Chrome-Manganese
Austenitic Stainless Steel
Making Quality cost-effective
JSL Limited
Formerly Jindal Stainless Limited, JSL Limited is India’s largest integrated producer of stainless steel in 300, 200, 400 and Duplex grades.

A leader and a name synonymous with enterprise, excellence and success, the company ethos mirrors characteristics of the metal it produces; JSL is innovative and versatile in its thought; strong and unrelenting in its operations; ‘Think Green’ in its manufacturing process; brilliant, appealing and beautiful in its community support activities.

Established in 1970, JSL Limited (formerly Jindal Stainless Limited), is the largest Stainless Steel conglomerate in India and the flagship company of the OP Jindal Group. An OHSAS 18001, ISO 9001, ISO 14001, AD W0, PED certified company, JSL is the leading producer of Stainless Steel flat products in Austenitic, Ferritic, Martensitic and Duplex grades and global leader in Chrome Manganese (Cr-Mn) 200 Series Stainless Steel grades. The company has strong export market and has presence in over 50 countries including US, Europe, China, Middle-East and South Asian countries.

JSL, while leading the Indian Stainless steel industry is also among the top 15 stainless steel producers worldwide.
JS L - S U B S I D I A R I E S & J O I N T V E N T U R E S

A R T D ’ I N O X ( A U S T E N I T I C C R E A T I O N S P V T. L T D )
- Art in Stainless.
- Lifestyle product in Stainless Steel.
- Innovation & elegance blended with Stainless Steel utensils and artifacts.

A R C ( J I N D A L A R C H I T E C T U R E L I M I T E D )
- Provide technical and aesthetic solution.
- Innovative design in Architecture, Building and Construction segment.

J I N D A L S T A I N L E S S S T E E L W A Y L I M I T E D
- Stainless Steel Service Center.
- JV between JSL and Steelway srl, Italy.
- Customized products & distribution services for specific products on JIT basis.

P T J I N D A L S T A I N L E S S, I N D O N E S I A
- Cold Rolling facility, 75,000 tpa, being enhanced to 150,000 tpa.
- Setup to service customers in South-east Asia and Oceanic market.

I B E R J I N D A L S. L. , S P A I N
- JV with the Fagor group, Spain.
- Custom tailored stainless steel formats for the Spanish market.
- Setup to service customers in other European countries.

J S L

G R E E N F I E L D P R O J E C T-O R I S S A
- 1.6 million mt pa Steel Melting capacity.
- 3.2 million mtpa Hot Rolling capacity.
- 0.4 million mtpa Cold Rolling capacity.
- Facilities to produce major ferro-alloys; Fe-Cr, Fe-Mn, Si-Mn, etc.
- Fully integrated Stainless Steel plant from Mines to Cold Rolling along with 500 MW Power Plant.

H I S A R
- Steel Melting and Rolling capacity of 720,000 tpa.

V I S A K H A P A T N A M P L A N T
- 40,000 tpa Fe-Cr plant.
Harness the power of a leader

JSL Stainless Steels are international in all respects. Behind our products and services lie the massive resources of one of the great metal producers. A clear focus on customer needs, coupled with cross market expertise, a wide product range and up-to-the-minute technology ensures that innovative solutions are provided.
JSL has the expertise

You get our expertise, capability and coverage to bring you the right solutions whenever and wherever you need them.

This is the strength needed for today’s challenges: world class plants and skills backed by JSL’s research and development which is dedicated to stainless steel.

It all adds up to a powerful partnership for total success.
Cr-Mn Stainless Steel
Making Quality Cost Effective

Cr-Mn Stainless Steel – A cost-effective solution with grades which exhibit good strength, corrosion resistance and formability.

JSL is the largest producer of Chrome-Manganese stainless steel in the world. Cr-Mn stainless steels have been developed as a cost-effective alternative to 304 grades stainless steel for certain applications. These grades contain Chromium (15%-19%), Nickel (1-5%) along with appropriate combination of Manganese, Copper and Nitrogen.

All these grades have austenitic structure in annealed condition at ambient temperature; provide higher strength, excellent formability, weldability and good corrosion resistance. Addition of Copper enhances drawability, formability, reduces work hardening rate and also increases corrosion resistance in certain environments.

It manufactures grades JSL AUS 201 (Modified), J201 (UNS S20100), J4 (S20430 Modified) and J204Cu (UNS S20430).
Once you identify the applications, Cr-Mn Stainless Steel will be the greatest competitive advantage you will have.

It is also backed by the JSL team. It is here that by sharing resources, expertise, skills, research findings and experience between our specialist divisions we can bring you the best possible solutions for your requirement.

The market approach adopted as a keystone in JSL culture ensures that innovation is customer focused.

Take advantage of all the benefits associated with large scale production yet flexible enough to meet the needs of all users of stainless steel.

Through our fast, flexible, reliable and responsive systems, our aim is to ensure your total satisfaction.
Cr-Mn Stainless Steel
Properties and Product range

JSL offers an extensive range of Chrome-Manganese stainless steels in sheet and coil form. Detailed product range description and respective properties are provided in the following pages.
Chemical Composition

<table>
<thead>
<tr>
<th>Grade</th>
<th>Elements</th>
<th>%C</th>
<th>%Mn</th>
<th>%S</th>
<th>%P</th>
<th>%Si</th>
<th>%Cr</th>
<th>%Ni</th>
<th>N ppm</th>
<th>%Cu</th>
<th>%Mo</th>
</tr>
</thead>
<tbody>
<tr>
<td>AISI 304 (UNS S30400)</td>
<td>Min</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>17.5</td>
<td>8</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0.07</td>
<td>2</td>
<td>0.03</td>
<td>0.045</td>
<td>0.75</td>
<td>19.5</td>
<td>10.5</td>
<td>1000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>AISI 301 (UNS 30100)</td>
<td>Min</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>16</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0.15</td>
<td>2</td>
<td>0.03</td>
<td>0.045</td>
<td>1</td>
<td>18</td>
<td>8</td>
<td>1000</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>J201 (UNS S20100)</td>
<td>Min</td>
<td>-</td>
<td>5.5</td>
<td>-</td>
<td>-</td>
<td>16</td>
<td>3.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0.15</td>
<td>7.5</td>
<td>0.03</td>
<td>0.06</td>
<td>1</td>
<td>18</td>
<td>5.5</td>
<td>2500</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>JSLAUS (201 Modified)</td>
<td>Min</td>
<td>-</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>16</td>
<td>4</td>
<td>-</td>
<td>1.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0.08</td>
<td>8</td>
<td>0.01</td>
<td>0.06</td>
<td>0.75</td>
<td>18</td>
<td>6</td>
<td>1000</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J204 Cu (UNS S20430)</td>
<td>Min</td>
<td>-</td>
<td>6.5</td>
<td>-</td>
<td>-</td>
<td>16</td>
<td>1.5</td>
<td>1000</td>
<td>2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0.1</td>
<td>9</td>
<td>0.01</td>
<td>0.06</td>
<td>0.75</td>
<td>17.5</td>
<td>3.5</td>
<td>2000</td>
<td>4</td>
<td>-</td>
</tr>
<tr>
<td>J4 (S20430 Modified)</td>
<td>Min</td>
<td>-</td>
<td>8.5</td>
<td>-</td>
<td>-</td>
<td>15.5</td>
<td>1</td>
<td>-</td>
<td>1.5</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0.1</td>
<td>10</td>
<td>0.01</td>
<td>0.07</td>
<td>0.75</td>
<td>16.5</td>
<td>2</td>
<td>2000</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td>J316L (UNS S31603)</td>
<td>Min</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>16</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0.03</td>
<td>2</td>
<td>0.03</td>
<td>0.045</td>
<td>-</td>
<td>18</td>
<td>14</td>
<td>1000</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>J216L (UNS S21603)</td>
<td>Min</td>
<td>-</td>
<td>6</td>
<td>-</td>
<td>-</td>
<td>16</td>
<td>6</td>
<td>-</td>
<td>1.5</td>
<td>1.5</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Max</td>
<td>0.03</td>
<td>8</td>
<td>0.015</td>
<td>0.06</td>
<td>0.75</td>
<td>18</td>
<td>8</td>
<td>0.25</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

*In all the above mentioned grades, the balance content is Fe.

Mechanical Properties

<table>
<thead>
<tr>
<th>Grade</th>
<th>UTS (Mpa)</th>
<th>YS (Mpa)</th>
<th>%Elongation</th>
<th>Hardness (HRB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AISI 304 (UNS 30400)</td>
<td>Co. Std</td>
<td>515min</td>
<td>205min</td>
<td>40min</td>
</tr>
<tr>
<td>AISI 301 (UNS 30100)</td>
<td>Co. Std</td>
<td>515min</td>
<td>205min</td>
<td>40min</td>
</tr>
<tr>
<td>J201 (UNS S20100)</td>
<td>Co. Std</td>
<td>515min</td>
<td>260min</td>
<td>40min</td>
</tr>
<tr>
<td>JSLAUS (201 Modified)</td>
<td>Co. Std</td>
<td>600min</td>
<td>300min</td>
<td>40min</td>
</tr>
<tr>
<td>J204Cu (UNS S20430)</td>
<td>Co. Std</td>
<td>620min</td>
<td>310min</td>
<td>40min</td>
</tr>
<tr>
<td>J4 (S20430 Modified)</td>
<td>Co. Std</td>
<td>650min</td>
<td>325min</td>
<td>40min</td>
</tr>
<tr>
<td>J316L (UNS S31603)</td>
<td>Co. Std</td>
<td>515min</td>
<td>310min</td>
<td>40min</td>
</tr>
<tr>
<td>J216L (UNS S21603)</td>
<td>Co. Std</td>
<td>485min</td>
<td>170min</td>
<td>40min</td>
</tr>
</tbody>
</table>

JSI Stainless Steels are refined by AOD/VOD process to achieve very low sulphur levels and high degree of cleanliness to exhibit superior corrosion resistance.
The dimensions below can also be customised to meet specific requirements.

## Product Range

<table>
<thead>
<tr>
<th>Product</th>
<th>Thickness (mm)</th>
<th>Width (mm)</th>
<th>Length (mm)</th>
<th>Surface Finish</th>
<th>Edge</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slab</td>
<td>160/200</td>
<td>600-1270</td>
<td>15000 (max)</td>
<td>As Cast &amp; Ground</td>
<td></td>
</tr>
<tr>
<td>Bloom</td>
<td>160 x 160</td>
<td>200 x 200</td>
<td>10000 (max)</td>
<td>As Cast &amp; Ground</td>
<td></td>
</tr>
<tr>
<td>Hot Rolled Sheet/Plate</td>
<td>4.0 - 50.0</td>
<td>1250 (max)</td>
<td>7000 (max)</td>
<td>Hot Rolled (Black)/ No. 1 (HR Annealed &amp; Pickled)</td>
<td>Sheared/ Plasma/ Mill</td>
</tr>
<tr>
<td>Hot Rolled Coil</td>
<td>2.8 - 6.5</td>
<td>1250 (max)</td>
<td></td>
<td>Hot Rolled (Black)/ No. 1 (HR Annealed &amp; Pickled)</td>
<td>Trim/Mill</td>
</tr>
<tr>
<td>Cold Rolled Coil</td>
<td>0.4 - 2.0</td>
<td>1000 (max)</td>
<td></td>
<td>(CR Annealed and Pickled 2D/2B/ No.3/No.4)</td>
<td>Trim/Mill/ Slitted</td>
</tr>
<tr>
<td></td>
<td>0.5 - 4.0</td>
<td>1250 (max)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Precision Strips</td>
<td>0.05 - 5.0</td>
<td>600 (max)</td>
<td></td>
<td>2B/BA</td>
<td>Trim/Mill/ Slitted</td>
</tr>
</tbody>
</table>
### Surface Finish

<table>
<thead>
<tr>
<th>Surface</th>
<th>Finishes</th>
<th>Definition Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. 1</td>
<td>Hot rolled, annealed, shot blasted and pickled.</td>
<td>Pipes, Tubing, General Fabrication.</td>
</tr>
<tr>
<td>No. 2D</td>
<td>Cold Rolled, annealed and pickled.</td>
<td>Sinks, Automotive trims, Heat exchanger.</td>
</tr>
<tr>
<td>No. 2B</td>
<td>Cold Rolled, annealed, pickled and skin passed.</td>
<td>Food industry, Cookware, Medical equipment, Construction material, White goods, Rail car, Trailer bodies.</td>
</tr>
<tr>
<td>No. 3</td>
<td>Cold Rolled, annealed, pickled and polished with 100 to 120 grit.</td>
<td>Kitchen equipment, Restaurants, Building construction, Medical equipment.</td>
</tr>
<tr>
<td>No. 4</td>
<td>Cold Rolled, annealed, pickled and polished with 150 to 180 grit.</td>
<td>Restaurants, Kitchen utensils, Building construction, Medical equipment.</td>
</tr>
<tr>
<td>Scotch Brite</td>
<td>Very fine hairline finish generated by polishing with rolls made out of scotch brite material.</td>
<td>Architectural purposes, Railway cabins, Elevator interiors, Paneling, Kitchen appliances.</td>
</tr>
</tbody>
</table>

**Note:** Information in this document is only for explanation of general characteristics and properties of JSL products, not for Guarantee of the material. We have made all efforts to ensure accuracy of the information printed in this brochure, the use of information is at reader’s risk and no warranty is implied or expressed by JSL with respect to the use of information contained herein. Technical information in this brochure is subject to change by environment condition and the purpose of use.

### Certifications

JSL is a OHSAS 18001:1999, ISO 9001:2000, ISO 14001:2004 and ADW (German Standards) and PED/97/23 certified company.
### Corrosion resistance

<table>
<thead>
<tr>
<th>Test Solution</th>
<th>Concentration</th>
<th>Temperature</th>
<th>304</th>
<th>201</th>
<th>204Cu</th>
<th>JSLAus</th>
<th>J4</th>
<th>216L</th>
<th>316L</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nitric Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>14%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>35%</td>
<td>Boiling</td>
<td>A</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>70%</td>
<td>Boiling</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>C</td>
<td>B</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>Sulphuric Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>20°C</td>
<td>C</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>C</td>
<td>C</td>
<td>B</td>
<td>B</td>
</tr>
<tr>
<td>5%</td>
<td>Boiling</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>50%</td>
<td>20°C</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>C</td>
<td>D</td>
</tr>
<tr>
<td>50%</td>
<td>Boiling</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>98%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>98%</td>
<td>Boiling</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Hydro chloride</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100%</td>
<td>20°C</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Phosphoric Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>5%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>10%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Oxalic Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>5%</td>
<td>Boiling</td>
<td>A</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>10%</td>
<td>Boiling</td>
<td>A</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>B</td>
<td>A</td>
</tr>
<tr>
<td>Acetic Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>100%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>50%</td>
<td>Boiling</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Formic Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>50°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>5%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Lactic Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>50°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>10%</td>
<td>Boiling</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Citric Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5%</td>
<td>50°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>15%</td>
<td>Boiling</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Carbolic Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Tartaric Acid</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>99%</td>
<td>20°C</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
</tbody>
</table>

A < 0.1068 mmpy, B = 0.1068-1.068 mmpy, C = 1.068-3.0 mmpy, D = 3.0-10.68 mmpy, E > 10.68 mmpy
### Weldability

<table>
<thead>
<tr>
<th>Welding Methods</th>
<th>Applicable Thickness (mm)</th>
<th>J4</th>
<th>J 204Cu</th>
<th>201</th>
<th>JSL AUS</th>
<th>304</th>
<th>216L</th>
<th>316L</th>
<th>Applications</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shielded Metal arc welding</td>
<td>t &gt; 0.8</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Butt Welding, corner arc welding reinforce welding, wide diameter pipe.</td>
</tr>
<tr>
<td>TIG Welding</td>
<td>0.5&lt;t&lt;3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Butt welding thin sheets, corner reinforce welding, narrow diameter tube, pipe.</td>
</tr>
<tr>
<td>MIG Welding</td>
<td>t &gt; 3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Thick sheet/plate welding, corner reinforce welding, wide diameter pipe.</td>
</tr>
<tr>
<td>Plasma Arc welding</td>
<td>t &gt; 3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>Butt welding thick sheets/plates, corner reinforce welding, wide diameter pipe.</td>
</tr>
<tr>
<td>Spot Welding</td>
<td>0.5&lt;t&lt;3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>Kitchenware, rail car, vehicle.</td>
</tr>
<tr>
<td>Projection Welding</td>
<td>0.5&lt;t&lt;3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>Projection welding is particularly applicable where many spot welds are required in restricted area; where the parts are pressing, so that projections can be formed during the final pressing operation.</td>
</tr>
<tr>
<td>Lap Seam Welding</td>
<td>0.5&lt;t&lt;2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>Automobile, gas burner, freezerparts, kitchenware.</td>
</tr>
<tr>
<td>Soldering</td>
<td>0.3&lt;t&lt;2</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>Joining small parts when strength &amp; precision is not vital.</td>
</tr>
</tbody>
</table>

**Notes:**
1. Widely used as one of the recommended welding methods
2. Ordinarily used but has limitations
3. Used only for specific application
4. Rarely used

### Grades and Electrode types

<table>
<thead>
<tr>
<th>Grades</th>
<th>Electrodes Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>J4, J204Cu, 201, JSL AUS, 202, 204, 304</td>
<td>304, 304L, 308, 308L</td>
</tr>
<tr>
<td>216L, 316L</td>
<td>316L</td>
</tr>
</tbody>
</table>
Any industry you might operate in, be certain of at least one application that can do just right with Cr-Mn stainless steels.

You can create a commercial advantage in your market place. Talk to us and find how your company can benefit by using Cr-Mn stainless steels.
Choose the Cr-Mn stainless steel for the right application

JSL offers five types of Cr-Mn stainless steels:

- JSL AUS (201 modified)
- J204Cu (UNS S20430)
- J4 (S20430 Modified)
- J201 (UNS S20100) &
- J216L (UNS S21603)

On the following pages, each of the above Cr-Mn stainless steels has been described with its characteristics, fabrication, applications and more importantly, how it compares with AISI 304.

If you feel you need to know more, just call the JSL team. Your company can benefit from our commitment to providing a level of support that helps you create a commercial advantage in your market place.

If like most of our customers, you allow us to work closely with you, we can develop an understanding of your material requirements and, where appropriate, your business and markets you operate in. Every support and operational member involved in servicing your account, from the melting shops to the local sales company, will be aware of your specific product needs and operational parameters. The total involvement ensures that the product and support you receive not only meet your material requirements but also contributes fully to your business objectives.
JSL AUS (201 modified) is a Chrome-Manganese-Nickel (min. 4% nickel) austenitic Stainless Steel grade. It has a higher annealed strength than AISI 304. Addition of copper reduces work hardening rate to facilitate cold working/forming. The alloy is non-magnetic in annealed condition; it becomes mildly magnetic after cold working. JSL AUS is a cost effective alternative to AISI 304, having similar formability and weldability.
Fabrication

**Welding:** JSL AUS can be welded by all conventional methods applied to AISI 304 austenitic stainless steel. Filler wires or electrodes of the conventional chromium-nickel 300 series can be used. Its susceptibility to inter-granular corrosion in weld heat-affected zone is analogous to AISI 304.

**Cold Forming:** JSL AUS is very tough, ductile and readily amenable to deep drawing, bending, stretch forming and spinning.
J204Cu

J204Cu (UNS S20430) is a Chrome-Manganese stainless steel with moderate amounts of Nickel, Copper and Nitrogen. Addition of Copper to austenitic stainless steel increases stacking fault energy, reduces work hardening rate and enhances formability. Nitrogen increases strength and pitting resistance of stainless steels. Manganese as austenite former replaces a part of Nickel and has beneficial effect on weldability. J204Cu has a higher annealed strength, similar corrosion resistance in a variety of mild corrosive media and similar formability and weldability in comparison with AISI 304.
Fabrication

**Welding:** J204Cu can be welded by all conventional methods applied to 18/8 type of austenitic stainless steel. Filler wire or electrodes of the conventional Chromium-Nickel 300 series stainless steel can be used. Resistance to inter-granular corrosion can be restored by post weld annealing treatment.

**Cold Forming:** J204Cu can readily be cold rolled, cold drawn and formed in similar manner as AISI 304. J204Cu can take up-to 80% cold reduction without intermediate annealing. It is less magnetic than AISI 304 on cold working.
J4

J4 (S20430 Modified) is a Chrome-Manganese austenitic stainless steel with moderate amount of Copper, Nickel and Nitrogen. Manganese and Nitrogen additions render this grade more economical while endowing it with good strength and high formability making it highly suitable for a wide variety of consumer and structural applications. Presence of Copper in this steel reduces work hardening rate and improves drawability. Nitrogen improves resistance to pitting corrosion. The alloy is non-magnetic in annealed condition like AISI 304. J4 can be used both in fully annealed condition and in temper rolled as well as cold rolled condition.
Fabrication

Welding: J4 can be welded by all conventional methods applied to 18/8 type of austenitic stainless steel. Filler wire or electrodes of the conventional Chromium- Nickel 300 series Stainless Steel can be used.

Cold Forming: It is tough, ductile and readily amenable to drawing, bending, stretch forming and spinning.
J201

J201 (UNS S20100) is a Chrome-Manganese-Nickel austenitic stainless steel similar in properties to AISI 301. J201 in annealed condition is having fully austenitic structure. The combination of Manganese, Nitrogen and Nickel renders a superior combination of strength and toughness at ambient and cryogenic temperatures. J201 possesses good resistance to oxidation. J201 will perform in most deep drawing applications and it is resistant to a wide variety of mild to moderately corrosive media.
Fabrication

**Welding:** J201 can be welded by all types of conventional methods applied to 18/8 steels. Filler wires or electrodes of the conventional Chromium-Nickel 300 series can be used. Its susceptibility to intergranular corrosion in weld heat-affected zone is analogous to AISI 304.

**Cold Forming:** J201 is very tough, ductile and responsive to deep drawing, bending, stretch forming and spinning.
J216L is a Chrome-Manganese-Nickel-Molybdenum austenitic stainless steel with moderate amount of nitrogen and copper, which offers a number of advantages over conventional AISI 316L stainless steel. The corrosion resistance of this stainless steel is comparable to AISI 316L. This alloy has nearly 50% higher strength in annealed condition and higher elevated temperature strength. It can be cold rolled to significantly higher tensile strength while retaining a very low magnetic permeability. A distinct combination of properties makes J216L highly suited for numerous applications in chemical, petrochemical, pulp, paper, oil and gas industries which currently use AISI 316L.
Fabrication

Since J216L and AISI 316L have comparable work hardening rate and sufficiently high ductility, the fabrication techniques are essentially similar.

Welding: The alloy possesses good weldability like stainless steels of 300 series. Gas tungsten-arc and gas metal arc techniques have been used for such grade. It can be welded to other stainless steels with conventional welding electrodes currently used.
**Indian Offices**

**Delhi (Corporate)**
Jindal Centre, 12 Bhikaji Cama Place,
New Delhi 110066
T: +91 11 2618 8340/50, 2618 8360/80,
F: +91 11 2610 1562 / 4165 9169
E: info@jindalsteel.com
www.jindalstainless.com

**Bangalore**
#129,7th Main,2nd Cross,
Avalahalli BDA, Banashankari 3rd Stage,
Bangalore - 560 085
T: +91 80 2675 6641
F: +91 80 2615 6641
E: info.bangalore@jindalsteel.com

**Chennai**
4C, Century Plaza, 560-562 Anna Salai
Teynampet, Chennai - 600 018
T: +91 44 - 2431 3935
F: +91 44 - 2432 9146
E: info.chennai@jindalsteel.com

**Hyderabad**
Technopolis, 302/B, Begumpet,
1-10-74/B
Hyderabad - 500 016
T: +91 40 6620 9201, 6527 8326
F: +91 40 6620 9202
E: info.hyderabad@jindalsteel.com

**Kolkata**
3A, Duckback House
41, Shakespeare Sarani,
Kolkata - 700 017
T: +91 33 4002 1300 /1319
F: +91 33 2290 6203
E: info.kolkata@jindalsteel.com

**Mumbai**
Citi Point 202, “B” Wing, 2nd Floor,
Andheri Kurla Road,
J.B. Nagar, Andheri (East)
Mumbai - 400 059
T: +91 22 2823 2190, 2283 9361
F: +91 22 28235039
E: info.mumbai@jindalsteel.com

**Vadodara**
1st Floor, BBC Towers
SayajiGurj, Vadodara - 390 005
T: +91 265 2225 004-5
F: +91 265 2361 162
E: info.vadodara@jindalsteel.com

---

**Global Offices**

**China**
Room No. 1206, Metro Plaza,
183, Tian He Bei Lu, Guangzhou
Post Code: 510 620
(Pr. China)
T: +86 20 8755 8862 / 8755 8855
F: +86 20 8755 8856
E: info.china@jindalsteel.com
Description: Representative Office

**Indonesia**
Unit A, 7th Floor,
Office Tower B,
Superblock Mega Glodok,
Kemayoran, Jakarta Pusat,
Indonesia
T: +62 21 2664 6701/2
F: +62 21 2664 6701/2
E: info.indonesia@jindalsteel.com
Description: Representative Office

**Italy**
Via Camuffo n. 7
30174, Mestre Venezia (VE)
Italy
T: +39 041 505 9728
F: +39 041 955 753
E: info.italy@jindalsteel.com
Description: Representative Office & Warehouse

**Poland**
Wisniowa 40B
02-520 Warszawa
Poland
T: +48 22 542 4108
F: +48 22 542 4109
E: info.poland@jindalsteel.com
Description: Representative Office & Warehouse

**Russia**
Kazanskaya Ulitsa 46/12
Saint Petersburg-190000
Russia
T: +7 812 3123626
F: +7 812 3123626
E: info.russia@jindalsteel.com
Description: Representative Office

**Spain**
Iberjindal S.L.
Ctra. Cordoba-Malaga Km 80800
14900 Lucena (Cordoba)
Spain
E: info.spain@jindalsteel.com
Description: Service Centre (JV with Fagor)

**UAE**
LOB 10 , Jebel Ali Free Zone,
P.O. Box - 18721, Dubai
United Arab Emirates
T: +971 4 8811751
F: +971 4 8811751
E: jsfze@eim.ae
Description: Representative Office / Subsidiary

**South Korea**
Room No. 1222, Lifecombi Building,
61-4 Yeouido-dong
Youngdungpo-gu, Seoul,
South Korea
T: + 82 1024 003 134
E: info.korea@jindalsteel.com
Description: Representative Office

**Turkey**
Innovative Inox
Paslarımaz Çelik San Ve Ticaret Ltd Sti
Golden Plaza 19 Mayis Cad No: 1, Kat:2, Sisli,
Istanbul, Turkey
T/F: +90 2122334285
E: turkey@innovativeinox.com
Description: Exclusive Agents

**USA**
4320, Winfield Road,
Suite 200
Warrenville, IL 60555
Chicago, United States of America
T: +1 630 836 8764
F: +1 630 836 8762
E: info.usa@jindalsteel.com
Description: Representative Office

**Vietnam**
5th Floor, VITIC Building,
6B, Nguyen Thanh Y Street,,
Da Kao Ward, District.1.
Ho Chi Minh City, Vietnam
T: +84 08 3911 80 11
F: +84 08 3911 80 99
E: info.vietnam@jindalsteel.com
Description: Representative Office & Warehouse