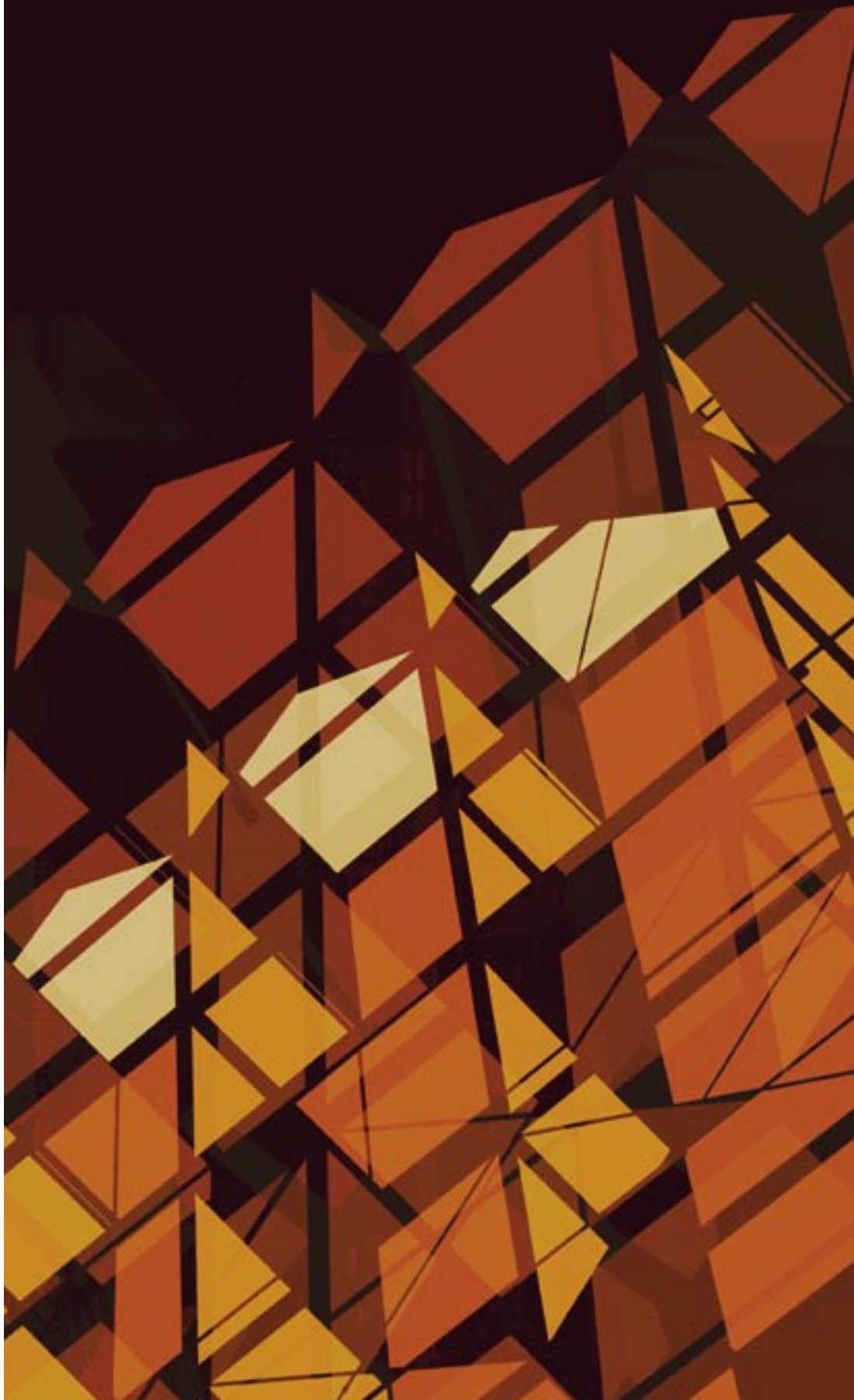


beyond stainless steel





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The Cold-Rolling Division, Hisar, India

JSL (formerly Jindal Stainless) is in many ways very much like the material it produces. Like Stainless Steel, the company is versatile in its thought process; strong and unrelenting in its operations; environment friendly in its manufacturing process; bright, shining and beautiful in its community support activities. The properties of Stainless Steel are endless, just as our values are all encompassing.

JSL has always been committed to innovation, progress, research and development. Our

innovations are admired beyond the geographical boundaries of our country. No wonder, we are the preferred strategic partners of global leaders. Our achievements narrate a story of our determination to succeed and our passion to win. We will continue to leverage opportunities in creating excellence.



Looking beyond
horizons



After independence, a young man with a fiery ambition to start life afresh, left his village for Kolkata in 1950 only to return to his native soil to start an industrial group. His only asset then was a deep understanding of pipe manufacturing and an innovative mind.

Om Prakash Jindal, in 1952, started his first unit to manufacture steel pipes, bends and sockets at Liluah near Kolkata.



Hisar plant started manufacturing Stainless Steel based on in-house R&D. Hence, the beginning of a 29 year period in which Jindal Strips forged ahead as one of the largest Stainless Steel producer in India.

1952

1960

1970

1977

1979

Jindal Industries sets up Pipe Mill at Hisar. Today, even after four decades it is a brand leader in the market.

Birth of the Jindal Organisation. A mini steel plant established as Jindal Strips Limited at Hisar. This plant was one of its kind in the country. It manufactured hot rolled steel coils, plates, slabs and blooms through the electric arc furnace route to use cost effective raw materials to bring down the production cost.



m i l e s t o n e s

All glory
comes from
daring to
begin

Om Prakash Jindal's efforts heralded first indigenously manufactured Stainless Steel at the Hisar plant. This year marked the installation of India's first Argon Oxygen Decaburisation (AOD) convertor at the factory – a major breakthrough in Stainless Steel technology.





Supplies of ferro chrome, the important ingredient for Stainless Steel, were still dependent on vagaries of external factors. This coupled with erratic price escalation of ferro chrome affected production at Hisar plant. Thus, leading to setting up of the Ferro Alloys Division at Kothavalasa, Vishakhapatnam.

1987

1991



arc, the Architecture Division launches pioneering products with innovative use of Stainless Steel in Architecture, Building and Construction segment.

2002

2003



The Hisar plant is under expansion, Steel Melting and Rolling capacity being augmented to 900,000 tpa and Cold Rolling capacity to 275,000 tpa.

JSL's joint venture in South Korea - Dai Yang Co. Limited, markets stainless steel from India and the Indonesian plant.

Joint venture in Spain, JSL España, S.L. offers custom tailored stainless steel formats for the Spanish market and services customers in other European countries.

arc, the Architecture Division develops bus shelters in New Delhi on a BOT basis.

2005

2008 & beyond

Manufacturing of Blade Stainless Steel started at Hisar. The company stepped on the road to become an exclusive producer of Stainless Steel Strips for making razor and surgical blades in India.

With an all-time high Nickel prices, Jindal Stainless develops chrome-manganese Stainless Steel, a cost effective alternative to 18/8 type (304) grade for certain applications. This contains chromium (15.5%-18.0%), nickel (1.0%-4.0%) along with appropriate combination of manganese, copper and nitrogen.



Restructuring of Jindal Strips and the manufacturing operations spun off to be called **Jindal Stainless**.

art d'inox launches designer Stainless Steel lifestyle products in the retail market.



Ratan Jindal at the helm of affairs.

Sets the ball rolling for the setting up of a 1.6 million ton integrated Stainless Steel project at Kalinga Nagar Industrial Complex in Jajpur District of Orissa.

The company acquires Maspion Stainless Steel plant in Indonesia.

To keep itself ahead in ever changing market dynamics and its customer focus, Jindal Stainless enters into a joint venture with Steelway, Italy to provide customized products to its customers through its new Service Centre.



Finished Coils at our Shipping Yard



Tapping in Progress

From mining to manufacturing

Hisar plant (Haryana, India)

At Hisar, exists India's only fully integrated and the largest Stainless Steel plant. An exclusive complex for manufacturing cold rolled Stainless Steel coils, and Stainless Steel for razor & surgical blades has been created. Additionally a coin blanking line has also been installed.

Vizag plant (Andhra Pradesh, India)

The ferro alloys plant is situated at Jindal Nagar, Andhra Pradesh. The plant has an installed capacity of 40,000 metric tons per annum to produce high carbon ferro chrome. The plant is also equipped with an ultra modern product testing laboratory to ensure global standards.

Greenfield Project at Orissa, India

JSL is setting up a greenfield, fully integrated Stainless Steel project in the state of Orissa which would involve mining of iron, manganese and chrome ore for production of ferro alloys and Stainless Steel. This Stainless Steel plant will have an installed capacity of 1.6 million tons per annum.

PT Jindal Stainless Indonesia

The acquisition of a Stainless Steel cold rolling plant from Maspion Stainless Steel has further enhanced our presence in the South East Asian region. It has increased our cold rolling capacity and enhanced our presence in the global markets.

art d'inox

art d'inox was set up with the objective of creating exclusive Stainless Steel Lifestyle products. The product range encompasses tableware, serving ware, gifts, home accessories and office accessories.



art d'inox Range



Innovative Designs in Stainless Steel by arc



arc

arc has taken an initiative to promote Stainless Steel products and technology solutions to cater to emerging markets of Stainless Steel for Architecture, Building and Construction (ABC) in India.

Jindal Stainless Steelway Limited

A joint initiative with Steelway s.r.l. of Italy, this service center is another step forward to keep ourselves ahead in the ever changing market dynamics.

This venture provides customised products and distribution services in Stainless Steel to meet specific requirements of customers on just-in-time basis.



Stainless Steel Space Frame at the Entrance of Hisar Plant

steel making

Major Equipment

The state-of-the-art Melt & Casting Shops have an installed capacity of 600,000 metric tons per annum being upgraded to 720,000 metric tons per annum.

These facilities comprise of:

- Ultra High Power - Electric Arc Furnaces
- Argon Oxygen Decarburisation Converters
- VOD (Vacuum Oxygen Decarburisation)
- Continuous Slab and Bloom casters



Slab Caster at Hisar, India



Tapping from ASM Converter in Progress



Electric Arc Furnace

Steel Melt Shop

Electric Arc Furnace	02	45MT & 40 MT
AOD Convertor	02	50 MT & 45 MT
VOD Convertor	01	50 MT
Ladle Refining Furnace	02	50 MT each
Slab Caster	02	160/200mm (max. thickness) 1270mm (max. width)
Bloom Caster	01	200 x 200 mm

hot rolling



Steckel Mill

Our strength lies in our fully integrated operations



The Control Room of the Hot Steckel Mill

Hot Rolling comprises of Hot Steckel Mill and Tandem Strip Mill with a total capacity of 720,000 metric tons per annum.

Hot Steckel Mill consists of Walking Beam Slab Reheating Furnace.

The Tandem Strip Mill comprises of reheating furnace, roughing stand, five finishing stands and down coiler.

Cold Rolling Division of JSL has a capacity to produce 150,000 metric tons per annum of Stainless Steel flat products. This capacity is currently being expanded to 275,000 metric tons per annum along with modernisation of existing units.

The complex is equipped with three 20 Hi-Sendzimir Cold Rolling Mills, three Continuous Anneal and Pickle lines, two of these are equipped with Electrolitic Pickling, One Bright Annealing Line, Two Coil Preparation Lines, Five Slitting Lines, One Precision Levelling and Sheet Shearing Line with associated facilities.

Jindals Stainless is fully equipped to produce material with No.1, 2D, 2B, BA and No. 4 surface finish. It can also produce other specialised finishes such as moon rock, hammerstone and honey comb.

cold rolling



AP Line



BA Lines



Slitting Line



Skin Pass Mill

Cold Rolling Division

Preparation Equipment

Coil Buildup Line	Max. Width 1300mm	Thickness 3.00-6.00mm
Coil Preparation Line	Max. Width 1600mm	Thickness 2.8 -8.00mm

Cold Rolling Mills

20 Hi Sendzimir Mill No.1	Max. Width 1040mm	Thickness 0.45-4.0mm
20-Hi Sendzimir Mill No.2	Max. Width 1600mm	Thickness 0.45-8.0mm
20-Hi Sendzimir Mill No.3	Max. Width 1240mm	Thickness 0.45-4.5mm

Anneal & Pickle Lines (A&P)

Continuous A&P Line No.1	Max. Width 1300mm	Thickness 2.8-6.0mm
Continuous A&P Line No.2	Max. Width 1300mm	Thickness 0.50-5.0mm
Continuous A&P Line No.3	Max. Width 1300mm	Thickness 1.0-8.0mm

Bright Annealing Line

	Max. Width 1040mm	Thickness 0.40-2.0mm
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Strip Grinding Line

	Max. Width 1600mm	Thickness 0.70-4.00mm
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Skin Pass Mill

	Max. Width 1600mm	Thickness 0.40-4.00mm
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Finishing Lines

Slitting Line -1	Max. Width 1250mm	Thickness 1.0-5.0mm
Slitting Line -2	Max. Width 1040mm	Thickness 0.45-2.0mm
Slitting Line -3	Max. Width 1600mm	Thickness 0.70-5.0mm
Slitting Line -4	Max. Width 1500mm	Thickness 3.0-6.0mm
Slitting Line -5	Max. Width 1250mm	Thickness 0.4-3.0mm
Sheet Shearing Line -1	Max. Width 1300mm	Thickness 1.5-4.0mm
	Max. Length 5000mm	

Special Products Division

The Special Products Division at Hisar Plant has a capacity to produce 25000 metric tons, of highly specialised grades of cold rolled precision strips, razor blade steel and Ferritic/ Martensitic steel.

The equipment in this complex comprises of Bell Annealing furnaces, Shot Blasting machine, 4-Hi and 20-Hi Mills, Continuous Bright Annealing furnace and Slitting machines. This complex processes mainly martensitic Stainless Steel for razor blade operations.

The razor blade cold rolled strips of up to 0.1 mm thickness are produced in this division and supplied to leading Indian and international razor blade manufacturers. In addition

to razor blade steel, other grades in 200, 300 and 400 series are also processed in this division. The Precision Strips are rolled up to 0.05 mm in thickness and up to 350 mm in width. These precision strips are consumed by the Indian petrochemicals, optical fibre industries etc. and exported as well.

Coin Blanks

JSL has been supplying Stainless Steel coins blanks to the Indian Government Mint and Foreign Mints for making coins.

The company has the capability of producing ferritic Stainless Steel and cupro-nickel coin blanks.

The present installed capacity for coin blanking is 10,000 metric tons per annum.



The Coin Unit



20-Hi Mill



Blade Steel



Coin Blanks

From aerospace
to coins,
stainless steel is
everywhere

20-Hi Sendzimir	2	Max. Width 450mm	Min. Thickness 0.30mm
4-Hi Mill	4	Max. Width 350mm	Min. Thickness 0.05mm
Bell Annealing Furnaces	9	Max Dia 1800mm	Max. Thickness 10mm
Pull through Annealing Furnaces	4	Max. width 350mm	Thickness 0.30-1.20mm
Shot Blasting & Pickling Line		Max. width 350mm	Max. Thickness 4mm
Slitting Line	4	Max. width 350mm	Thickness 0.05-2.00mm (max)
Bright Anneal Line	2	Max. Width 400mm	Thickness 0.10-0.70mm

types of stainless steel

Stainless Steel grades are essentially alloys of iron with more than 10.5% chromium. These grades may contain additional elements of nickel, manganese, carbon, nitrogen and silicon. They can further be modified for special purposes by addition of molybdenum, titanium, niobium, silicon, sulphur etc. A wide range of these grades have been developed based on specific requirements. These are classified into following categories based on their micro structure:



Ferritic Stainless Steel

Ferritic Stainless Steel grades are non-hardenable plain chromium grades with chromium content varying from 10.5% to 28% and with low carbon content. These are magnetic and exhibit a better resistance to corrosion than martensitic grades. These grades are employed in applications where the desired formability, weldability and corrosion resistance is between those of martensitic and austenitic types. The ferritics can be polished or buffed to achieve high lustre.

Martensitic Stainless Steel

Martensitic Stainless Steel grades are plain chromium grades containing 11.5 % to 18% of chromium with relatively high carbon content (0.1% – 1.2%). Initially developed for cutlery, these are well suited for applications requiring high hardness and resistance to abrasion and erosion. These grades are magnetic and display fair cold forming characteristics. Although these can be hardened by air-cooling, oil quenching is sometimes used to assure uniform hardening. These grades can be

welded but require stress relieving after welding. They exhibit their best corrosion resistance in the hardened condition and perform well in mildly corrosive environments. Martensitic Stainless Steel grades are commonly used for knife blades, turbine blades, surgical instruments, fasteners, shafts, spindles, valves and pins.



Austenitic Stainless Steel

Austenitic Stainless Steel grades are characterized by superior corrosion and oxidation resistance, weldability, ductility and toughness compared to ferritic and martensitic Stainless Steel grades for similar levels of chromium.

Austenitic Stainless Steel grades exhibit excellent resistance to atmospheric corrosion. They effectively withstand

attack of organic acids (e.g. acetic, lactic, citric etc.), exhibit good resistance to oxidizing acids (e.g. nitric acid) and fair resistance to mineral acids (e.g. sulfuric acid).

These grades are well suited for severe forming. Some grades work harden to a high degree while others have been developed to minimize this tendency. Work hardening is advantageous in certain cases where high strength is required. Austenitic Stainless Steel grades are non-magnetic in annealed condition but depending on composition, they may become mildly magnetic when cold worked. These Stainless Steel grades possess good high temperature properties such as creep strength and resistance to oxidation or scaling. They also exhibit excellent low temperature ductility and impact strength. Austenitic Stainless Steel grades can be readily fabricated by bending, drawing, spinning, punching, drilling, machining and welding and can be readily

polished to a high finish. These attributes make them very versatile and popular for diverse applications in a variety of industries.

There are two broad categories of Austenitic Stainless Steel — chrome-nickel (300 Series) and chrome-manganese (200 Series). Currently, chrome-nickel is the largest produced Stainless Steel category globally.

Typical applications for this category include food processing, chemical plants, pharmaceutical equipment, hospitals, textile, architectural, building construction, kitchenware, consumer durables etc.

Chrome-manganese Stainless Steel is the fastest growing of all Stainless Steel categories on account of its high performance to cost ratio. Its applications include kitchenware, cutlery, sinks, automotive trim, architectural, buildings, furniture, buses, trains and ornamental tubes.



Duplex Stainless Steel

Duplex Stainless Steel grades contain relatively high chromium (between 18% and 28%) and moderate amounts of nickel (1% to 8%). This combination of ferritic and austenitic structures is called duplex. Many of these grades contain molybdenum (1% to 5%) and nitrogen (0.05% to 0.3%). Some duplex Stainless Steel grades also contain manganese (up to 5%), copper (up to 2%) and tungsten (up to 2%). These grades exhibit high resistance to stress corrosion cracking and chloride ion attack and have higher yield strength than that of austenitic or ferritic steel grades. These properties combined with suitable design lead to material saving. High quality fabrication and welding are possible if the operator is trained well. These grades are used in marine applications, offshore platforms, paper and pulp industry, chemical, petrochemical and desalination plants.



JSL J Series Austenitic Stainless Steel is Used in a Variety of Applications

The Development of JSL J Series Austenitic Stainless Steel

JSL is the largest producer of chrome-manganese Stainless Steel in the world. It supplies grades J201, J202, JSL AUS (J1), J204Cu and J4. All these grades have austenitic structure in annealed condition at ambient temperature similar to 18/8 (304) Stainless Steel with higher strength, excellent formability, weldability and good corrosion resistance. These grades are non-magnetic in annealed condition and like 18/8 (304) become mildly magnetic after cold working.

J201 and J202 fully conform to AISI 201 and AISI 202 and have even

- Share of Cr-Mn grade has witnessed the fastest growth in global Stainless Steel consumption in recent past
- Helps in sustainable growth of Stainless Steel through minimising substitution by other competing material

lower levels of carbon for superior corrosion resistance. J202 from JSL comes with minimum 17.5% chromium. Thus, J202 has almost similar chromium and carbon levels as European and Indian standards for 18/8 (304) grades. This results in corrosion resistance similar to 18/8 (304) in various media such as general atmospheric corrosion, mild acids, organic

**Jindal innovation
drives markets**



Cr-Mn Stainless Steel is Used Extensively in Industrial Kitchens

compounds etc. Presence of moderate amount of nitrogen improves pitting resistance of this Stainless Steel and reduces its susceptibility to sensitization on welding. This grade is suitable for replacing 18/8 (304) Stainless Steel for numerous applications in welded as well as unwelded condition.

JSL AUS(J1) has lower nitrogen content than AISI 201 and 202 and contains copper to obtain a softer product with reduced work hardening rate to facilitate forming operation. The chemistry is so optimized as to achieve drawability similar to that of 18/8 (304). JSL AUS (J1) can be used for extra deep drawn products and has been used for many applications involving press-forming/fabrication where 18/8 (304) was previously chosen.

Grades J204Cu and J4 have moderate amount of nitrogen along with copper. J204Cu is an

improved lower carbon version of international specification UNS S20430, the properties of which have been extensively evaluated in USA and Europe. The properties of J204Cu and J4 such as strength, ductility, and their ability to be fabricated by bending, forming and welding resemble Type 301 Stainless Steel. J204Cu and J4 can be used for moderately drawn items and are replacing 301 and 18/8 (304) in applications requiring moderate corrosion resistance. They also have an advantage over 18/8 (304) in applications involving wear, abrasion and erosion as well as for certain structural uses.

These grades have been subjected to extensive mechanical and corrosion testing

in India and abroad and it has been established that they constitute appropriate engineering materials for substituting 18/8 (304) grade in a variety of applications. However JSL AUS (J1), J204Cu and J4 should not be used for external applications in coastal areas with medium to heavy rainfall. These grades are not recommended for handling/storage of acids and other highly corrosive industrial chemicals. On the other hand, J202 with minimum 17.5% chromium exhibits corrosion behaviour resembling 18/8 (304) in such media.

Thus, Jindal 200 series provides cost effective and appropriate solutions for wide range of applications.

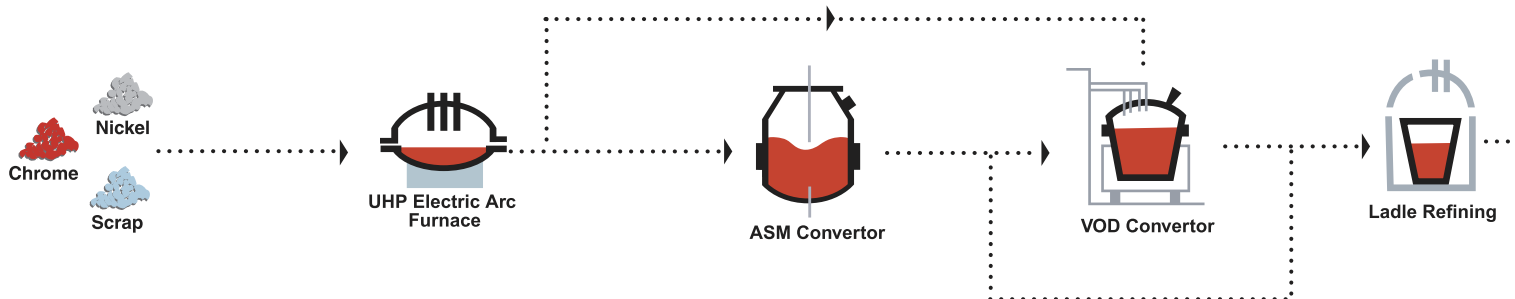


Cr-Mn Stainless Steel is also used for Furniture and Sculpture

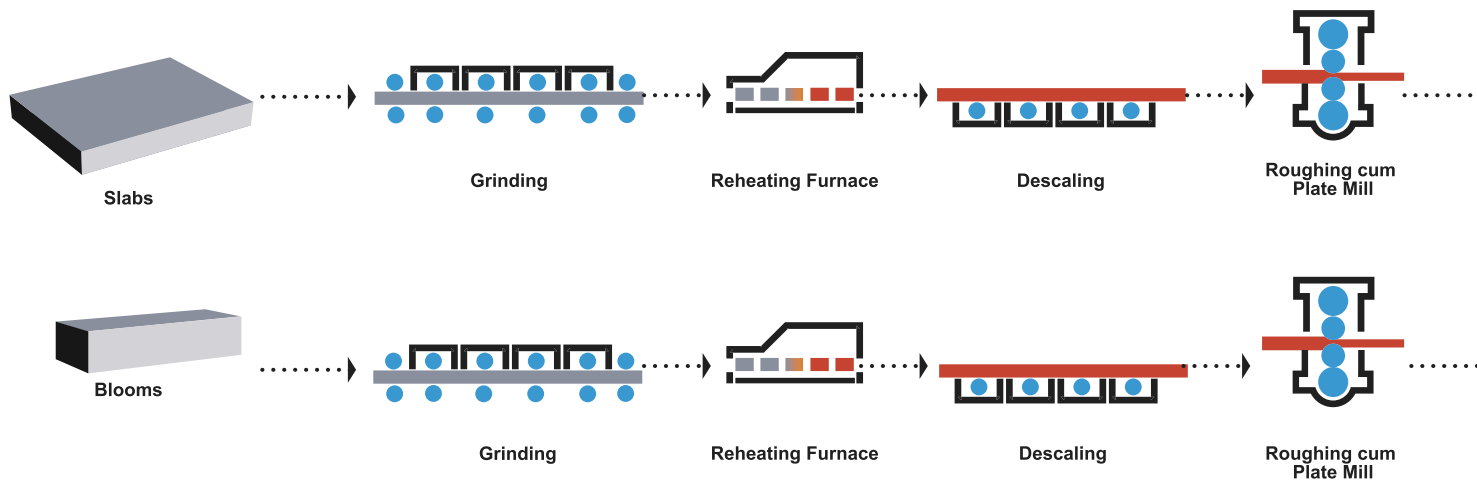
Typical Applications		
Due to their good formability, weldability and corrosion resistance, JSL 200 series grades can be used for applications as detailed below:		
Catering and Food processing	JSL AUS (J1)	Deep drawn utensils, pressure cookers, water filters,
	J 204Cu, J4	storage vessels, milk cans, kitchen sinks Shallow/medium drawn utensils, tableware, cutlery, stand for water filters, flasks, dog pots
Consumer Durables	JSL AUS (J1)	White goods/house hold appliances, washing machines, microwave ovens, dishwashers, thermo-ware
	J 204Cu, J4	White goods dry applications, steel furniture, decorative tubing
Architecture, Building & Construction	JSL AUS (J1)	Outdoor non-coastal
	J204Cu, J4	Indoor decorative, handrails, ornamental tubes, doors and window frames, door hinges/knobs, street furniture, tree guards, dustbin
Transport (Automotive)	JSL AUS (J1)	Automotive trim, wheel caps, wiper arms, auto accessories, motorcycle rims
	J 204Cu, J4	Interior decorative accessories, structurals, bus body, rail car

process flow

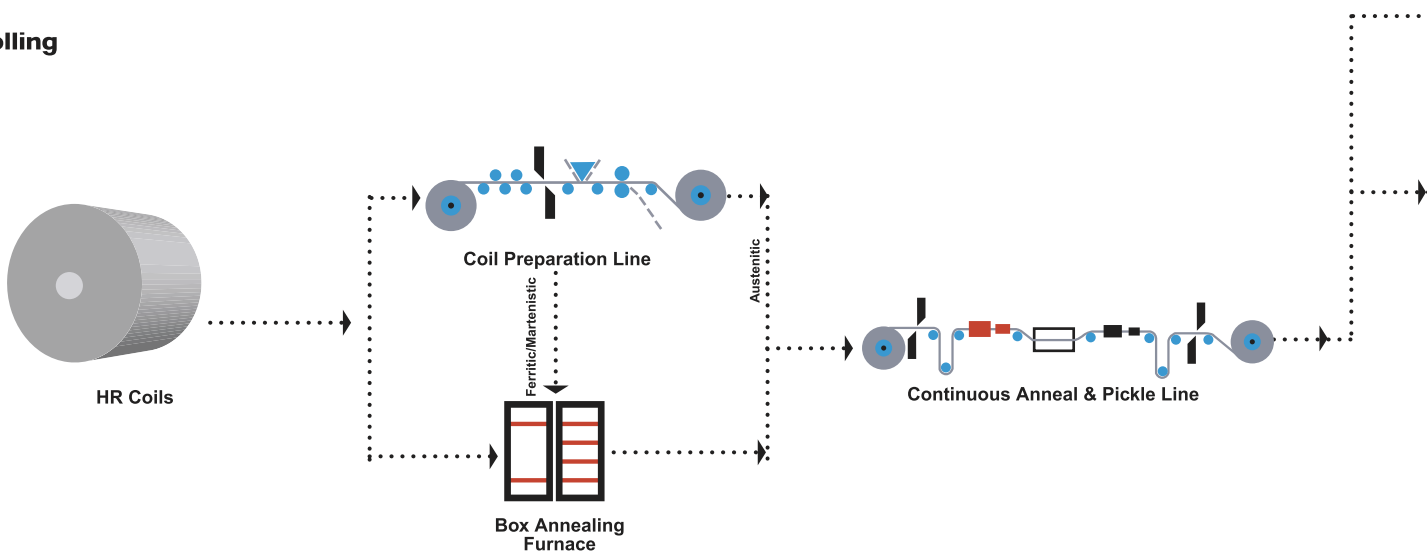
Steel Making

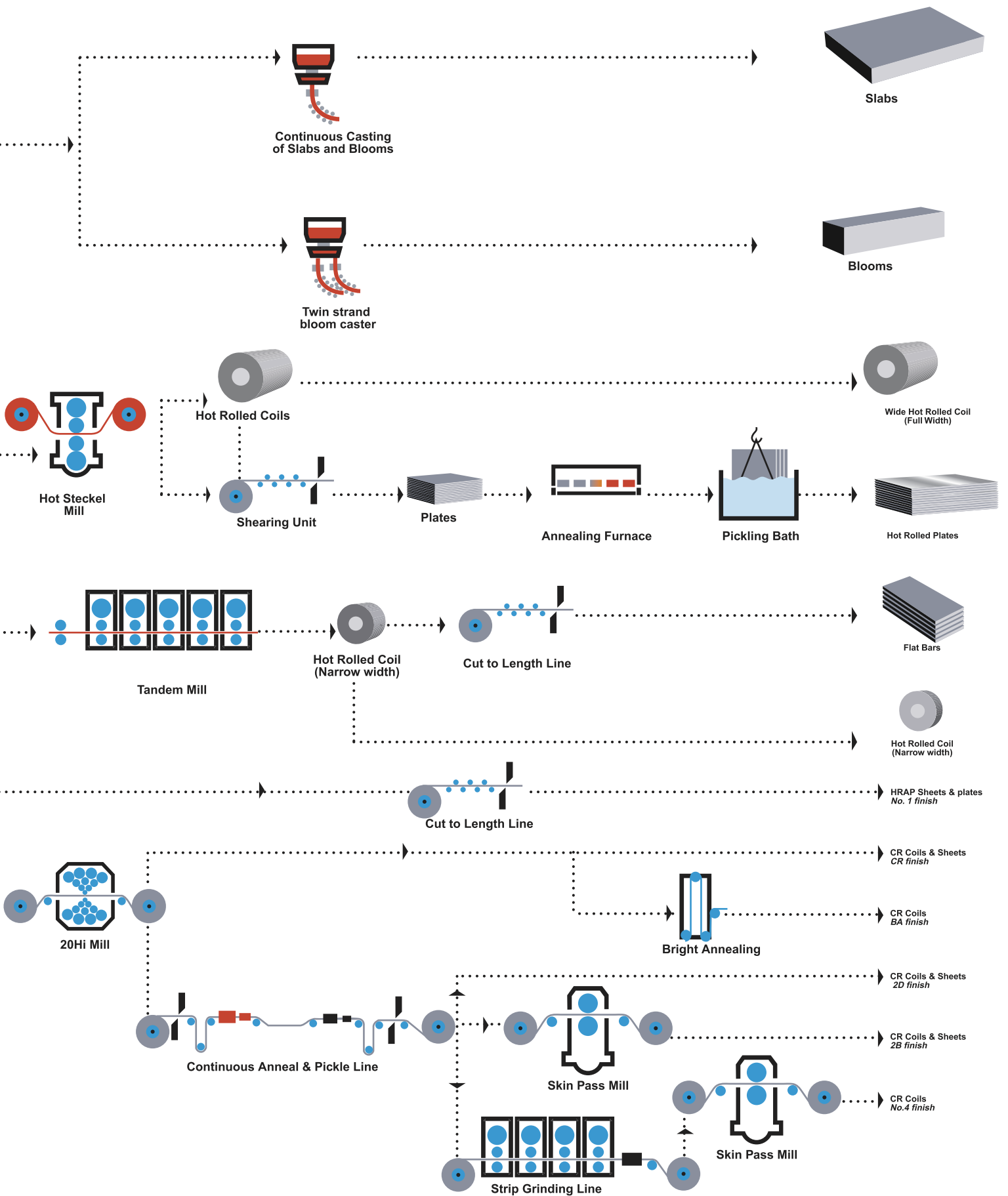


Hot Rolling



Cold Rolling





specifications &

PRODUCT MIX

Product	Thickness (mm)	Width (mm)	Length (mm)	Surface Finish	Edge Condition
Slab	160/200	600-1270	15000 (max)	As Cast & Ground	–
Bloom	160x160/ 200x200	–	10000 (max)	As Cast & Ground	–
Hot Rolled Sheet/Plate	4.0-50.0	1250 (max)	7000 (max)	Hot Rolled (Black)/ No.1 (HR Annealed & Pickled)	Sheared/ Plasma/Mill
Hot Rolled Coil	2.8-6.5	1250 (max)	Coil	Hot Rolled (Black)/ No.1 (HR Annealed & Pickled)	Trim/Mill
Cold Rolled Coil	0.4-2.0 0.5-4.0	1000 (max) 1250 (max)	Coil/Sheet Coil/Sheet	(CR Annealed and Pickled) 2D/2B/No.3/No.4	Trim/Mill Trim/Mill
Cold Rolled Precision Strips	0.05-0.50	600 (max)	Coil	2B	Trim/Mill
Razor Blade Steel	0.1-0.45	340 max.	Coil Form	2D/2B	Mill Edge/ Trimmed

Dimensions can also be customised to meet specific requirements.
These values are subject to change without prior notice.

CHEMICAL COMPOSITION

	Jindal Designation / Grade	UNS (Unified Numbering System)	USA - Canada / ASTM - ASME	%C (Max)	%Mn (Max)	%P (Max)	%S (Max)	%Si (Max)	%Cr	%Ni	%Mo	%N (Max.)	%OTHERS
AUSTENITIC C-Mn*	J201#	S20100	201	0.15	5.5 - 7.5	0.06	0.03	1.00	16.0 – 18.0	3.5 – 5.5		0.25	
	J202 ^Q	S20200	202	0.15	7.5 - 10.0	0.06	0.03	1.00	17.0 – 19.0	4.0 – 6.0			
	J204 Cu [†]	S20430		0.10	6.5 - 9.0	0.06	0.01	0.75	16 – 17.5	1.5 – 3.5		0.10 – 0.20	Cu = 2.0 – 4.0
	JSLAUS (J1)			0.08	6.0 - 8.0	0.06	0.01	0.75	16.0 – 18.0	4.0 – 6.0		0.10	Cu = 1.50 – 2.0
	J4			0.10	8.50 - 10.0	0.07	0.01	0.75	15.0 – 16.5	1.0 – 2.0		0.20	Cu = 1.50 – 2.0
AUSTENITIC C-Mn	J-301	S30100	301	0.15	2.00	0.045	0.030	1.00	16.00 – 18.00	6.00 – 8.00		0.10	
	J-304	S30400	304	0.07	2.00	0.045	0.030	0.75	17.5 – 19.5	8.00 – 10.50		0.10	
	J-304H	S30409	304H	0.04-0.10	2.00	0.045	0.030	0.75	18.00 – 20.00	8.00 – 10.50			
	J-304L	S30403	304L	0.030	2.00	0.045	0.030	0.75	17.5 – 19.5	8.00 – 12.00		0.10	
	J-304LN	S30453	304LN	0.030	2.00	0.045	0.030	0.75	18.00 – 20.00	8.00 – 12.00		0.10 – 0.16	
	J-309	S30900	309	0.20	2.00	0.045	0.030	0.75	22.00 – 24.00	12.00 – 15.00			
	J-309S	S30908	309S	0.08	2.00	0.045	0.030	0.75	22.00 – 24.00	12.00 – 15.00			
	J-310	S31000	310	0.25	2.00	0.045	0.030	1.50	24.00 – 26.00	19.00 – 22.00			
	J-310S	S31008	310S	0.08	2.00	0.045	0.030	1.50	24.00 – 26.00	19.00 – 22.00			
	J-316	S31600	316	0.08	2.00	0.045	0.030	0.75	16.00 – 18.00	10.00 – 14.00	2.00 – 3.00	0.10	
	J-316L	S31603	316L	0.030	2.00	0.045	0.030	0.75	16.00 – 18.00	10.00 – 14.00	2.00 – 3.00	0.10	
	J-316LN	S31653	316LN	0.030	2.00	0.045	0.030	0.75	16.00 – 18.00	10.00 – 14.00	2.00 – 3.00	0.10 – 0.16	
	J-316Ti	S31635	316Ti	0.08	2.00	0.045	0.030	0.75	16.00 – 18.00	10.00 – 14.00	2.00 – 3.00	0.10	Ti=5X(C+N) Min., 0.70 Max.
	J-317	S31700	317	0.08	2.00	0.045	0.030	0.75	18.00 – 20.00	11.00 – 15.00	3.00 – 4.00	0.10	
	J-317L	S31703	317L	0.030	2.00	0.045	0.030	0.75	18.00 – 20.00	11.00 – 15.00	3.00 – 4.00	0.10	
MARTENSITIC	J-317LN	S31753	317LN	0.030	2.00	0.045	0.030	0.75	18.00 – 20.00	11.00 – 15.00	3.00 – 4.00	0.10 – 0.22	
	J-321	S32100	321	0.08	2.00	0.045	0.030	0.75	17.00 – 19.00	9.00 – 12.00		0.10	Ti=5X(C+N) Min., 0.70 Max. Cb=10XC Min., 1.00 Max.
	J-347	S34700	347	0.08	2.00	0.045	0.030	0.75	17.00 – 19.00	9.00 – 13.00			
	J-410	S41000	410	0.15	1.00	0.040	0.030	1.00	11.50 – 13.50	0.75 max			
	J-415	S41500		0.05	1.00	0.030	0.030	0.60	11.50 – 14.00	3.50-5.50	1.00 max		
	J-420	S42000	420	0.15 min	1.00	0.040	0.030	1.00	12.00 – 14.00	0.75 max			
	JBS			0.6-0.75	1.00	0.040	0.030	0.75	12.00 – 14.00		0.75 max		
	J-405	S40500	405	0.08	1.00	0.040	0.030	1.00	11.50 – 14.50	0.60			Al = 0.10 – 0.30
	J-409	S40900	409	0.030	1.00	0.040	0.020	1.00	10.50 – 11.75	0.50 max		0.030	Ti = 6X (C+N) Min., 0.5 Max.
	J-409RC			0.02	1.00	0.040	0.030	1.00	10.50 – 11.75	0.50 max		0.020	Ti = 6X (C+N) Min., 0.5 Max.
FERRITIC	J-409M			0.03	0.8-1.5	0.030	0.030	1.00	10.80 – 12.50	1.50 max		0.030	Ti = 0.75 Max.
	J-410S	S41008	410S	0.08	1.00	0.040	0.030	1.00	11.50 – 13.50	0.60 max			
	J-430	S43000	430	0.12	1.00	0.040	0.030	1.00	16.00 – 18.00	0.75 max			
	J-430Ti		430	0.030	1.00	0.040	0.030	1.00	16.00 – 19.00				Ti = 0.10 – 1.00
	J-436	S43600	436	0.12	1.00	0.040	0.030	1.00	16.00 – 18.00		0.75 – 1.25		Cb = 5X C Min., 0.80 Max.
DUP. PH.	J-439	S43035	439	0.03	1.00	0.040	0.030	1.00	17.00-19.00	0.50 max		0.030	Ti=0.20 + 4X (C+N) Min., 1.10 Max. Al = 0.15 Max.
	J-2205	S32205/ S31803	2205	0.03	2.00	0.030	0.020	1.00	22.00 – 23.00	4.50 – 6.50	3.0 – 3.50	0.14 – 0.20	

*These grades can be supplied with 0.005%S max also.

This grade will be supplied with 0.08%C max for improved corrosion resistance.

Q This grade will be supplied with 17.50%Cr min and 0.08%C max for improved corrosion resistance.

† This grade can be supplied in two versions of 0.08%C max or 0.1%C max.

properties

SURFACE FINISHES

SURFACE FINISH	DEFINITION	APPLICATIONS
No. 1	Hot rolled annealed, shot blasted and pickled.	Pipes, tubing, chemical tank
No. 2D	Cold rolled annealed and pickled.	Deep drawn utensils, heat exchanger, exhaust pipe
No. 2B	Cold rolled annealed and pickled and skin passed; given an appropriate luster by again cold rolling.	Food industry, kitchen utensils, medical equipment, construction material
BA	Bright annealed finish; processed with bright heat treatment after cold rolling.	Decorative usage, kitchen utensils, electric equipment, building construction
No. 3	Cold rolled annealed and pickled and polished with 100 to 120 grit.	Kitchen utensils, building construction, medical equipment
No. 4	Cold rolled annealed and pickled and polished with 150 to 180 grit.	Kitchen utensils, building construction, medical equipment
Scotch Brite	Very fine hairline finish generated by polishing with rolls made out of scotch brite material.	Architectural purposes, railway cabins, elevator interiors, paneling, kitchen appliances

MECHANICAL PROPERTIES

		MECHANICAL PROPERTIES				VARIOUS EQUIVALENT INTERNATIONAL STANDARDS						
Jindal Designation/Grade		Tensile Strength Mpa(min)	Yield strength Mpa(min)	%Elongation (min)	Hardness Rockwell B (max)	INDIA/IS Letter Symbol	INDIA/IS Numerical Symbol (ISS)	UNS Designation	GERMANY/DIN Designation	Japan/JIS	USSR/GOST	
AUSTENITIC C-Mn	J201	515	260	40	95	X10Cr17Mn6Ni4N20		S35350	X12CrMnNiN17-7-5	SUS201		
	J202	620	260	40	100	X10Cr18Mn9Ni5		S35450	X12CrMnNiN18-9-5	SUS202		
	J204Cu	620	310	40	100							
	JSLAUS(J1)	600	300	40	95							
	J4	650	325	40	100							
AUSTENITIC C-Ni	J-301	515	205	40	95	X10Cr17Ni7	301		X12CrNi177	SUS301		
	J-304	515	205	40	92	X04Cr19Ni9	304SI		X5CrNi1810	SUS304		
	J-304H	515	205	40	92							
	J-304L	485	170	40	92			S30403		SUS304L	03Ch18N11	
	J-304LN	515	205	40	92				X2CrNiN1810	SUS304LN		
	J-309	515	205	40	95	X15Cr24Ni13	309	S30920	X15CrNiSi2012	SUH309	20Ch20N14S2	
	J-309S	515	205	40	95			S30908	X7CrNi2314	SUS309S		
	J-310	515	205	40	95	X20Cr25Ni20	310	S31020	X15CrNiSi2520	SUH310	20Ch25N20S2	
	J-310S	515	205	40	95			S31008	X12CrNi2621	SUS310S	20Ch23N18	
	J-316	515	205	40	95	X04Cr17Ni12Mo2	316	S31608	X5CrNiMo17122	SUS316		
	J-316L	485	170	40	95	X02Cr17Ni12Mo2	316L		X2CrNiMo17132	SUS316L		
	J-316LN	515	205	40	95				X2CrNiMoN17133	SUS316LN		
	J-316Ti	515	205	40	95	X04Cr17Ni12Mo2Ti	S31635		X6CrNiMoTi17122		10Ch17N13M2T	
	J-317	515	205	35	95		S31700			SUS317		
	J-317L	515	205	40	95		S31703		X2CrNiMo18154	SUS317L		
	J-317LN	550	240	40	95		S31753					
	MARTENSITIC	J-321	515	205	40	95	X04Cr18Ni10Ti	321		X6CrNiTi1810	SUS321	08Ch18N10T
		J-347	515	205	40	92	X04Cr18Ni10Nb	347		X6CrNiNb1810	SUS347	08Ch18N12B
J-410		450	205	20	96	X12Cr12	410		X12Cr13	SUS410		
J-415		795	620	15	32rc				X3CrNiMo13-4			
FERRITIC	J-420	690		15	96	X20Cr13	420 S1		X20Cr13	SUS420J1		
	JBS											
	J-405	415	170	20	88	X04Cr12	405		X6CrAl13	SUS405		
	J-409	380	170	20	88				X2CrTi12			
	J-409RC	350	170	30	88							
	J-409M	450	275	20	90							
	J-410S	415	205	22	89			S41008				
	J-430	450	205	22	89	X07Cr17	430		X6Cr17	SUS430		
	J-430Ti	360	175	22	90				X3CrTi17	SUS430LX		
DUPLEX	J-436	450	240	22	89							
	J-439	415	205	22	89		439		X3CrTi17			
	JSL2205	655	450	25	31rc				X2CrNiMoN 22-5-3	SUS329J3L		

Imagination at work...

research & development



R&D in Progress

The R&D division plays a pivotal role in retaining and consolidating company's leadership position in the Stainless Steel industry. This is achieved through continuous up-gradation of quality, processes, services and through product innovation to develop new products at competitive costs. Cross-fertilization of knowledge between production, quality control and commercial units in order to maintain global standards has been the guiding principle of the R&D function.

- Development of high value products to serve niche markets
- Quality up-gradation of existing products to enable enhanced global acceptance

- Cost reduction by process development, optimization and refinement to provide a consistent competitive edge
- Technology enhancement to increase quality production
- Foster growth and develop new market segments through knowledge sharing with customers and to assist them in their operations and applications of our products

In addition to the above, the R&D division closely interacts with reputed national and international laboratories/ scientific institutions/ Universities to avail expert services and knowledge for critical investigations.



Tulsi Bhawan, the R&D Complex at Hisar, India

Turning
impossibilities
into
possibilities



Metallurgical Microscope



Tensile Testing Machine

quality assurance

Understanding customer requirements and supplying products as per their requirements is ensured with the help of Quality Assurance and Quality Control groups. Across the entire business chain of supplies, operations and marketing, appropriate quality assurance systems are in place to ensure correctness at each step of the cycle. ISO 9001-2000 Certification of the plant is a testimony to this. ISO 14001 and OHSAS 18001 Systems Certification of the plant assure our commitment towards the environment and for providing a safe workplace for our employees.

For ensuring quality at every step, the production processes are constantly monitored and controlled

to ensure that the finished products are as per customer's requirements. The plant has well equipped laboratories with a battery of modern equipment such as Optical Emission Spectrometres, X-Ray Fluorescence analyser, Carbon Sulphur analyser, Hydrogen analyser, Nitrogen and Oxygen analyser, Corrosion Testing facilities, Universal Testing machine, Ultrasonic Testing unit, Impact Testing machine, all types of Hardness testers, Surface Roughness tester and E-cupping testing machine.

Well documented procedures ensure correctness in testing and certification of the products.



Spectrometer



Micro Testing

The beginning of a new era

JSL is setting up a fully integrated Greenfield Stainless Steel project in the Indian state of Orissa, with a capacity of 1.6 million tons per annum. The project would involve mining of iron, manganese and chrome ore, production of ferro alloys and production of hot and

cold rolled Stainless Steel through melting, casting and rolling mills.

To meet the full requirement of power, JSL is setting up a 500 MW coal based captive power plant.



Shri O. P. Jindal and Smt Savitri Jindal at Laying of Foundation Stone of the Project



Work in Progress, at the Greenfield Project

The dream comes full circle. The largest fully integrated Stainless Steel plant.



2 Hi Skin Pass Mill



Combined Annealing and Pickling Line



Tension Levelling Line



Z-mill

Shaping a Global Vision



Packaged Coils

JSL has established its foothold in the South East Asian market with its acquisition of a Stainless Steel cold rolling plant in Indonesia from Maspion Stainless Steel. The plant has a capacity of 60,000 metric tons per annum. Its strategic location has enabled JSL to serve the South East Asian and the Oceania markets. With its strong

team and modern facilities to produce quality product, PT Jindal Stainless Indonesia is leaving its mark in the markets.

This plant produces all grades of Stainless Steel including 200, 300 and 400 series and is well prepared to serve customized requirements.

art d'inox



The Lifestyle Products of art d'inox are Accepted Far and Wide

art d'inox is the exciting new form of ultimate style. The name translates to 'the art of Stainless Steel'. And that's precisely what it is: Works of art in Stainless Steel.

art d'inox has been set up with the objective of creating exclusive Stainless Steel lifestyle products, which are synonymous with

quality, beauty and functionality. The professionally qualified in-house design team is dedicated to exploring the frontiers of design and the product range is a celebration of both form and function. The range encompasses tableware, serving ware, gifts, home and office accessories.

Styling lifestyle

Constructing confidence, building trust



Innovative Designs in Stainless Steel by arc



Stainless Steel is a material par excellence, which now seeks to permeate through Indian Architecture. The Architecture Division launched by JSL has taken the initiative to promote Stainless Steel products and technology solutions to cater to the emerging markets of Stainless Steel for Architecture, Building and Construction in India.

The Architecture Division of JSL is capable of providing a full range of technical support services

including design, engineering work, fabrication of quality material, finishes and job site supervision by trained personnel.

The division has completed many projects specially those of street furniture, cafeteria furniture, lighting and signage apart from other architectural requirements.



Arial View of the Facility

Reaching
out to our
valued
customers



Cut to Length Line



Slitting Line



Scotch Brite Finishing Line

Another first, adding another feather in the cap – JSL has taken a leading step forward to bring convenient, customized, just-in-time services to the doorsteps of its valued customers.

The company has partnered with Steelway s.r.l., a leading Italian company in the business of distribution and processing of steel, to service its customers with exact

Slit, Cut to size, Polished Stainless Steel sheets, coils and blanks with highest standards of processing tolerances.

The facilities near Gurgaon (Haryana) and Mumbai, include state-of-the-art, high-end Precision Slitting, Cut to Length, Blanking and Polishing lines supplied by leading equipment manufacturers, FIMI & IMEAS, Italy.

Some of the many services offered are:

- Customized Stainless Steel Products
- Inventory Management
- Technical Value Engineering
- Warehousing
- Material Testing

Similar Service Centres will soon be operational at Surat and near Chennai.



Sheets Processed on CTL Line, Packed and Ready for Dispatch



Slit Coils, Packed and Ready for Dispatch



A commitment
to being and
having the best

human resources



Our Greatest Asset is Our People

Our people philosophy emanates from our vision and belief that people are the prime assets of our organization. They are the reservoirs of abundant capabilities and the key drivers of our growth. We offer an energizing and empowering environment which enables people to perform at their best and continuously up-skill themselves. There is a strong sense of partnership with the workforce with focus on individual development and leveraging of human capital onto accelerated business performance.

We are a quality and systems oriented company and constantly invest in Leadership and Process enhancement programs such as LEAP (Leadership Enhancement for Accelerated Performance) with Mercer Human Resource Consulting, TPM (Total Productive Maintenance) with JIPM of Japan, ERP (SAP) implementation in association with Accenture and Six Sigma in association with WIPRO. We have institutionalised the work ethos which instill a sense of belongingness and pride.

environmental friendliness



Greenery Around the Cold Rolling Division



State-of-the-art Fume Extraction System at Hot Rolling Division.



Fume Hood on the ASM Convertor at Hisar

We firmly believe that corporate growth is strengthened by our efforts in the area of environment protection and making a greener tomorrow. The Company believes in going beyond mere compliance with applicable legislation to create a healthy environment both within and outside our plants. Our operations have a fully equipped environment

management infrastructure in place. We use suitable processes and technology to make Stainless Steel without adversely impacting the environment. JSL has its work practices aligned with international Occupational Health and Safety Standard OHSAS 18001 and our plant at Hisar is ISO 14001 EMS certified.

For us, every day
is Earth Day

corporate social responsibility



Providing Education and Healthcare has been a major area of our interest

Shri O. P. Jindal had a vision of a progressive state – a state where men and women would work shoulder to shoulder towards making a happier tomorrow. JSL constantly echoes these values and gives due cognizance of its role as a responsible corporate citizen. Community Service has been the uppermost Corporate Value and JSL has contributed to the community cause through Rural Development Initiatives, Women's Upliftment, Health & Education Programs. Schools at various levels have been set up to educate the specifiers of the future. The Vidya Devi Jindal

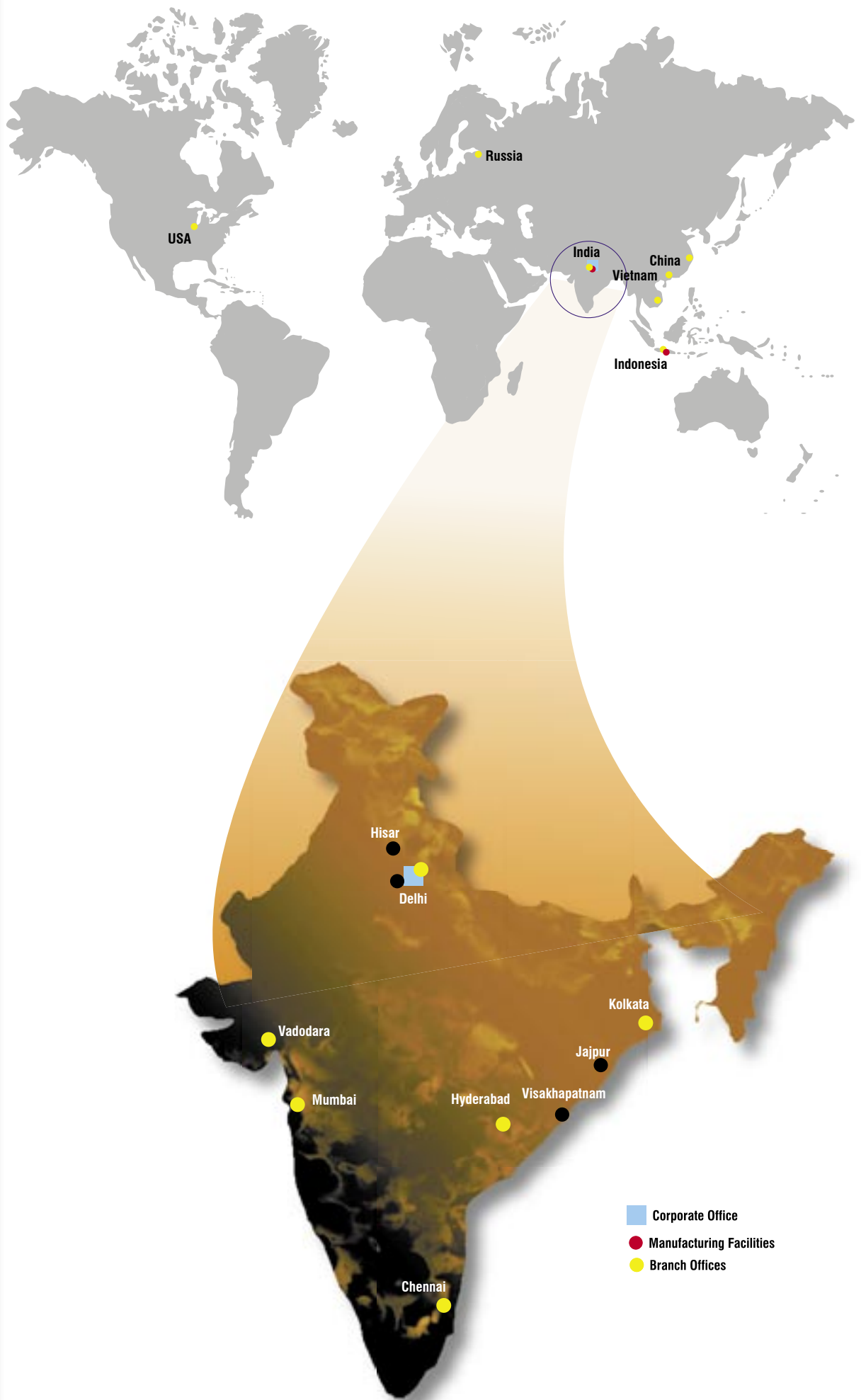
School, a residential girls' school and the Jindal Modern School, a 10+2 co-educational school at Hisar are engaged in the holistic development of students. Efforts towards providing good quality health care is provided through N. C. Jindal Institute of Medicare & Research at Hisar. Immunization drives and free health care camps on different medical aspects are also conducted from time to time. A Cancer Research Institute and Hospital is also being built to provide medical care to the community at a nominal cost.

Our true measure of success



The emphasis has always been on holistic development of the children

our presence





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