's objectives
roducts and services with a level of quality that satisfies
ropriate time and price".
JSW
HART

- First continuous annealing line in India
- Widest Cold Rolling Mill (up to 1870 mm width)
- India's largest Coated Steel producer
- First Licensee Galvalume® producer in India
- ZERO EFFLUENT discharge for greener: cleaner environment
- 1.6 million trees planted at Vijayanagar Works, transforming the area into a green oasis
- The only plant in India with pair cross technology and twin-stand reversible cold-rolling mill
- The highest productivity steel plant in India, producing 800 - plus tonnes per person per annum
- Recognized for its 'zero -effluent dischargestatus; it reuses more than 95% of process waste
- Low carbon footprint as it recycles 96% of coke oven gas for power generation
- Uses sophisticated ambient air control infrastructure beyond and has reduced gas flaring to lower levels

Did You Know? JSW has the widest cold rolling mill for automotive steel in India (Up to 1870 mm.)

JSW Cold Rolled Product

JSW's Cold Rolled Closed Annealed (CRCA) Coils and Sheets are produced through the cutting -edge Cold Rolling Mills (CRM) at Vijayanagar. The 4.05 Mtpa CRM's modern facilities, advanced operational technologies, strict inspection processes and integrated quality control, ensures an excellent product.

JSW's CRCA is manufactured in Deep Drawing, Extra Deep Drawing, Interstitial Free Steels and High Strength grades, which are conformed to IS, JIS, EN, ASTM and JFS and standards. Dimensional accuracy is guaranteed by an automatic thickness control system using advanced numerical models.

Easy formability, Better quality surface finish, Consistent surface texture with the optimum balance between texture (for paint keying] and smoothness (for image distinction) makes JSW's CRCA the product of choice for automobiles, appliances, furniture and many other applications.

- Technical Collaboration with JFE Steel Corporation, Japan to improve Plant, Process and Products
- Development of CR & Coated (GA, GI) for automotive steel and other high end applications
- Jointly provide auto customers with products & services including application engineering solutions
- Proven overseas technology from SMS Siemag for PLTCM and JP Steel Plantech for CAL & CGL

Did You Know?

The Cold Rolled Closed Annealed Coils and Sheets are manufactured using the cutting-edge Cold Rolling Mills at Vijayanagaar. With a 3.3 MTPA, the CRM facility offers state-of-the-art facilities, advanced operational technologies, a robust due diligence process and an integrated quality control mechanism.

JSW Steel Plant, Vijayanagar Works, Karnataka
India's leading integrated steel company

Manufacturing Facilities

Vijayanagar					
Parameters	**Pellet**	**Sinter**	**Coke Oven**	**Corex**	**Blast Furnace**
Capacity	Pellet Plant1: 4.2 MTPA Pellet Plant2: 4.2 MTPA Pellet Plant3: 8.0 MTPA Total: 16.4MTPA	Sinter Plant1: 2.2MTPA Sinter Plant2: 2.2MTPA Sinter Plant3: 4.75MTPA Sinter Plant4: 2.2MTPA Total: 12.95MTPA	Coke Oven3: 1.5MTPA Coke Oven4: 1.9MTPA Cove Oven5:3.00MTPA Total: 6.4MTPA	Corex1: 0.8MTPA Corex2: 0.8MTPA Total - 1.6MTPA	Blast Furnace1: 1.9MTPA Blast Furnace2: 1.5MTPA Blast Furnace3: 3.5MTPA Blast Furnace4: 3.5MTPA Total: 10.4MTPA
Technology / Supplier	M/s. Kvaerner Metals, USA	M/s Otto Kumpo, Germany	Coke Oven3,4&5: M/s MECC, China (Sino Steel)	M/s Voest Alpine, Austria	BF1 - M/s Mecon, India BF2 - M/s Danieli Corus, Netherlands BF3 & 4 - M/s Siemens VAI, UK
Features	Dryers, Ball Mills, Pelletisiers of 7.5m dia, Indurating furnace, Electrostatic Precipitator and Water Re-circulation System	SP1 &2: 204 Square meter Sinter Bed SP3: 496 Square meter Sinter Bed SP4: 231 Square meter Sinter Bed	Coke Oven3,4&5: Recovery type with 12 batteries of 760 ovens	Coal Blending Station, Coal Drying Plant, Stock House, Water Re-circulation System, Gas Cleaning System, and Slag Granulation Plant	BF1 - useful volume of 2307 m3 BF2 - useful volume of 1680 m3 BF3&4 - useful volume of 4019 m3 each

Vijayanagar

Convertor	Secondary Steel Making	Caster	HSM	CRM	ACL
SMS1 (3 Convertors) : 4.0 MTPA SMS2 (4 Convertors) : 6.8 MTPA SMS3 (EAF, ZPF): 2.9 MPTS Total: 13.7 MTPA	SMS1: 3LHF & 1RH degasser SMS2: 4LHF & 2RH degassers SMS3:2LHF,1VD Degasser	SMS1 (4 Slab casters): 4.00MTPA SMS2(1 Billet caster): 1.40MTPA SMS2(4 Slab casters): 5.40MTPA SMS3(2 Billet Casters): 2.90MTPA Total - 13.7MTPA	HSM1: 3.2MTPA HSM2: 5.0MTPA Total - 8.2MTPA	CRM1: 1.8MTPA CRM2: 2.3MTPA (CAL1-0.95MTPA, CAL2-0.95MTPA - CRCA & CGL-1.30MTPA - Coated), CCL-0.3 MTPA	ACL1 - 0.2MTPA
M/s SMS Demag, Germany	M/s SMS Demag, Germany	M/s. SMS Demag, Germany M/s. VAI Siemens, UK	HSM1: M/s Danieli, USA HSM2: M/s Mitsubishi-Hitachi, Japan	CRM1: Continuous Pickling Line:M/s. Flat Products India Ltd Compact Cold Rolling Mill:M/s. SMS Demag, Germany Batch Annealing Furnace:M/s. Ebner, Austria CRM2: Pickling and Continuous Cold Rolling Mill:M/s. SMS Siemag, Germany Continuous Annealing Mill(2 Nos): M/s. SPCO, Japan Continous Galvanising Line (1 No.) : M/s SPCO, Japan	Terminal equipments- Tenova, Italy Furnaces- LOI Thermoprocess
SMS1 Convertors: 130tons/heat SMS2 Convertors: 170tons/heat SMS3 Convertors:155tons/heat Pre tap plug & post tap slag arrester (DART system), Top Cone Cooling, Combined blowing of oxygen from top and Argon from bottom, Sublance system.	LHF: Auto Electrode regulation system, Multiple wire feeding, Water cooled roof RH Degasser: Multi function lance, Hydraulic Rocker Arm System, Recirculation rate : 100 TPM for SMS1 & 125TPM for SMS2	Billet Caster: 165 x 165mm Slab Casters: 220/260/300mm Thick with 800 to 2200 mm Width Caster1&2: Curved Moulds with electromechanical Oscillation, Air mist cooling, Auto mould width change, SEN change facility Caster 3,4,6,7&8: Dynamic spray cooling, Auto mould width change, Vertical mould with hydraulic Oscillator, Auto-strand taper control with dynamic soft reduction. Electro Magnetic Stirrer facility also available	Thickness 1.4 - 25.4 mm and width 900-2100mm HSM1: 2- Reheating Furnace, 1-Roughing mill (Reversible), 6 stand-4 Hi tandem mill (Finishing Mill), Run out Table & 2-Down coilers HSM2: 3- Reheating Furnace, 2-Roughing mill (Reversible), 7 stand-4 Hi tandem mill (Finishing Mill), Run out Table & 3-Down coilers capable to make Dual Phase steel Online Surface inspection system	Thickness: 0.35 - 3.2mm and Width:900 - 1870mm CRM1: Pickling and Continuous Cold Rolling Mill(1 No), Electrolytic Cleaning Line(1 No:), Batch Annealing Furnace(1 No:), Skin Pass Mill(1 No), Recoiling Line(2 Nos), Auto Packing Line(1 Nos) CRM2: Pickling and Continuous Cold Rolling Mill(1 No), Continuous Annealing Line(2 Nos), Continous Galvanising Line (1 No.) : M/s SPCO, Japan, Recoiling Line(3 Nos), Auto Packing Line(2 Nos)	Thickness: 0.30 - 0.7 mm and Width:900 - 1350mm Process speed- 30-120mpm Coating- C3,C5,C6 Welder Capability- To weld 0.3 to 3.2%Si in the above thickness

Manufacturing Facilities

Vasind CAL	
Parameters	CAL
Capacity	CAL:0.5MTPA
Technology / Supplier	John Cockerill,Belgium
Features	•6 Hi Skin Pass Mill with 1000T Roll Force & 2% Elongation capacity •Electrostatic Oiler-0.2 to 3 gm/m2

BPSL BAF (Annealing)	
Parameters	CRM
Capacity	PICKLING - 1.2MTPA ,CRM 1 & 2: 1.2MTPA (CRCA-0.25 MTPA & GALVANIZED -0.23MTPA ,GALVALUME -0.46MTPA & CCL-0.25 MTPA
Technology / Supplier	**CRM1:** 3 Pickling Line:M/s. Flat Products India Ltd 6 Cold Rolling Mill:M/s. Flat Products India Ltd Batch Annealing Furnace:M/s. Ebner, Austria, Galvanising line (3 Nos), Galvalume line (1 Nos), Colour coating line (1Nos) M/S CMI **CRM2:** Cold Rolling Mill(1 No):M/s.Flat Products India Ltd Continous Galvalume Line (2 No.) , Colour coating line (1 Nos) : M/s Flat Products India Ltd
Features	Thickness: 0.08 - 3.2mm and Width: 20 - 1320mm **CRM1:** Pickling (3 Nos), Cold Rolling Mill(6 Nos), Electrolytic Cleaning Line(1 No:), Batch Annealing Furnace(12 Nos base :), Skin Pass Mill(3 Nos), TLL Line(1 No), CRS (14 Nos) CTL (10 Nos) ,Deck Profile (1 Nos) , Profile (3 Nos) Tiles Profile (1 Nos) **CRM2:** Cold Rolling Mill(1 No), Continous Galvalume Line (2 No.) CRS (1 Nos) Lineer Profile (1 Nos)

Widest CR Mill for automotive Steel in India

- First Continuous Annealing Line in India
- State-of-the-art continuous galvanizing line with dual pot system for GI & GA production
- Higher Strength (up to TS 980MPa) & SEDDQ grade processing facilities, which is first time in India.
- PLCTM Line at CRM1 (Pickling Line coupled to Tandem Cold- Mill)-Capacity -1.75 Mtpa, Supplier Primetal Technology , Japan
- PLCTM Line at CRM2 (Pickling Line coupled to Tandem Cold- Mill)-Capacity -2.3 Mtpa. Supplier- SMS Siemag, Germany, automation by TMEIC,USA
- Two Continuous Annealing Lines - Capacity -0.95 Mtpa each, Steel Plantech Corporation (SPCO), Japan Automation by TMEIC, Japan
- Continuous Galvanizing Line - Capacity -0.40 Mtpa Steel Plantech Corporation (SPCO), Japan automation was done by TMEIC, Japan
- Seamless automatic material storage, tracking, retrieval and transfer system
- Continuous pickling line (capacity: 1.2 Mtpa) supplier -Flat Products India Ltd.
- Electrolytic Cleaning Line (Capacity 0.6 Mtpa) Supplier- Flat Products India Ltd, India automation by ABB
- Batch Annealing Furnaces (Capacity - 0.825 Mtpa) Supplier- Ebner, Austria
- 4-High single stand skin pass (Capacity - 0.875 Mtpa) Supplier- SMS Demag, Germany
- Two Re -Coiling Lines (combined capacity - 0.35 Mtpa) Supplier- Bronx, UK
- Recoiling Line (3 in numbers) - combined capacity- 0.6 Mtpa. Supplier- Dongbang, Korea
- Slitting Line - capacity- 0.3 Mtpa Supplier- Dongbang, Korea
- Coal Yard Management System Supplier - Pesmel, Finland

JSW Steel Cold Rolled Product Advantages

•Reduced lead time
Quicker serviceability from CAL route.

•True customization
Customized sizes through service center at Vijaynagar, Pune, Palwal, and Chennai & Ahmedabad.

•Master workability
JSW's cold rolled products have splendid formability and minimal deviation in mechanical properties due to company's innovative technologies, and integrated quality control system extending from raw materials to the final product and newly constructed and modernized facilities.

•Superior surface quality and dimensional accuracy
Dimensional accuracy is guaranteed by an automatic thickness control system using advanced numerical models, modern facilities, advanced operational technologies, strict inspection, and integrated quality control ensure excellent surface quality.

•Wide range of product standards
JSW cold rolled products meet a wide range of product standards, such as BIS and other international standards, including JFS standards.

•Wide range of sizes
Wide range of thickness and width options.

•Superior shape
Flatness control ensures superior strip flatness.

Cold Rolling Mills

CRM1 Lines			
Specification	**Details**	**Unique Features**	**Value for Customers**
PLTCM-Pickling Line coupled to Tandem Cold-Mill	Every aspect of JSW PLTCM is designed to add precision and quality control to the cold rolled process. In this, pickling line is linked with cold rolling mill, which provides better shape control, delivers significant improve ments with regard to mill productivity, yield, and production as a result of the elimination of strip threading and tailing-out operations. JSW's PLCTM is characterized by high pickling rates, quality pickling operations, flexible production, and a wide range of product sizes. Quality product and lower production time requirements as well as compliance of the highest standards for environmental safety.	•Laser welder for joining coil ends with automatic seam evaluation by Miebech •Tension leveler for shape improvement and effective scale breaking •IBOX (Immersed box) type Pickling for energy saving & superior pickling performance •5 Stand 6 High tandem cold mill •CVC ^{PLUS} technology, for stand 1 & 2 (existing CCM stands) •UC Technology for stand 3 to 5 •Tandem Tension Reel for handling 62 ton coils •Multi zone cooling for better Auto Shape Control System •X-ray gauges mounted at the entry & exit of TCM for fine thickness control with feed forward & feedback system •laser Velocity Meter have precise mass flow •In-line inspection system at the TCM exit section to take fast corrective action towards any process abnormality •Mathematical process model for pickling & TCM areas for efficient process control & level 2 & 3 automation •Online Trimmer	•Excellent gauge accuracy by high response control •Reduced edge drop with small workroll
Electrolytic Cleaning Line (ECL)	The main purpose of electrolytic cleaning is to remove the carried over rolling oils and other debris left on the strip surface after rolling. Every trace of surface oil is removed by saponification and emulsification of steel in alkaline solution. This degreasing process is necessary for the production of cold rolled strip with smooth surface.	•Level 2 automation •In line skin pass mill for roughness transfer •Low current density line for better surface conditions •Flying shear and accumulator for retaining product quality	-
Batch Annealing Furnace (BAF)	After cold rolling, the steel strip is hard and brittle with its grains elongated in the rolling direction. To obtain the desired grain structure and to improve the mechanical properties, the strip is annealed at an elevated tempera ture in a reducing atmosphere.	•Uniform annealing under 100% hydrogen atmosphere •Hydrogen purity is 99.999% •Superior surface cleanliness •Final cooling on separate bases under dry & protected atmosphere	-
Skin Pass Mill (SPM)	Automatic packing improves packing consistency, aesthetics, quality and annealed coil to restore the desired temper and prevent generation of stretcher strain and coil breaks. Skin pass rolling also helps to produce the desired surface roughness (dull, matte or bright) as per customer's requirements.	•Shape meter at exit side •Use of temper fluid for better cleanliness •Level 12 set up and storage system •Complete automation from coil entry to exit •AC drives and high speed processors for better quality	-

Cold Rolling Mills

CRM2 Lines			
Specification	**Details**	**Unique Features**	**Value for Customers**
PLTCM-Pickling Line coupled to Tandem Cold-Mill	Every aspect of JSW PLTCM is designed to add precision and quality control to the cold rolled process. In this, pickling line is linked with cold rolling mill, which provides better shape control, delivers significant improvements with regard to mill productivity, yield, and production as a result of the elimination of strip threading and tailing-out operations. JSW's PLCTM is characterized by high pickling rates, quality pickling operations, flexible production, and a wide range of product sizes. Quality product and lower production time requirements as well as compliance of the highest standards for environmental safety.	•Laser welder with automatic seam evaluation by SMS X -Pro •Stretch Leveler for shape improvement and scale breaking •PPMC (Pickling Process Model Computer) from SMS Siemag •5 Stand 6 HI eves Plus Technology •Shapemeter Roll by ABB •Multizone Cooling System for localized shape control •Laser Velocity Meter (LVM) for precise speed feedback •Flying Gauge Change (FGC) •Carousel reel with 2 mandrels	•Wider coil width (1870mm) •Shorter production lead time
Continuous Aneealing Line (CAL)	The continuous annealing line is designed to produce material for automotive industry, appliance industry etc. In order to get unifrom mechanical properties, it has a radiant tube heating type vertical annealing furnace followed by the rapid cooling type cooling furnace and overaging section. The entire furnace will be filled with protective HN gas. This wet type skin pass unit improves the flatness with ease, apart from removing the stretcher strain. The annealing process consists of pre-heating, soaking, slow cooling, rapid cooling, overaging, final cooling & water cooling in sequence. A mathematical model ensures high temperature accuracy. Due to this homogenous heating & cooling takes place which results in superior ductility and super surface finish.	•Narrow lap mash seam welding system •Thermal crown control system •X-Ray thickness 7 width gauge •6 HI skin pass mall with IMR bending with additional IMR shifting for top notch shape •Vertical & horizontal in line inspection •Electrostatic oiler • Automatic surface inspection system by Cognex	•High tensile sheet (-980Mpa) •Uniform mechanical property in coil •Shorter production lead time


KLP ROLLSTOP
KLP ROLLSTOP
KLP ROLLSTOP

Product Specification

Grades & Standards

Classification	EN	JIS	ASTM	IS513	JFS
CQ DQ DDQ EDDQ IF	DC01 DC03 DC04 DC05 DC06	SPCC SPCD SPCE SPCF SPCG	CS Type A,B & C DS Type A & B - DDS EDDS	CR1 CR2 CR3 CR4 CR5	- JSC270C JSC270D JSC270E JSC270F
High Strength - IF based	HC220Y HC260Y -	- - -	- - -	ISC340P ISC390P ISC440P	JSC340P JSC390P JSC440P
Bank Hardened	HC180B HC220B HC260B HC300B	- - - -	- GR_BH_31 - -	ISC300B ISC320B ISC360B ISC390B	- JSC340H - -
High Strength Micro Alloyed Steel	HC260LA HC300LA HC340LA HC380LA HC420LA HC460LA HC500LA - - -	- - - - - - - - - -	- - - - - - - - - -	ISC350LA ISC380LA ISC410LA ISC440LA ISC470LA ISC510LA ISC550LA ISC600LA ISC700LA ISC800LA	- - - - - - - - - -
C-Mn High Strenght Steel	- - - - -	SPFC340 SPFC390 SPFC440 SPFC490 SPFC540	- - - - -	ISC340W ISC390W ISC440W ISC490W ISC540W	JSC340W JSC390W JSC440W - -
Rephosphorized	HC180P HC220P HC260P HC300P - -	- - - - - -	- - - - - -	ISC280R ISC320R ISC360R ISC400R ISC440R -	- - - - JSC440R JSC590R
Dual Phase	HCT490X HCT590X HCT780X HCT980X - -	- SPFC590Y SPFC780Y SPFC980Y - -	- - - - - -	ISC490Y ISC590Y ISC780Y ISC980Y - -	- JSC590Y JSC780Y JSC980Y - -
Complex Phase	HCT600C HCT780C	- -	- -	ISC600C ISC780C	- -
TRIP	HCT690T HCT780T	- -	- -	ISC690T ISC780T	- -

Note : Comparison between standards is indicative only

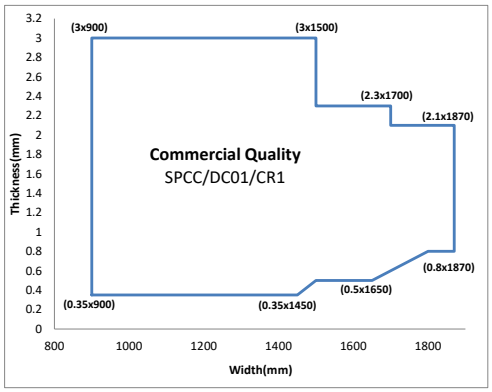
Grades & Standards

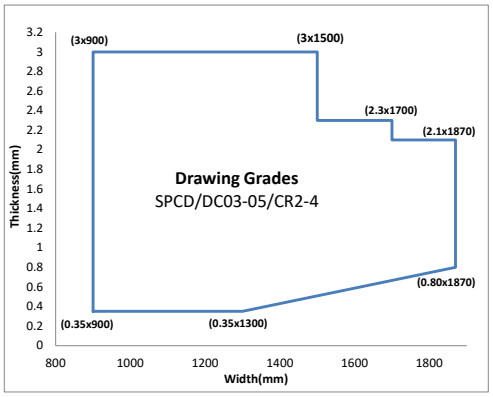
Steel Type	Ref STD	UTS (N/mm²) Min	Y.S (N/mm²) Min	Y.S (N/mm²) Max	% Elongation	n - Value	R - bar
CQ	EN_DC01	270	0	280	28	-	-
DQ	EN_DC03	270	0	240	34	-	1.30
DDQ	EN_DC04	270	0	210	38	0.18	1.60
EDDQ	EN_DC05	270	0	180	40	0.20	1.90
IF	EN_DC06	270	0	180	38	0.22	1.80
High Standard - IF based	EN_HC220Y	350	220	270	34	0.18	1.60
	EN_HC260Y	390	260	320	32	0.17	1.40
	JFS_JSC440P	440	225	335	31	-	-
Bank Hardened	EN_HC180B	300	180	230	34	0.17	1.60
	EN_HC220B	320	220	270	32	0.16	1.50
	EN_HC260B	360	260	320	29	-	-
	EN_HC300B	400	300	360	26	-	-
High Strength Micro Alloyed Steel	EN_HC260LA	350	260	330	26	-	-
	EN_HC300LA	380	300	380	23	-	-
	EN_HC340LA	410	340	420	21	-	-
	EN_HC380LA	440	380	480	19	-	-
	EN_HC420LA	470	420	520	17	-	-
	EN_HC460LA	510	460	580	13	-	-
	EN_HC500LA	550	500	620	12	-	-
	IS_ISC600LA	600	550	-	11	-	-
	IS_ISC700LA	700	650	-	10	-	-
	IS_ISC800LA	800	830	-	4	-	-
C-Mn High Strength Steel	JFS_JSC340W	340	185	285	36	-	-
	JFS_JSC390W	390	225	335	32	-	-
	JFS_JSC440W	440	265	370	29	-	-
	JIS_SPFC490	490	295	-	24	-	-
	IS_ISC540W	540	325	440	20	-	-
Rephosphorized	EN_HC180P	280	180	230	34	-	1.60
	EN_HC180P	320	220	270	32	-	1.30
	EN_HC180P	360	260	320	29	-	-
	EN_HC180P	400	300	360	26	0.50	1.40
	JFS_JSC440R	440	335	440	26	-	-
	JFS_JSC590R	590	410	560	18	-	-
Dual Phase	EN_HCT490X	490	290	380	24	-	-
	JFS_JSC590Y	590	320	440	19	-	-
	JFS_JSC780Y	780	420	590	14	-	-
	JFS_JSC980Y	980	580	920	10	-	-
	JFS_JSC980YL	980	580	730	11	-	-
	JFS_JSC980YH	980	650	920	10	-	-
Complex Phase	EN_HCT600C	600	350	500	16	-	-
	EN_HCT780C	780	570	720	10	-	-
TRIP	EN_HCT690T	690	400	520	23	-	-
	EN_HCT780T	780	450	570	21	-	-

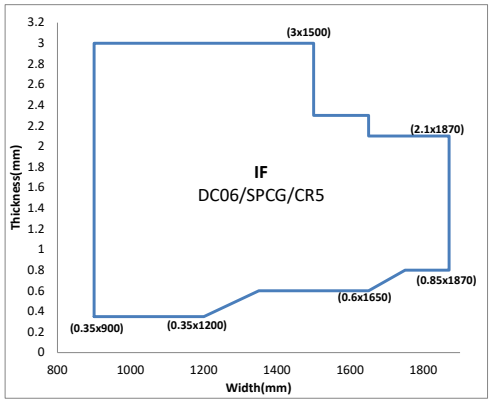
Chemical Properties

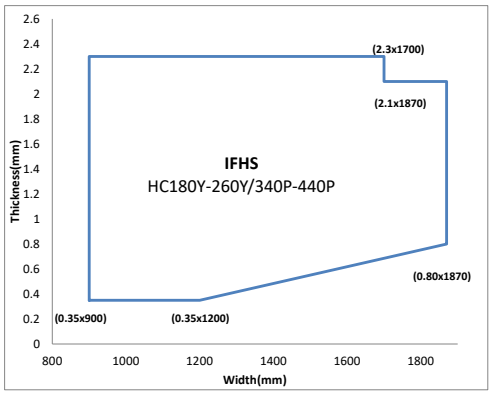
Standard		Chemistry (Max%)							
Steel Type	Ref STD	C	Mn	Si	Al	S	P	Ti	Nb
CQ	EN_DC01	0.12	0.60	-	-	0.045	0.045	-	-
DQ	EN_DC03	0.10	0.45	-	-	0.035	0.035	-	-
DDQ	EN_DC04	0.08	0.40	-	-	0.030	0.030	-	-
EDDQ	EN_DC05	0.06	0.40	-	-	0.025	0.025	-	-
IF	EN_DC06	0.02	0.35	-	-	0.020	0.020	0.30	-
High Strength - IF based	EN_HC220Y	0.010	0.90	0.30	0.010	0.025	0.080	0.12	-
	EN_HC260Y	0.010	1.60	0.30	0.010	0.025	0.10	0.12	-
	JFS_JSC440P	0.010	1.80	0.30	0.070	0.020	0.080	-	-
Bank Hardened	EN_HC180B	0.050	0.70	0.50	0.015	0.025	0.60	-	-
	EN_HC220B	0.060	0.70	0.50	0.015	0.025	0.08	-	-
	EN_HC260B	0.080	0.70	0.50	0.015	0.025	0.10	-	-
	EN_HC300B	0.10	0.70	0.50	0.015	0.025	0.12	-	-
High Strength Mirco Alloyed Steel	EN_HC260LA	0.10	0.60	0.50	0.015	0.025	0.025	0.15	-
	EN_HC300LA	0.10	1.00	0.50	0.015	0.025	0.025	0.15	0.090
	EN_HC340LA	0.10	1.10	0.50	0.015	0.025	0.025	0.15	0.090
	EN_HC380LA	0.10	1.60	0.50	0.015	0.025	0.025	0.15	0.090
	EN_HC420LA	0.10	1.60	0.50	0.015	0.025	0.025	0.15	0.090
	EN_HC460LA	0.14	1.80	0.60	-	0.025	0.030	0.15	0.090
	EN_HC500LA	0.14	1.80	0.60	-	0.025	0.030	0.15	0.090
	IS_ISC600LA	0.16	2.50	-	0.070	0.025	0.070	-	-
	IS_ISC700LA	0.16	2.50	-	0.070	0.025	0.070	-	-
	IS_ISC800LA	0.18	3.00	-	0.070	0.025	0.070	-	-
C-Mn High Strength Steel	JFS_JSC340W	0.12	0.70	0.50	0.015	0.025	0.025	-	-
	JFS_JSC390W	0.18	1.00	0.50	0.015	0.025	0.025	-	-
	JFS_JSC440W	0.22	1.50	0.50	0.015	0.025	0.025	-	-
	JFS_JSC490W	0.25	1.80	0.50	0.015	0.025	0.025	-	-
	IS_ISC540W	0.20	2.50	0.50	0.070	0.030	0.050	-	-
Rephosphorized	EN_HC180P	0.050	0.60	0.40	-	0.025	0.080	-	-
	EN_HC220P	0.070	0.70	0.50	-	0.025	0.080	-	-
	EN_HC260P	0.080	0.70	0.50	-	0.025	0.10	-	-
	EN_HC300P	0.10	0.70	0.50	-	0.025	0.12	-	-
	JFS_JSC440R	0.10	1.50	0.50	0.015	0.025	0.12	-	-
	JFS_JSC590R	0.15	2.00	0.50	0.015	0.025	0.12	-	-
Dual Phase	EN_HCT490X	0.14	2.00	0.75	0.015	0.015	0.08	0.10	0.050
	JFS_JSC590Y	0.15	2.00	1.00	0.020	0.020	0.10	-	-
	JFS_JSC780Y	0.20	2.50	1.00	0.020	0.020	0.10	-	-
	JFS_JSC980Y	0.20	3.50	1.00	0.020	0.020	0.10	-	-
	JFS_JSC980YL	0.20	3.50	1.00	0.020	0.020	0.10	-	-
	JFS_JSC980YH	0.20	3.50	1.00	0.020	0.020	0.10	-	-
Complex Phase	EN_HCT600C	0.18	2.20	0.80	0.015	0.015	0.08	0.10	0.050
	EN_HCT780C	0.18	2.50	1.00	0.015	0.015	0.08	0.10	0.050
TRIP	EN_HCT690T	0.24	2.20	2.00	0.015	0.015	0.08	0.10	0.10
	EN_HCT780T	0.25	2.50	2.20	0.0.15	0.015	0.08	0.10	0.10

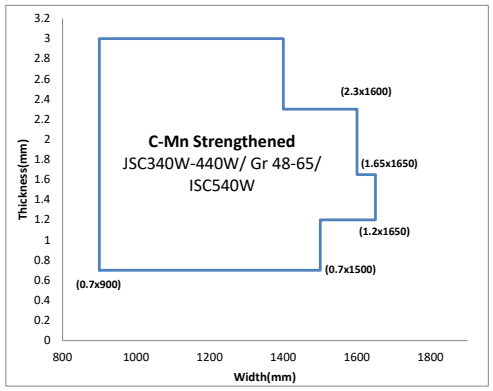
*Above mentioned chemical composition is just for basic referance. Final chemistry of the product will be based on the mutual agreement between the customer and M/s.JSW Steel Ltd.


Commercial Quality
SPCC/DC01/CR1
(3x900)
(3x1500)
(2.3x1700)
(2.1x1870)
(0.8x1870)
(0.5x1650)
(0.35x900)
(0.35x1450)
Thickness(mm)
Width(mm)


Drawing Grades
SPCD/DC03-05/CR2-4
(3x900)
(3x1500)
(2.3x1700)
(2.1x1870)
(0.80x1870)
(0.35x900)
(0.35x1300)
Thickness(mm)
Width(mm)


IF
DC06/SPCG/CR5
(3x1500)
(2.1x1870)
(0.85x1870)
(0.6x1650)
(0.35x900)
(0.35x1200)
Thickness(mm)
Width(mm)

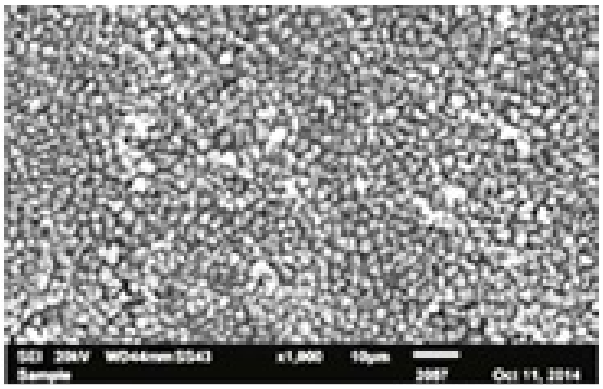

IFHS
HC180Y-260Y/340P-440P
(2.3x1700)
(2.1x1870)
(0.80x1870)
(0.35x900)
(0.35x1200)
Thickness(mm)
Width(mm)


C-Mn Strengthened
JSC340W-440W/ Gr 48-65/
ISC540W
(2.3x1600)
(1.65x1650)
(1.2x1650)
(0.7x1500)
(0.7x900)
Thickness(mm)
Width(mm)

Application

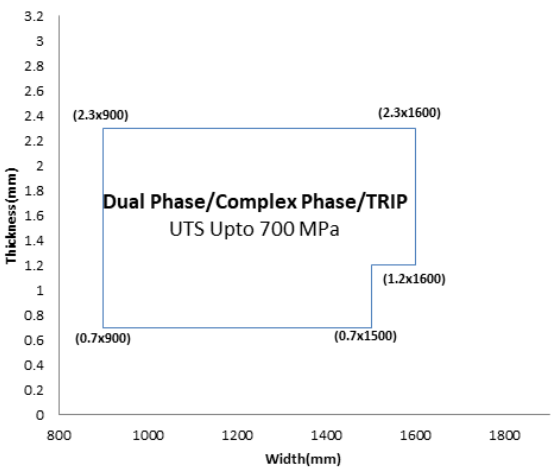
Given their high energy absorption capacity and fatigue strength, cold rolled Dual Phase Steels are particularly well suited for automotive structural and safety parts such as longitudinal beams, cross members and reinforcements.

Phosphatability Test

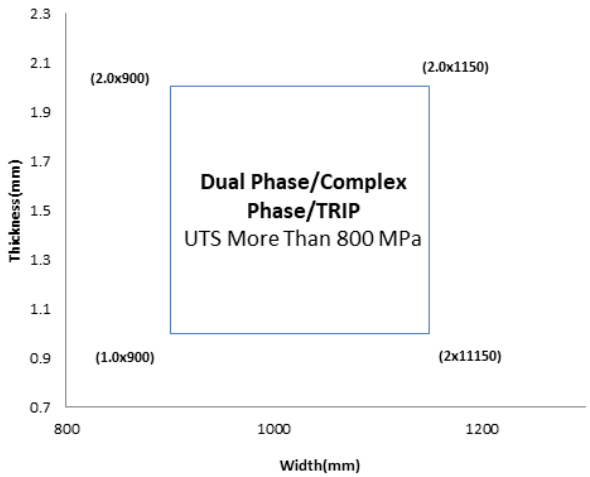


*JSW DP Steel comfortably satisfy the test requirements having very fine and even phos phate crystal size with Phosphat ability ratio) 90%

Available Dimension for Dual Phase Grades (700mPa)

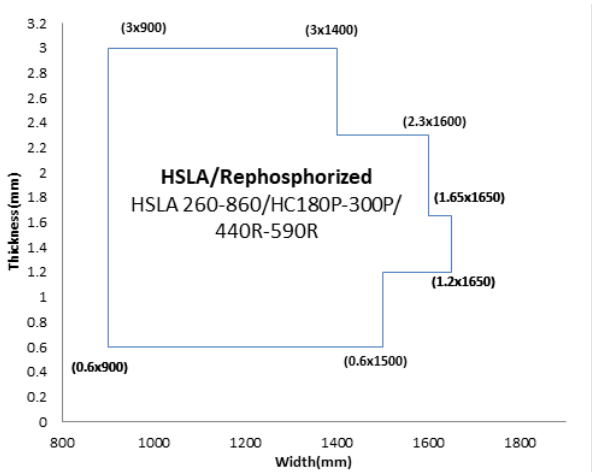


Available Dimension for Dual Phase Grades (UTS)800mPa)



High Strength Low Alloy Steel

Cold rolled HSLA (High Strength Low Alloy) steels are strengthened by a combination of precipitation hardening and grain size refining resulting in high strength with low alloy. Due to their fine grain microstructure and excellent weldability these grades are particularly suitable for structural compo nents such as suspension systems and chassis and reinforcement parts. HSLA steels offers good fatigue strength suitable for suspension arm, shock tower along with superior impact strength applicable for longitudinal beams cross members, reinforce ments, etc. For their respective yield strength levels, these steels show excellent cold forming and low -temperature brittle fracture strength. The various HSLA grades are characterized by their yield strength.



Complex Phase

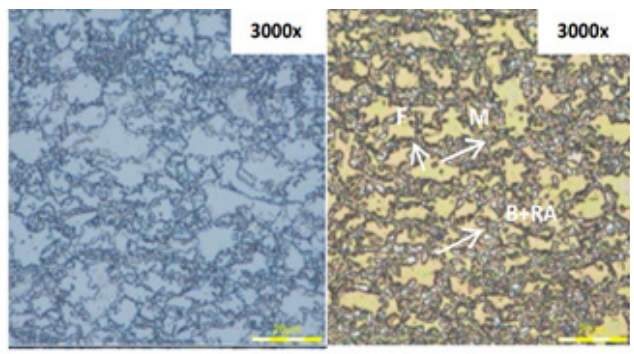
Emerging trend in automotive industry is usage of advance high strength steel (AHSS) sheets in auto body applications. Trend is driven by reduction of vehicle weight in combination to improved passenger safety by incorporating thinner gauge AHSS. The Complex Phase family of steels supplements JSW's AHSS (Advanced High Strength steel) product range. These steels are cold formed to make lightweight structural elements. For this reason, JSW has added the Complex Phase family of steels to its range. These steels offer high as-delivered Yield Strength, Uniform elongation, good bendability and stretch flangeability.

Application

Given their high energy absorption capacity and fatigue strength, this grades are particularly well suited for automotive safety components requiring good impact strength and for suspension system components.

Microstructure

Complex phase microstructure consist of Ferrite, Bainite, martensite & Retained Austenite. Primary phase is ferrite +Bainite, Martensite islands with retained Austenite on Grain boundary. State of art facility of continuous annealing line provide precise control on cooling rate and overaging temperature for achieving desired microstructure, leads to precise range of properties in Complex Phase grades.



Optical Nital Optical La-Pera

TRIP Steel

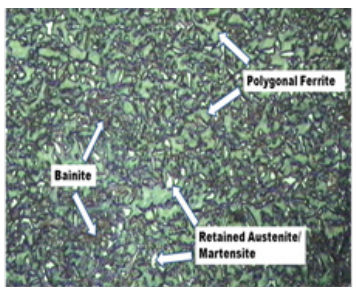
Formability is a major limitation which restricts the application of high strength steel in automotive body parts having complex profile. Through improving the strain hardening coefficient better formability can be achieved. To facilitate, TRIP phenomenon has been utilized where retained austenite in ferrite-bainite matrix can be transformed to martensite post forming resulting in higher strength and improved stretch formability. However, the optimum deployment of said TRIP steel can only be achieved by right combination of retained austenite, bainite and martensite phase fractions and their distribution. In order to achieve the said TRIP phenomenon, Si and Al are added to get the desired amount of retained austenite at room temperature.

Application

TRIP Steels find their applications in automotive structural parts, Dash Panel, Roof Rails, B Pillar, reinforcements and brackets, bumper-reinforcement beams.

Microstructure

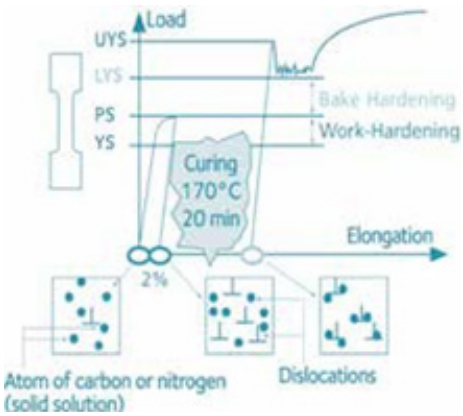
TRIP (Transformation-Induced Plasticity) steels exhibit a unique microstructure that contributes to their exceptional mechanical properties. The matrix phase of TRIP steels is ferrite, which provides strength and toughness. It has a fine-grained structure, contributing to overall strength, Bainite which enhances strength and ductility and has a needle-like or lath-like morphology. TRIP steels have retained austenite, a metastable phase. The presence of retained austenite is crucial for TRIP steels' mechanical properties. During deformation, the austenite transforms into martensite, leading to strain hardening and improved ductility.



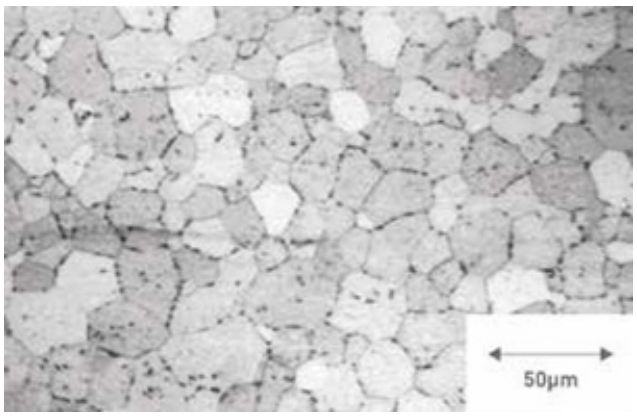
Bake Hardening Grades

JSW BH grades are best suited for the automobile components, which are put for the commercial paint baking operation. Some examples of these components are side, outer, inner body panels. BH grades possesses higher yield and tensile strength than conventional low carbon steel, excellent formability (r & n -value) along with bake hardening strength of 35-50 MPa .BH grades can replace lower strength material with thicker gauge and provide better fuel efficiency by decreasing the weight of the vehicle. It has better dent resistance than conventional low C steel confirming better safety of the automobiles and the passengers as well. The various BH grades are characterized by their yield strength as per EN standard

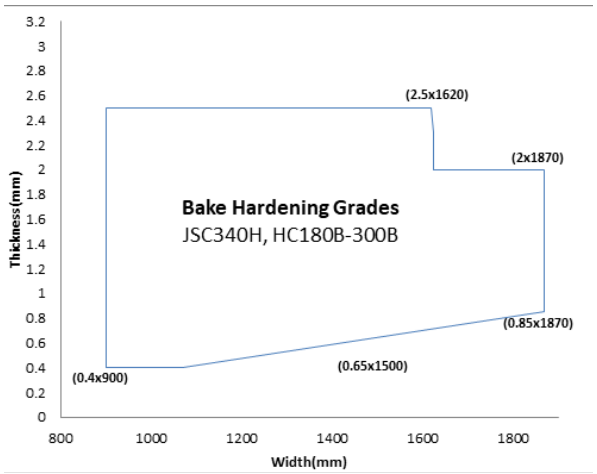
Bake hardening -IF steel having carbon content of ⟨0.0035 wt% has very low yield strength initially. Small amount of carbon (approx. 5 to 10 ppm wt%) is intentionally left unfixed in steel solution by controlled Ti addition. Following press forming via plastic deformation the induced dislocations results in work hardening. The press formed components are heated at approx 170°C for 20mins during bake hardening process. Through the paint baking process the solute carbon stabilizes the dislocations which were induced during work hardening by diffusing next to the core of a dislocation. An additional stress is now required to promote the slip movement once mobile dislocations are pinned down by solute carbon after paint baking. Therefore, a bake hardenable steel sheet exhibits a low yield strength value before press forming and a high yield strength value in a finished car component after paint baking.



The Mechanism and evaluating method of bake hardening in a tensile is illustrated in above figure



BH Grade microstructure showing complete polygonal ferrite grains resulting in excellent drawability



24 km long conveyer belt to aid
seamless transmission of iron ore.
Vijayanagar Works, Karnataka

Slitting Line

Particulars	CR Slitter 1	CR Slitter 2	CR Slitter 3
Material Specifications	CQ / DQ / EDDQ / HSLA / IF (Oiled only)	CQ / DQ / EDDQ / HSLA / IF (Oiled only)	CQ / DQ / EDDQ / HSLA / IF (Oiled only)
Tensile Strength (N/mm^2)	270 - 700	270 - 700	270 - 700
Thickness (mm)	0.30 - 3.30	0.30 - 3.30	0.40 - 3.00

Slitting Line - Input Material Specification

Particulars	CR Slitter 1	CR Slitter 2	CR Slitter 3
ID (mm)	508 / 610	508 / 610	508 / 610
OD (mm) max	800 - 1900	800 - 1900	800 - 1900
Weight (t) max	30	25	20
Width (mm)	400 - 1700	400 - 1300	400 - 1650

Slitting Line - Output Material Specification

Particulars	CR Slitter 1	CR Slitter 2	CR Slitter 3
ID (mm)	508 for all thk; 610 for thk ≥ 0.65	508 for all thk; 610 for thk ≥ 0.65	508 for all thk; 610 for thk ≥ 0.65
OD (mm) max	800 - 1900	800 - 1900	800 - 1900
Weight (t) max	30	25	20
Tolerance	For width upto 600mm ± 0.25mm For width above 600mm ± 0.50mm	For width upto 600mm ± 0.25mm For width above 600mm ± 0.50mm	For width upto 600mm ± 0.25mm For width above 600mm ± 0.50mm
Slit Width (min) mm	80	80	80
Telescopycity	7 mm max at inner dia and 3 mm max. between the wraps	7 mm max at inner dia and 3 mm max. between the wraps	7 mm max at inner dia and 3 mm max. between the wraps
No of Slits	Min strength & Min thk : 20 Nos; Max strength & Max thk : 5 Nos	Min strength & Min thk : 15 Nos; Max strength & Max thk : 5 Nos	Min strength & Min thk : 20 Nos; Max strength & Max thk : 5 Nos

Cut to Lenght Line

Particulars	CR CTL 1	CR CTL 2	CR CTL 3
Material Specifications	CQ / DQ / EDDQ / HSLA / IF	CQ / DQ / EDDQ / HSLA / IF	CQ / DQ / EDDQ / HSLA / IF
Tensile Strength (N/mm^2)	270 - 700	270 - 700	270 - 700
Thickness (mm)	0.65 - 3.30	0.30 - 1.50	0.60 - 3.30

Cut to Lenght Line - Input Material Specification

Particulars	CR CTL 1	CR CTL 2	CR CTL 3
ID (mm)	508 / 610	508 / 610	508 / 610
OD (mm) max	800 - 1900	800 - 1900	800 - 1900
Weight (t) max	30	25	15
Width (mm)	500 - 1700	400 - 1300	150 - 800
Flatness	40 I	40 I	40 I

Cut to Lenght Line - Output Material Specification

Particulars	CR CTL 1	CR CTL 2	CR CTL 3
Length (mm)	500 - 4500	500 - 4500	250 - 2500
Length Tolerance for Rectangular Shape (mm)	± 0.50 (upto 2000mm length); ± 1.00 (above 2000mm length)	± 0.50 (upto 2000mm length); ± 1.00 (above 2000mm length)	± 0.50 (upto 2000mm length); ± 1.00 (above 2000mm length)
Length Tolerance for Angular Shape (mm)	-	± 1.5 mm	-
Diagonal diff (mm)	1.50 (for trimmed edge only)	1.00 (for trimmed edge only)	1.00 (for trimmed edge only)
Flatness	5 I (subject to input shape)	5 I (subject to input shape)	5 I (subject to input shape)
Packet wt (t) max	4.00	4.00	2.50

Note : These are the best possible tolerances we can offer, but wider tolerances are appriciated which will enhance the production rate and also bring down rejection levels

Process Capacity CAL

Parameters	Details
Thickness (min)	0.3mm
Thickness (max)	1.5mm
Width (min)	900mm
Width (max)	1550mm
Coil ID	508 / 610 mm
Coil OD	700 / 2000 mm
YS	900 Mpa max
TS	1000 Mpa max
Surface Condition	Skin passed Matt finish (Ra - 0.7 to 1.6 µm)

Process Capacity CAL

Standard	Grade
IS513 : 2016	CR1 Low Carbon, CR2 Low Carbon, CR2 IF based, CR3 IF based
EN 10130 : 2007	DC01, DC03
ASTM A1008	CS Type A, B & C
JIS G 3141 ; 2017	SPCC, SPCD
IS15391 : 2003	50SP1050D5 (NOSP), 50SP660D5 (NOSP)

Process Capacity CAL

Description	Details
Testing Facilities	Universal Testing Machine - 50KN Rockwell Hardness Tester - 150N Automatic Cupping Tester - 15KN
Mechanical & Chemical properties	As per IS513 : 2016, EN10130 : 2007, ASTM A1008, JIS G 3141 : 2017, ISI5391 : 2003
The dimensions for Commercial grades	0.5 - 1.5 mm
Available dimensions for Drawing grades	0.5 - 1.5 mm
Available dimensions for IF & IFHS grades	IF : 0.5 - 0.9 mm

Process Capability CAL - General

Features	Single Reduced	Double Reduced
Specification	ASTM A624M,ASTM A626M,EN 10202, IS 1993,JIS G 3303,MS 1076	ASTM A624M,ASTM A626M,EN 10202, IS 1993,JIS G 3303,MS 1076
Tin Plate Grades	T-1,T-2,T-2.5,T-3,T-3.5,T-4, T-5,T49,T53,T55,T57, T59,T61,T65,TH245,TH260,TH275,TH300,TH330, TH350,TH385, TH400,TH415,TH435,TH450, TH480,TS260,TS275,TS290	DR-7.5,DR-8,DR-8.5,DR-9, DR-9M,DR-9.5, DR-10, T71,T72,T73,T75,T76, TH480,TH520, TH550,TH580, TH620,TH650
CRCA Grades	As per TDC (YS 280 Mpa to 350 Mpa), NOSP semi processed electrical steel (si - 0.25 to 0.30%)	

Process Capability CAL - Input Coil

Features	Single Reduced	Double Reduced
Thickness (mm)	0.14 to 0.60	
Width (mm)	650 to 1250	
Inside dia (mm)	508 , 610	
Outside dia (mm)	900 to 2000	
Coil Weight (mt)	25 max	
Flatness	⟨ 30 I Units	
Edge Waviness	Steepness ⟨ 1.5%	
Centre & Quarter Buckling	Steepness ⟨ 1.5%	
Surface Condition	Rolling Oil 250 mg/m2 max/ side Iron Fines 150 mg/m2 max/ side	

Process Capability CAL - Output Coil

Features	Single Reduced	Double Reduced
Thickness (mm)	0.14 to 0.60	
Width (mm)	650 to 1250 (950 max for thickness below 0.16mm)	
Inside dia (mm)	508	
Outside dia (mm)	900 to 2000	
Coil Weight (mt)	25 max	

Process Capacity CRM

Parameters	Details
Thickness (min)	0,08mm
Thickness (max)	3.2mm
Width (min)	20mm
Width (max)	1320mm
Coil ID	508 / 610 mm
Coil OD	700 / 2000 mm
YS	900 Mpa max
TS	1000 Mpa max
Surface Condition	Bright (Ra-0.3 to 0.7 µm) Skin Passed Matt Finish (Ra-0.7 to 1.6µm)

Process Capacity BAF

Standard	Grade
IS513 : 2016	CR1 Low Carbon, CR2 Low Carbon, CR3 Low Carbon
EN 10130 : 2007	DC01, DC03
ASTM A1008	CS Type A
JIS G 3141 ; 2017	SPCC
EN10268 : 2006	340LA

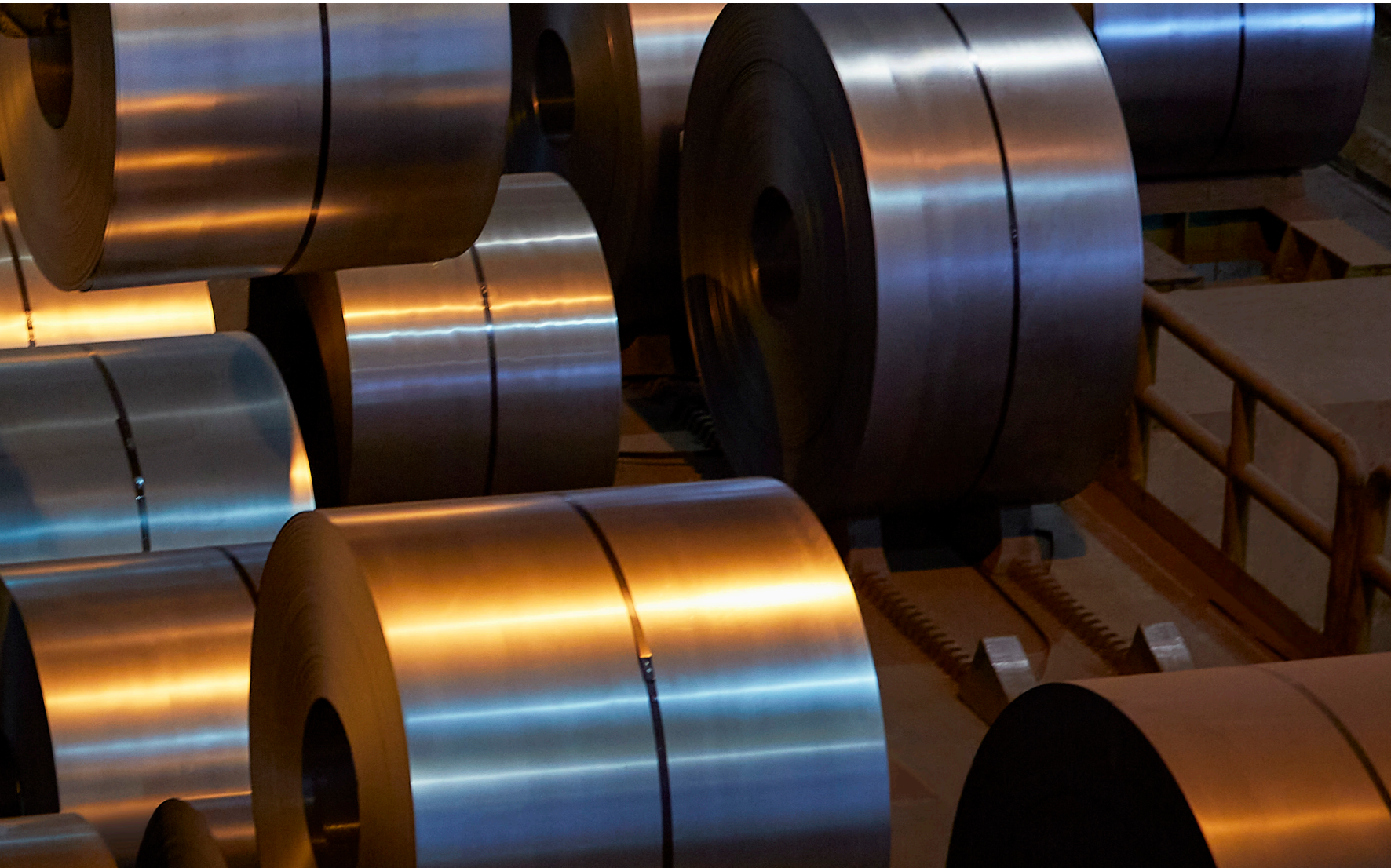
Process Capacity BAF

Description	Details
Testing Facilities	Universal Testing Machine - 50KN Rockwell Hardness Tester - 150N Automatic Cupping Tester - 15KN
Mechanical & Chemical properties	As per IS513:2016, EN10130:2007, ASTM A1008, JIS G 3141:2017
The dimensions for Commercial grades	0.08 - 1.8mm
Available dimensions for Drawing grades	0.25 - 3.2mm
Available dimensions for Deep Drawing Grades	0.3 - 2.0mm

Product Range
BPSL

Product Range Chemical Properties							
Product	Range			Temper	Surface Finish	Grade	National International Standards
	Thickness	Width (mm)	Cut Length				
CRFH Coil	0.076 * 1.50	762 * 1320	-	Rolled	Bright | Fine Matt | Matt	CRFH / SPCC	IS-513 / JIS-G-3141
CRFH Sheet	0.50 * 1.50	500 * 1320	500 * 9000	Rolled	Bright | Fine Matt | Matt	CRFH / SPCC	IS-513 / JIS-G-3141

Product Range Chemical Properties								
Mechanical Properties				Coil WT (MT)	Packet WT (MT)	Special Manufacturing	Achievement	End Use
Hardness	YS	TS	%EL min					
180 - 240	-	-	-	1.5 - 10 Kg per m of width (upto 23Mt)	-	-	-	Galvanized / Coated Products
180 - 240	-	-	-		1.0 * 4.0 Mt	-	-	Galvanized / Coated Products



CRCA Wider							
Product	Range			Temper	Surface Finish	Grade	National International Standards
	Thickness	Width (mm)	Cut Length				
CRCA Coil	0.20 - 3.0	100 - 1320	-	Skin passed	Mirror | Bright | Fine Matt | Matt	D / SPCC	IS-513 / JIS-G-3141
CRCA Coil	0.20 -3.0	100 - 1320	-	Skin passed	Mirror | Bright | Fine Matt | Matt	DD / SPCC	IS-513 / JIS-G-3141
CRCA Coil	0.20 -3.0	100 - 1320	-	Skin passed	Bright | Fine Matt | Matt	EDD / SPCC	IS-513 / JIS-G-3141
CRCA Coil	0.50 - 0.65	100 - 1320	-	Skin passed	Fine Matt | Matt	D Stamping	-
CRCA Coil	0.40 - 2.0	100 - 1320	-	Skin passed	Bright | Fine Matt | Matt	D Quarter Hard	IS-513 / JIS-G-3141
CRCA Coil	0.50 - 2.0	100 - 1320	-	Skin passed	Bright | Fine Matt | Matt	D Half Hard	IS-513 / JIS-G-3141
CRCA Coil	0.50 - 2.0	100 - 1320	-	Skin passed	Bright | Fine Matt | Matt	SPFC 370	JIS-G-3135
CRCA Coil	0.80 - 2.0	100 - 1320	-	Skin passed	Bright | Fine Matt | Matt	SPFC 440	JIS-G-3135
CRCA Coil	0.80 - 2.0	100 - 1320	-	Skin passed	Bright | Fine Matt | Matt	380Y	SS4012
CRCA Coil	0.80 - 2.0	100 - 1320	-	Skin passed	Bright | Fine Matt | Matt	340LA	EN10268
CRCA Coil	1.20 - 2.0	100 - 1320	-	Skin passed	Bright | Fine Matt | Matt	420LA	EN10268

CRCA Wider						
Mechanical Properties				Coil WT (MT)	Special Manufacturing	End Use
Hardness	YS	TS	%EL min			
115 VPN	240 Max	370 Max	32	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile, white goods, home appliances, general eng.
105 VPN	220 Max	345 Max	36	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile, white goods, home appliances, general eng.
100 VPN	210 Max	330 Max	38	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile, white goods, home appliances, general eng.
115 - 140	250 Min	370 Min	32	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Decarb Quality, Stamping
115 - 125	-	-	-	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Car Door Beading
125 - 150	-	-	-	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Motorcycle / Bicycle Rim
-	250 Min	370 Min	34	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure
-	305 Min	440 Min	32	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure
-	380 Min	450 Min	22	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure
-	340 Min	430 Min	25	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure
-	420 Min	470 Min	18	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure

Product Range
BPSL

CRCA Wider							
Product	Range			Temper	Surface Finish	Grade	National International Standards
	Thickness	Width (mm)	Cut Length				
CRCA Coil	0.80 - 2.0	100 - 1320	-	Skin passed	Mirror | Bright | Fine Matt | Matt	ST - 42	IS - 2062
CRCA Coil	0.80 - 2.0	100 - 1320	-	Skin passed	Mirror | Bright | Fine Matt | Matt	ST - 45	IS - 2062
CRCA Coil	0.80 - 3.0	100 - 1320	-	Skin passed	Mirror | Bright | Fine Matt | Matt	Corten A	JIS - 3125 / IRS M41

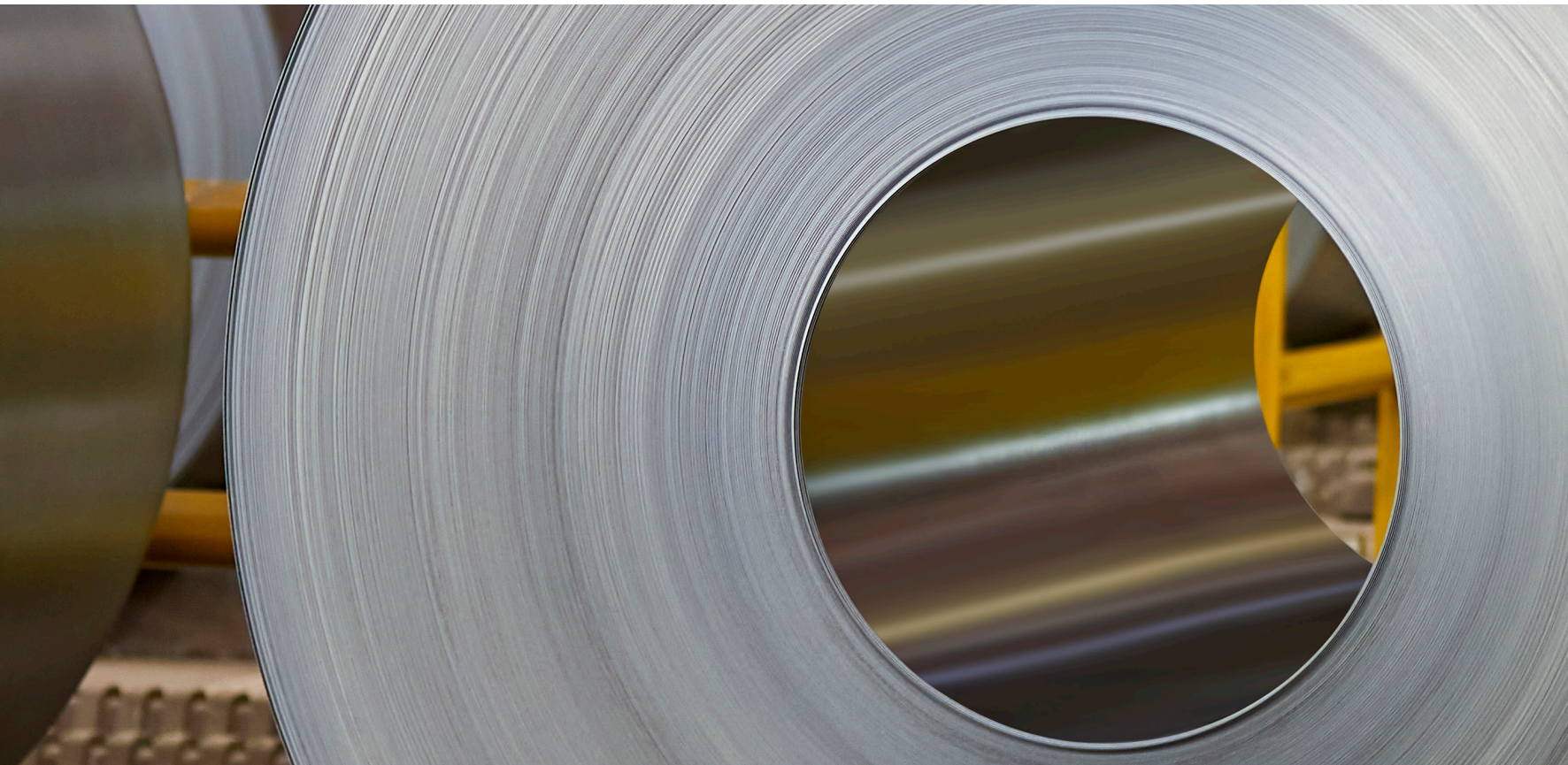
CRCA Wider						
Mechanical Properties				Coil WT (MT)	Special Manufacturing	End Use
Hardness	YS	TS	%EL min			
-	275 Min	420 Min	25	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automotive Structure
-	340 Min	450 Min	20	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automotive Structure
-	340 Min	450 Min	22	1.5 - 10 Kg per mm of width (upto 23Mt)	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Air pre heater, Railway coaches

CRCA Wider						
Product	Range			Temper	Surface Finish	Grade
	Thickness	Width (mm)	Cut Length			
CRCA Sheet	0.20 - 3.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Mirror | Bright | Fine Matt | Matt	D / SPCC
CRCA Sheet	0.20 - 3.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Mirror | Bright | Fine Matt | Matt	DD / SPCD
CRCA Sheet	0.20 - 3.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Bright | Fine Matt | Matt	EDD / SPCD
CRCA Sheet	0.50 - 0.65	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Bright | Fine Matt | Matt	D Stamping
CRCA Sheet	0.40 - 2.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Bright | Fine Matt | Matt	D Quarter Hard
CRCA Sheet	0.50 - 2.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Bright | Fine Matt | Matt	D Half Hard
CRCA Sheet	0.50 - 2.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Bright | Fine Matt | Matt	SPFC 370
CRCA Sheet	0.80 - 2.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Bright | Fine Matt | Matt	SPFC 440
CRCA Sheet	0.80 - 2.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Bright | Fine Matt | Matt	380 Y
CRCA Sheet	0.80 - 2.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Bright | Fine Matt | Matt	340LA

CRCA Wider							
National International Standards	Mechanical Properties				Packet WT (MT)	Special Manufacturing	End Use
	Hardness	YS	TS	%EL min			
IS-513 / JIS-G-3141	115 VPN	240 Max	370 Max	32	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile, white goods, home appliances, general eng.
IS-513 / JIS-G-3141	105 VPN	220 Max	345 Max	36	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile, white goods, home appliances, general eng.
IS-513 / JIS-G-3141	100 VPN	210 Max	330 Max	38	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile, white goods, home appliances, general eng.
-	115 - 140	250 Min	370 Min	32	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Decarb Quality Stamping
IS-513 / JIS-G-3141	115 - 125	-	-	-	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Car Door Beading
IS-513 / JIS-G-3141	125 - 150	-	-	-	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Motorcycle / Bicycle Rim
JIS-G-3135	-	250 Min	370 Min	34	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure
JIS-G-3135	-	305 Min	440 Min	32	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure
SS4012	-	380 Min	450 Min	22	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure
EN10268	-	340 Min	430 Min	25	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure

Product Range
BPSL

CRCA Wider						
Product	Range		Cut Length	Temper	Surface Finish	Grade
	Thickness	Width (mm)				
CRCA Sheet	1.20 - 2.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Mirror | Bright | Fine Matt | Matt	420LA
CRCA Sheet	0.80 2.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Mirror | Bright | Fine Matt | Matt	ST - 42
CRCA Sheet	0.80 2.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Bright | Fine Matt | Matt	ST - 45
CRCA Sheet	0.80 - 3.0	For thik. 0.25 - 2.5 Width 200-1320 For 2.6 - 3.2 Width 500 - 1320	500 - 9000	Skin passed	Bright | Fine Matt | Matt	Corten A



CRCA Wider							
National International Standards	Mechanical Properties				Packet WT (MT)	Special Manufacturing	End Use
	Hardness	YS	TS	%EL min			
EN10268	-	420 Min	470 Min	18	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure
IS-2062	-	275 Min	420 Min	25	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure
IS-2062	-	340 Min	450 Min	20	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Automobile Structure
JIS - 3125 / IRS M41	-	340 Min	450 Min	22	1.0 - 4.0 MT	6 HI cold reversing rolling, Electolytic cleaning line, 100% Hydrogen annealing, 4 High Skin passking	Air Pre Heater, Railway Coaches

Testing Facilities

Vijayanagar

Test	Testing Equipment	Capacity	Make	Parameter	Unique Feature
Surface Roughness	Roughness Meter	+/- 400 µm	TSK Japan	Ra, Wca, PPI	Fully Computerised
Tensile Test	Tensile testers	100KN & 50KN grade 0.5 extensometers	Zwick , Germany	YP,TS,EL,n, R bar , Bake Hardening & Aging	Robo testing with motorized transverse extensometers
Tensile Test	Tensile tester	100KN	Shimadzu, Japan	YP,TS,EL,n, R bar , Bake Hardening & Aging	High rigidity machine to capture YPE accurately
Hardness test	Micro Vickers hardness tester	10 g to 2000 g	Future tech, Japan	Vickers Hardness	Automated with duel lenses
Hardness test	Rockwell superficial tester	HRA, HRB, HRC, HR 30 T & N	Future tech, Japan	Rockwell hardness	Automated with duel lenses
Bend test	Bend tester	25 MT , Twin Cylinder	Nano tools, India	Adhesion of coating & powdering	Specific tools for each type of bend test
Metallography	Microscope	1200 X	Carl Ziess, Germany	Grain size and Inclusion rating	Fully automatic image analyzer
Hole Expansion Test	Sheet metal testing	100KN	Zwick-Roell BUP-600 forming press	Hole Expasion Ratio, Cupping Teast, Earing Test & FLD Test	Electrical and hydraulic protection for all functions

Vasind

Test	Testing Equipment	Capacity	Make	Parameter	Unique Feature
Tensile Test	Tensile Testers	50KN	Shmadzu, Japan	YP, TS & EL	High rigidity machine to capture YPE accurately
Hardness test	Rockwell superficial tester	150N (HRB, 15T, 30T & 45T)	FIE, India	Rockwell hardness	High rigidity machine
Erichsen Values	Automatic Cupping Tester	1.2mm max	BEVS, China	ECV	Fully Automatic
Surface Roughness	Roughness Meter	3µm max	Mitutoyo	Ra Value	Fully Automatic

BPSL				
Test Equipment / Chemical sand Identification Numbers (Where applicable)	Make	Least Count & Range (Where applicable)	Tests used in with clause reference	Remarks (Indicate number of Equipment)
Universal Testing Machine	Bluescope	0.01 N	Testing Test cl. 8.1. Plastic Strain Ratio c.. 8.5, Tensile Strain Hardening Component cl. 8.6	01
Universal Tansile Testing Machine	Zwick Roel	0.01 N	Testing Test cl. 8.1. Plastic Strain Ratio c.. 8.5, Tensile Strain Hardening Component cl. 8.6	01
Vickers Hardness	FIE	0.01 VPN	Hardness test c. 8.3	01
Rockwell Hardness	FIE	0.01 HRB	Hardness test c. 8.3	01
Rockwell cum Superficial	Bluescope	0.01 HRB	Hardness test c. 8.3	01
Digital Lux Meter	-	0.1 LUX	-	01
Surface Roughness Tester	Mitutoyo	0.01 µm	Surface finish c. 9.5	01
Spectrometer	Thermofisher	-	Chemical composition cl. 7.1, 7.2, 7.3	01


JSW
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SORT
5S

An EPD declaration is available for ISW Steel's Hat Rolled Coils manufactured at iSw Steel Limited's Vijayanagar Plant (India). The EPD is in accordance with ISO 14025 and EN 15804.

The life cycle assessment (LCA) in the EPD provides a holistic approach measuring the environmental performance of hot Rolled Steel by considering the potential impacts from all stages of manufacturing. product use and end-of-life stages.

The constituent materials used within our products are responsibly sourced and we apply the principles of Sustainable Develapment and of Environmental Stewardship as a standard business practice in our operations. Protecting the environment by preserving non-renewable natural resources, increasing energy efficiency, reducing the environmental emissions, limiting the impact of materials transpartation to and fram our operations is part of our way in doing business.

S-P-01413 EPD®
environdec.com

EPD Information

Programme	The international EPD System, www.environdec.com
Programme operator	EPD International AB Box 210 60, SE - 100 31 Stockholm, Sweden
Declaration holder	JSW Steel Limited Vijaynagar Works,Vidyanagar P.O. Ballari,Dist,Karnataka-583275
Product	Hot Rolled Coil
CPC Code	41211 Flat-rolled products of non-alloy steel,not further worked than hot rolled,of a width of 600mm or more
EPD Registration Number	S-P-01413
Publication Date	2019-01-12
Validity Date	2024-07-11
Geographical Date	India
Reference Standards	ISO 14020:2001,ISO 14025:2008,EN 15804:2012

Sales Office

AHMEDABAD
JSW steel Ltd.
Office No 501/502,Mondeal
Height B-Wing, Lascon Cross road
Near Novotel Hotel
Opp Karnavati Club
S.G.Highway
Ahmedabad -380054
Mb:08128833390

AURANGABAD
JSw steel Ltd
Office no 306,3rd floor,05/1
A,B,C East Beside ,Prozone Mall
Chikaithana MIDC
Aurangabad

BANGALORE
JSW steel ltd
The Estate , Nest to Manipal Centre
9th Floor,East wing ,121,
Dickenson road
Bangalore-560042
Tel (08042448888)

BHUBANESWAR
JSW steel Ltd
JSS STP ,2nd Floor , Block B
Infocity, Chandrasekharpur E -1/1
Bhubaneswar-751024
Tel: 0674-6658904

CHENNAI
JSW Steel Ltd
5th Floor ,South Tower 2
Harrington road
Chetpet,
Chennai-600031
Tel :0732532158

COIMBATORE
]SW Steel Ltd.
211, 2nd Floor, Sathya Complex,
ESR Avenue Nr Post office,
TV Swamy Road (East),
Coimbatore – 541002

DELHI
JSW Steel Ltd.
4'"Floor, NTH Complex,
A-2, Shaheed Jeet Singh Marg,
Qutub Institutional Area,
New Delhi - 110067
Tel: (011) 48178600

FARIDABAD
]SW Steel Ltd.
Nain Sadan, Sector 20A,
Plot No- 35,
Near EF3 Mall,
Faridabad - 121001
Tel: (0129) 2239248, 2232387

GUWAHATI
]SW Steel Ltd.
6th Floor, Unique Avenue,
Front Side,
Opp. Fire Station,
Super Market,
Dispur, Guwahati - 781 005,

HUBLI
]SW Steel Ltd,
2nd Floor, Signature Mall,
Airport Road,
Gokul Road,
Hubli - 580030

HYDERABAD
]SW Steel Ltd.
Babu Khan Millenniums Centre,
7'" Floor, Somajiguda,
Hyderabad -500082
Tel : (040) 27846669 / 79

INDORE
JSW Steel Ltd.
Bloc No: 22,23,24,
Scheme no. 54,
Princess Business
Sky Park,
Commercial, opp. Orbit,
AB Road,
Indore - 452010
Tel: (0731) 2532156 to 59

JAIPUR
JSW Steel Ltd.' 3rd floor, 304-307,
Signature Tower,
Behind Police HQ,
Lal kothi,
Tonk Phatak,
Jaipur- 302015 (Rajasthan)
Tel: (0141) 4629200

KANPUR
JSW Steel Ltd.
2ndFloor, 14/75,
Plot No. 1, Gopal Vihar,
Civil Lines, Kanpur – 208001

KOCHI
JSW Steel Ltd.
34/138L3, New No 41/150A3,
2nd Floor,
Above Dhe Puttu Restaurant
Service Road
NH By-pass
Edapally, Kochi ,
Kerala 682024

KOLKATA
JSW Steel Ltd.
Godrej Waterside,
101" Floor, Tower - 1
Unit No 1003,
Plot- DP-5 Sector V,
Salt Lake City
Kolkata - 700091
Tel : (033) 40002020

LUDHIANA
JSW Steel Ltd.
3'd Floor, SCO 7-8,
Canal Colony,
Firoz Gandhi Market,
Pakhowal Road,
Ludhiana - 141008
Tel.: (0161) 6611700

MUMBAI
JSW Steel Ltd
JSW Centre ,Bandra Kurla Complex
Bandra East
Mumbai-400051
Mb: 022-42863000

NAGPUR
JSW Steel Ltd.
L&T Building,
3'° Floor (Back Side),
Plot No: 12,
Shivaji Nagar,
Nagpur: 440 010

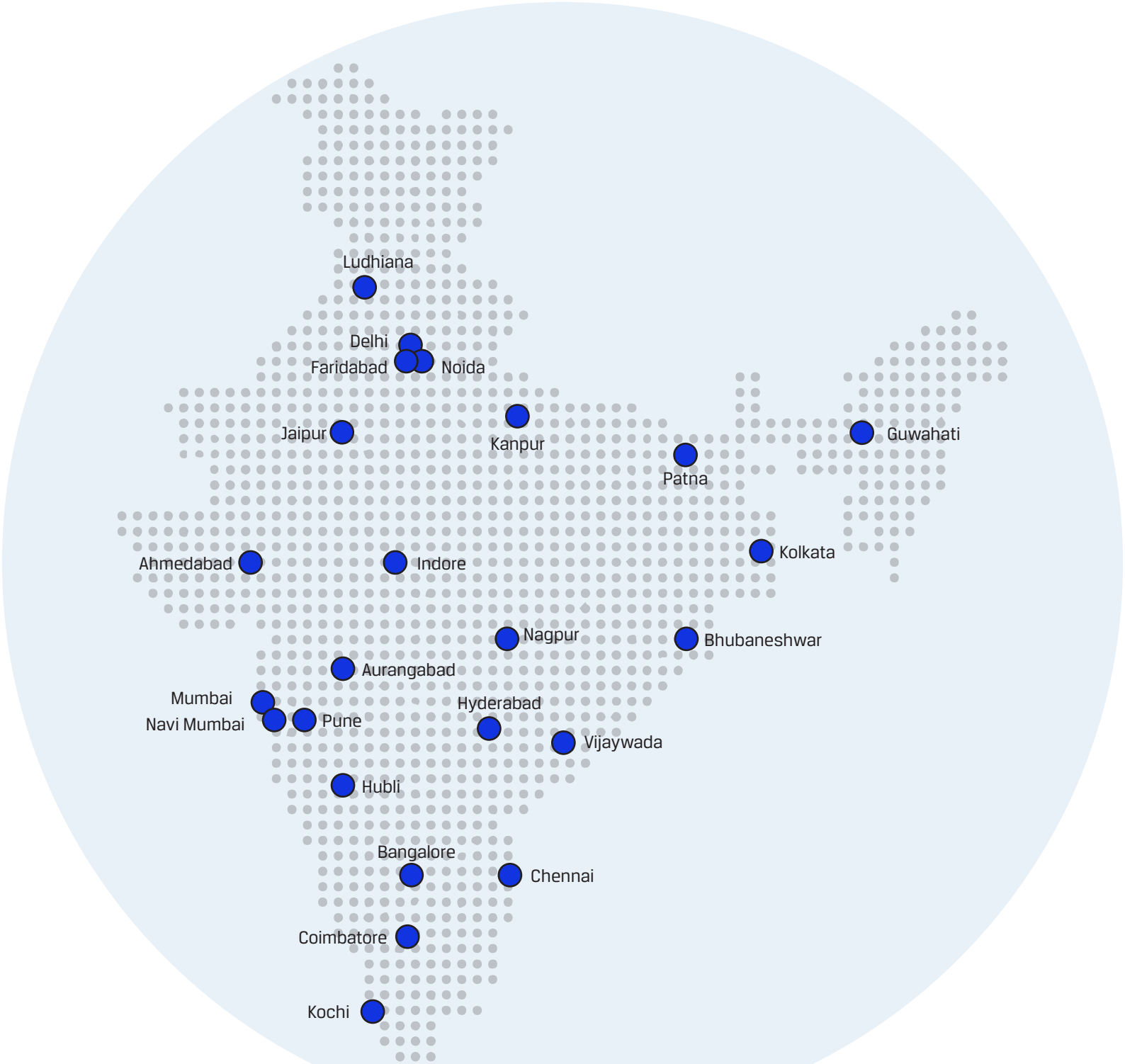
NAVI MUMBAI
JSW Steel Ltd.
1101-1102 a 1704-1707,
17'" Floor,
Plot No. 4 a 6,
Greenscape Cyber One,
Sector 30 A, Vasi,
Navi Mumbai - 400 705
Tel : 022 69337000

NOIDA
JSW Steel Ltd.
Trapezoid, C-27,
91" Floor,
Sector-62, Noida,
Uttar Pradesh

PATNA
JSW Steel Ltd.
Sai Tower, 3'd Floor,
Rekha House,
New Oak Banglow Road,
Patna - 800 001
Tel.: 0612 - 6696205

PUNE
JSW Steel Ltd.
EPI Centre, 2nd Floor,
CST No 4/6,
Above Royal Enfield Showroom,
Shivajinagar,
Wakadewadi,
Pune - 411005
Tel: (020) 66662300

VIJAYWADA
JSW Steel Ltd
VRN House Corporate,
2nd Floor, 3
8-4-12, Opp All India Radio,
Beside MG Road,
Punnamma Thota,
Vijaywada - 520010


Ludhiana
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Kanpur
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Kolkata
Ahmedabad
Indore
Nagpur
Bhubaneshwar
Aurangabad
Mumbai
Navi Mumbai
Pune
Hyderabad
Vijaywada
Hubli
Bangalore
Chennai
Coimbatore
Kochi

JSW Steel

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Bandra (E), Mumbai - 400 051, India
Tel.: +91 22 42861000
www.jswsteel.in

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