

# SPECIFICATIONS

## Ferro Alloys (Orissa)

	Cr	Mn (Min)	P (Max)	S (Max)	Si	C
Ferro Chrome	57-64 %		0.03%		2.5-3.5% <sup>m</sup>	6-8%
Ferro Manganese		75%	0.2%	0.05%	1.5% Max.	6-8%
		70%	0.25%	0.03%	1.5% Max.	7.5% Max.
HC Silico Manganese		60%	0.3%	0.02%	14% Min.	2% Max.
		65%	0.15%	0.02%	16% Min.	2% Max.
MC Silico Manganese		56%	0.14%	0.01%	23% Min.	0.46% Max.
LC Silico Manganese		56%	0.14%	0.01%	23% Min.	< 0.1%

## Metallurgical Coke (Orissa)

Met Coke	CSR: > 64%	CRI 20-25 %	M40: 92%	M10: 10%	ASH: 9-13 %	VM < 1%
----------	------------	-------------	----------	----------	-------------	---------

## Stainless Steel - Dimensions

Products	Max Width (mm)	Thickness (mm)	
		Min	Max
<b>Hisar</b>			
Hot Rolled Coil	1550	2.8	6.5
Plates	1550	4	50
HRAP / Coil	1550	2.8	6.5
CRAP Coil	1000	0.4	2
	1550	0.5	4
Precision Strips	435	0.05	0.5
Razor Blade Steel	340	0.076	0.45
<b>Indonesia</b>			
CRAP	1250	0.4	3
<b>Orissa</b>			
Slab	1650	160	250
Hot Rolled Coil	1650	2	12.7
Plates	1650	12.7	80
HRAP Coil/ 2E Coil	1650	1.4	10
CRAP Coil	1600	0.3	5

In case the product is supplied in Mill Edge, the tolerance on width may go up +50 / -0 mm.

## Stainless Steel - Finishes

SURFACE FINISH	DEFINITION	APPLICATIONS
No. 1	Hot rolled annealed, shot blasted and pickled.	Pipes, tubing, chemical tank, general fabrication
No. 2	Dull 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

Other Sizes / finishes can also be supplied by mutual agreement

## Equivalent International Stainless Steel Grades

	JSL Designation / Grade	UNS Designation	USA - Canada / AISI - ASTM - ASME	INDIA / IS Letter Symbol	European	Chinese	GERMANY / DIN Designation	Japan / JIS	COST
Austenitic Cr-Mn	J-201	S20100	201	X10Cr17Mn6Ni4N20	-	-	X12CrMnNi17-7-5	SUS201	-
	J-201L	S20103	201L	-	1.4371	-	X2CrMnNi17-7-5	-	-
	J-201LN	S20153	201LN	-	-	-	-	-	-
	J-202	S20200	202	X10Cr18Mn9Ni5	-	-	X12CrMnNi18-9-5	SUS202	-
	J-204 Cu	S20430	-	-	-	-	-	-	-
JSLAUS (J1)	-	-	-	-	-	-	-	-	-
J-4	-	-	-	-	-	-	-	-	-
Austenitic Cr-Ni	J-301	S30100	301	X10Cr17Ni7	1.4310	1Cr17Ni7	X12CrNi17-7	SUS301	-
	J301L	S30103	301L	-	-	-	-	-	-
	J301LN	S30153	301LN	-	1.4318	-	X2CrNi18-7	-	-
	J-304	S30400	304	X04Cr19Ni9	1.4301	0Cr18Ni9	X5CrNi18-10	SUS304	-
	J-304H	S30409	304H	-	-	-	-	-	-
	J-304L	S30403	304L	-	1.4307	-	X2CrNi18-9	SUS304L	-
	J-304LN	S30453	304LN	-	1.4311	-	X2CrNi18-10	SUS304LN	-
	J-309	S30900	309	X15Cr24Ni13	1.4828	-	-	-	-
	J-309S	S30908	309S	-	1.4833	1Cr23Ni13	X7CrNi23-14	SUS309S	-
	J-310	S31000	310	X20Cr25Ni20	-	-	X15CrNiSi25-20	SUH310	20Ch25N20S2
	J-310S	S31008	310S	-	1.4845	0Cr25Ni20	X12CrNi25-21	SUS310S	20Ch23N18
	J-316	S31600	316	X04Cr17Ni12Mo2	1.4401	0Cr17Ni12Mo2	X5CrNiMo17-12-2	SUS316	-
	J-316L	S31603	316L	X02Cr17Ni12Mo2	1.4404	00Cr17Ni14Mo2	X2CrNiMo17-13-2	SUS316L	-
	J-316LN	S31653	316LN	-	1.4429	-	X2CrNiMo17-11-2	SUS316LN	-
	J-316Ti	S31635	316Ti	X04Cr17Ni12Mo2Ti	1.4571	0Cr18Ni12Mo2Ti	X6CrNiMoTi17-12-2	SUS316Ti	10Ch17N13M2T
	J-317	S31700	317	-	-	-	-	-	-
	J-317L	S31703	317L	-	1.4438	00Cr19Ni13Mo3	X2CrNiMo18154	SUS317L	-
	J-317LN	S31753	317LN	-	-	-	-	-	-
	J31727	S31727	-	-	-	-	-	-	-
	J-321	S32100	321	X04Cr18Ni10Ti	1.4541	0Cr18Ni10Ti	X6CrNiTi18-10	SUS321	08Ch18N10T
J-347	S34700	347	X04Cr18Ni10Nb	1.4550	0Cr18Ni11Nb	X6CrNiNb18-10	SUS347	08Ch18N12B	
Martensitic	J-410	S41000	410	X12Cr12	1.4006	1Cr12	X12Cr13	SUS410	-
	J-415	S41500	-	-	1.4313	-	X3CrNiMo13-4	-	-
	J-420	S42000	420	X20Cr13	1.4021	-	X20Cr13	SUS420J1	-
	J-431	S43100	431	-	1.4057	1Cr17Ni2	X17CrNi15-2	-	20Ch17N2
JBS	-	-	-	-	-	-	-	-	
Ferritic	J-405	S40500	405	X04Cr12	1.4002	0Cr13A1	X6CrAl13	SUS405	-
	J-409	S40900	409	-	1.4512	-	X2CrTi12	SUH409	-
	J-409RC	-	-	-	-	-	-	-	-
	J-410S	S41008	410S	-	1.4000	0Cr13	X6Cr-13	SUS403	-
	J-430	S43000	430	X07Cr17	1.4016	1Cr17	X6Cr17	SUS430	-
	J-430Ti	-	-	-	-	-	X3CrTi7	SUS430LX	-
	J-436	S43600	436	-	-	-	-	-	-
	J-436L	S43932	436L	-	-	-	-	-	-
J-439	S43035	439	-	-	00Cr18Ti	X3CrTi7	-	SUS436L	
J-441	S43940	-	-	1.4509	-	X2CrTiNb18	-	-	
<b>Ferritic + Martensitic</b>									
J-409M	-	-	-	-	-	-	-	-	-
<b>Duplex (Austenitic+Ferritic)</b>									
J-2205	S32205	2205	-	-	-	-	-	-	-
J-31803	S31803	-	-	-	1.4462	-	X2CrNiMoN 22-5-3	SUS329J3L	-
J-2304	S32304	2304	-	-	1.4362	-	X2CrN 23-4	-	-

# SPECIFICATIONS

CHEMICAL COMPOSITION												MECHANICAL PROPERTIES			
JIS Designation/ Grade	%C (Max)	%Mn (Max)	%P (Max)	%S (Max)	%Si (Max)	%Cr	%Ni	%Mo	N PPM (Max)	%OTHERS	Tensile Strength MPa(min)	Yield strength MPa(min)	%Elongation (min)	Hardness Rockwell B (max)	
<b>Austenitic Cr-Mn*</b>															
J201#	0.15	5.5-7.5	0.060	0.030	1.00	16.00-18.00	3.50-5.50	-	2500	-	655	310	40	100	
J201L	0.030	5.5-7.5	0.045	0.030	0.75	16.00-18.00	3.50-5.50	-	2500	-	655	260	40	95	
J201LN	0.030	6.4-7.5	0.045	0.015	0.75	16.00-17.50	4.00-5.00	-	1000-2500	Cu = 1.0 Max.	655	310	45	100	
J202	0.15	7.5-10.0	0.060	0.030	1.00	17.00-19.00	4.00-6.00	-	2500	-	620	260	40	100	
J204 Cu#	0.10	6.5-9.0	0.060	0.010	0.75	16.00-17.50	1.50-3.50	-	1000-2000	Cu = 2.0-4.0	620	310	40	100	
JSLAUS (J1)	0.08	6.0-8.0	0.070	0.010	0.75	16.00-18.00	4.00-6.00	-	1000	Cu = 1.5-2.0	550	205	40	95	
J-4	0.10	8.50-10.0	0.080	0.010	0.75	15.00-16.00	1.00-2.00	-	2000	Cu = 1.5-2.0	650	325	40	100	
<b>Austenitic Cr-Ni</b>															
J301	0.15	2.00	0.045	0.030	1.00	16.00-18.00	6.00-8.00	-	1000	-	515	205	40	95	
J301L	0.030	2.00	0.045	0.030	1.00	16.00-18.00	6.00-8.00	-	2000	-	550	220	45	100	
J301LN	0.030	2.00	0.045	0.030	1.00	16.00-18.00	6.00-8.00	-	700-2000	-	550	240	45	100	
J304	0.07	2.00	0.045	0.030	0.75	17.50-19.50	8.00-10.50	-	1000	-	515	205	40	92	
J304M	0.04-0.10	2.00	0.045	0.030	0.75	18.00-20.00	8.00-10.50	-	-	-	515	205	40	92	
J304L	0.030	2.00	0.045	0.030	0.75	17.50-19.50	8.00-12.00	-	1000	-	485	170	40	92	
J304LN	0.030	2.00	0.045	0.030	0.75	18.00-20.00	8.00-12.00	-	1000-1600	-	515	205	40	95	
J309	0.20	2.00	0.045	0.030	0.75	22.00-24.00	12.00-15.00	-	-	-	515	205	40	95	
J309S	0.08	2.00	0.045	0.030	0.75	22.00-24.00	12.00-15.00	-	-	-	515	205	40	95	
J310	0.25	2.00	0.045	0.030	1.50	24.00-26.00	19.00-22.00	-	-	-	515	205	40	95	
J310S	0.08	2.00	0.045	0.030	1.50	24.00-26.00	19.00-22.00	-	-	-	515	205	40	95	
J316	0.08	2.00	0.045	0.030	0.75	16.00-18.00	10.00-14.00	2.00-3.00	1000	-	515	205	40	95	
J316L	0.030	2.00	0.045	0.030	0.75	16.00-18.00	10.00-14.00	2.00-3.00	1000	-	485	170	40	95	
J316LN	0.030	2.00	0.045	0.030	0.75	16.00-18.00	10.00-14.00	2.00-3.00	1000-1600	-	515	205	40	95	
J316Ti	0.08	2.00	0.045	0.030	0.75	16.00-18.00	10.00-14.00	2.00-3.00	1000	Ti=5X(C+N) Min., 0.70 Max.	515	205	40	95	
J317	0.08	2.00	0.045	0.030	0.75	18.00-20.00	11.00-15.00	3.00-4.00	1000	-	515	205	35	95	
J317L	0.030	2.00	0.045	0.030	0.75	18.00-20.00	11.00-15.00	3.00-4.00	1000	-	515	205	40	95	
J317LN	0.030	2.00	0.045	0.030	0.75	18.00-20.00	11.00-15.00	3.00-4.00	1000-2200	-	550	240	40	95	
J317Z7	0.030	1.00	0.030	0.030	1.00	17.50-19.00	14.50-16.50	3.80-4.50	1500-2100	Cu= 2.8-4.0	550	245	35	96	
J-321	0.08	2.00	0.045	0.030	0.75	17.00-19.00	9.00-12.00	-	1000	Ti=5X(C+N) Min., 0.70 Max.	515	205	40	95	
J-347	0.08	2.00	0.045	0.030	0.75	17.00-19.00	9.00-13.00	-	-	Nb= 10XC Min., 1.00 Max.	515	205	40	92	
<b>Martensitic</b>															
J410	0.08-0.15	1.00	0.040	0.030	1.00	11.50-13.50	0.75 max	-	-	-	450	205	20	96	
J415	0.05	0.50-1.00	0.030	0.030	0.60	11.50-14.00	3.50-5.50	0.50-1.00	-	-	795	620	15	32rc	
J420	0.15 min	1.00	0.040	0.030	1.00	12.00-14.00	0.75 max	0.50 max	-	-	690	-	15	96	
J431	0.20	1.00	0.040	0.030	1.00	15.00-17.00	1.25-2.50	-	-	-	-	-	-	29rc	
JBS	0.6-0.7	1.00	0.030	0.015	0.75	12.50-13.50	-	-	-	-	-	-	-	-	
J405	0.08	1.00	0.040	0.030	1.00	11.50-14.50	0.60	-	-	Al = 0.10-0.30	415	170	20	88	
J409	0.030	1.00	0.040	0.020	1.00	10.50-11.70	0.50 max	-	-	Ti = 6X (C+N) Min., 0.5 Max.	380	170	20	88	
J409L	0.030	1.00	0.040	0.030	1.00	10.50-11.70	0.50 max	-	300	Ti = 6X (C+N) Min., 0.75 Max.	380	170	20	88	
J410S	0.08	1.00	0.040	0.030	1.00	11.50-13.50	0.60 max	-	-	-	415	205	22	89	
J430	0.12	1.00	0.040	0.030	1.00	16.00-18.00	0.75 max	-	-	-	450	205	22	89	
J430Ti	0.030	1.00	0.040	0.030	1.00	16.00-19.00	-	-	-	Ti = 0.10-1.00	360	175	22	90	
J436	0.120	1.00	0.040	0.030	1.00	16.00-18.00	-	0.75-1.25	-	Nb= 5XC Min., 0.70 Max.	450	240	22	89	
J436L	0.025	1.00	0.040	0.030	1.00	16.00-19.00	-	0.75-1.25	250	% Nb or & Ti or % combination = 8X (C+N) Min., 0.80 Max.	410	245	20	96	
J439	0.030	1.00	0.040	0.030	1.00	17.00-19.00	0.50 max	-	300	Ti=0.20+4X(C+N) Min., 1.10 Max. Al= 0.15 Max.	415	205	22	89	
J441	0.030	1.00	0.040	0.015	1.00	17.50-18.50	-	-	-	Nb= 3X% C+0.3 Min. 1% Max., Ti = 0.1-0.6%	430	250	18	88	
<b>Ferritic + Martensitic</b>															
J-409M	0.030	0.8-1.5	0.030	0.030	1.00	10.80-12.50	1.50 max	-	300	Ti = 0.75 Max.	450	275	20	90	
<b>Duplex (Austenitic+Ferritic)</b>															
J2205	0.030	2.00	0.030	0.020	1.00	22.00-23.00	4.50-6.50	3.0-3.50	1400-2000	-	655	450	25	31rc	
J2304	0.030	2.50	0.040	0.030	1.00	21.50-24.50	3.00-5.50	0.05-0.60	500-2000	Cu 0.05 Min.-0.60 Max.	600	400	25	32rc	
J31803	0.030	2.00	0.030	0.020	1.00	21.00-23.00	4.50-6.50	2.50-3.50	800-2000	-	620	450	25	31rc	

\*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.

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

Specific Chemical and Mechanical properties can be supplied by mutual agreement.