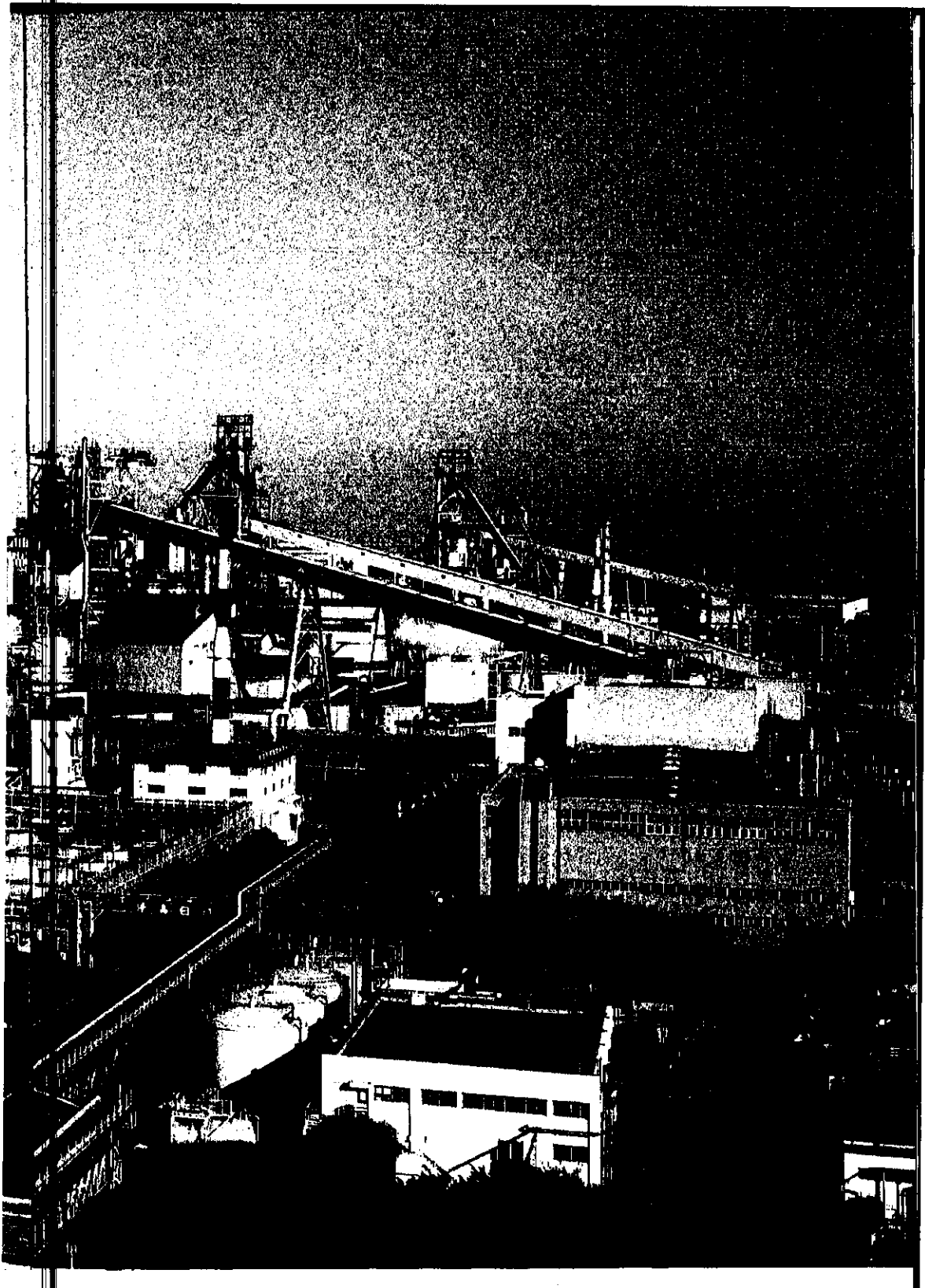


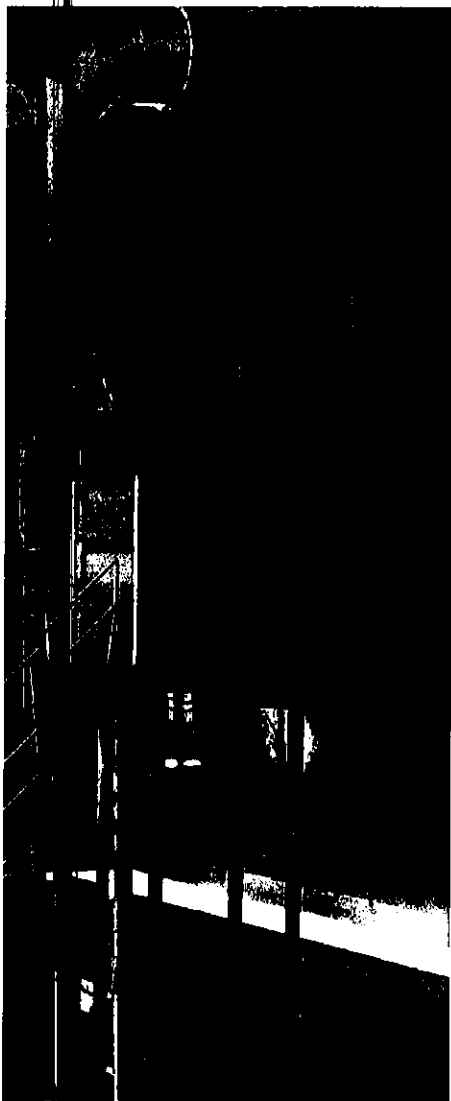
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CHINA STEEL

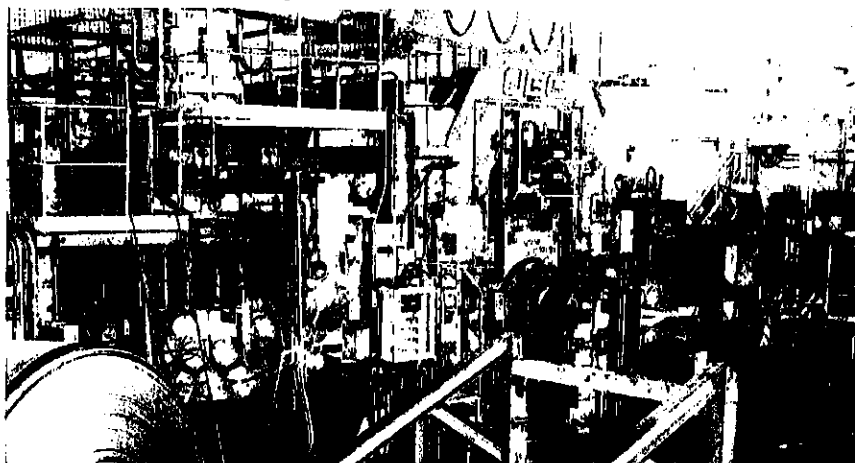
A NAME FOR QUALITY, TECHNOLOGY AND SERVICE



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▽ Tempering & Recoiling Line



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1. Brief Introduction

China Steel Corporation (CSC) was established in December 1971 and started its production in December 1977. After four consecutive stages of expansion, the annual production capacity of crude steel has reached 10.1 million metric tons, ranking 19th among the member companies of the International Iron and Steel Institute in 2003. The major products include steel plates, steel bars, wire rods, hot-rolled coils, cold-rolled coils, coated coils, electrical steel coils, and electro-galvanized coils. All of these products are widely used in various downstream manufacturing industry enhancing competitiveness and forming a mutual beneficial interdependence between the CSC and customers. And CSC proved it to be a reliable and innovated supplier of steel products. The accreditation certificate of ISO 9001, ISO/TS 10949; the Chinese National Laboratory Accreditation (CNLA) and JIS MARK approvals were obtained to demonstrate CSC's commitment to keep progressing in quality management system.

Providing cost-effective and superior quality of products and services to diversities satisfied customer is the original mission of CSC. The company has therefore put a great deal of effort in expanding and modernizing its facilities, and continually improving the products quality and developing new products as well to help customers to create more value-added products. The newly developed cold rolled steel products such as CSC HW-50BV30, PA and PAS were introduced to meet the stringent market demands.

▽ Plant Greenery



Some Recently developed Products**■ Hot-Rolled Cr-B-V Alloy steel (CSC HW-50BV30)**

50BV30 provides less cost to Cr-B-V steel. It can replace Hot-Rolled Cr-Mo steel made into consumable handwork tools and knives which need no torsion tests and fewer safe requirements. Thus, it can lower commerce cost and raise product competition.

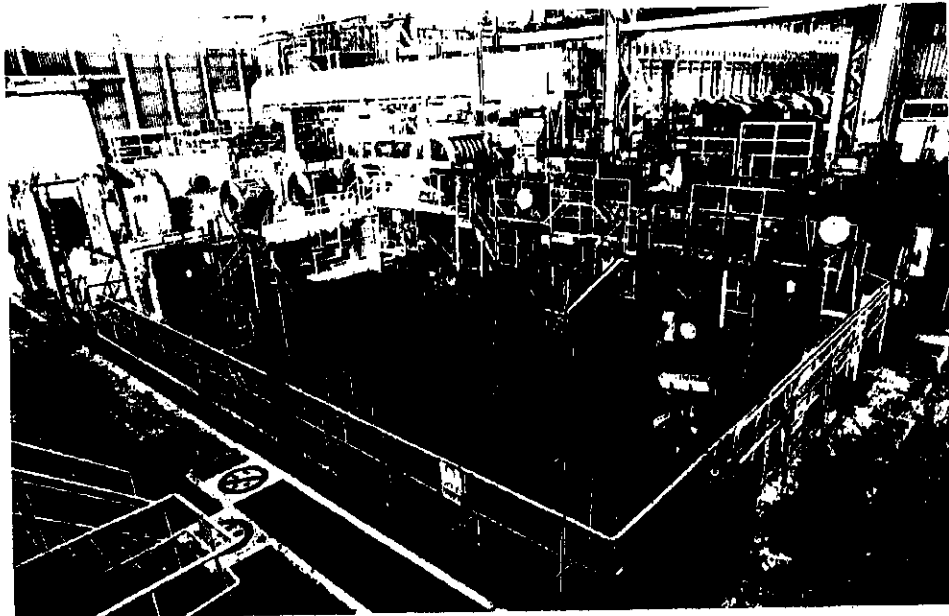
■ Hot- Rolled and Pickled and Annealed Steel (PA)

Low hardness homogeneous mechanical properties of PA steel can decrease cold impedance and allow more processing, and it can also decrease the worn-out and prolong the life of mold. It is suitable for simple manufacture like piping, blanking, and bending to produce cold drawing pipes for bikes, hydraulic pipes, washers, knives, or cold rerolls.

■ Hot-Rolled Pickled and Spheroidizing-Annealed steel (PAS)

Besides homogeneous mechanical properties, PAS can spheroidize carbide so that middle-carbon steel or low alloy steel can be applied to strict manufacture like fine blanking, shaving, finish blanking, cold hammering, hole expanding, drawing, ect. Some typical products are as follows: gear wheels, gear plates, slides, gears of starters, bearing collars, plates for sewing machines, and so on.

▽ Plant Greenery



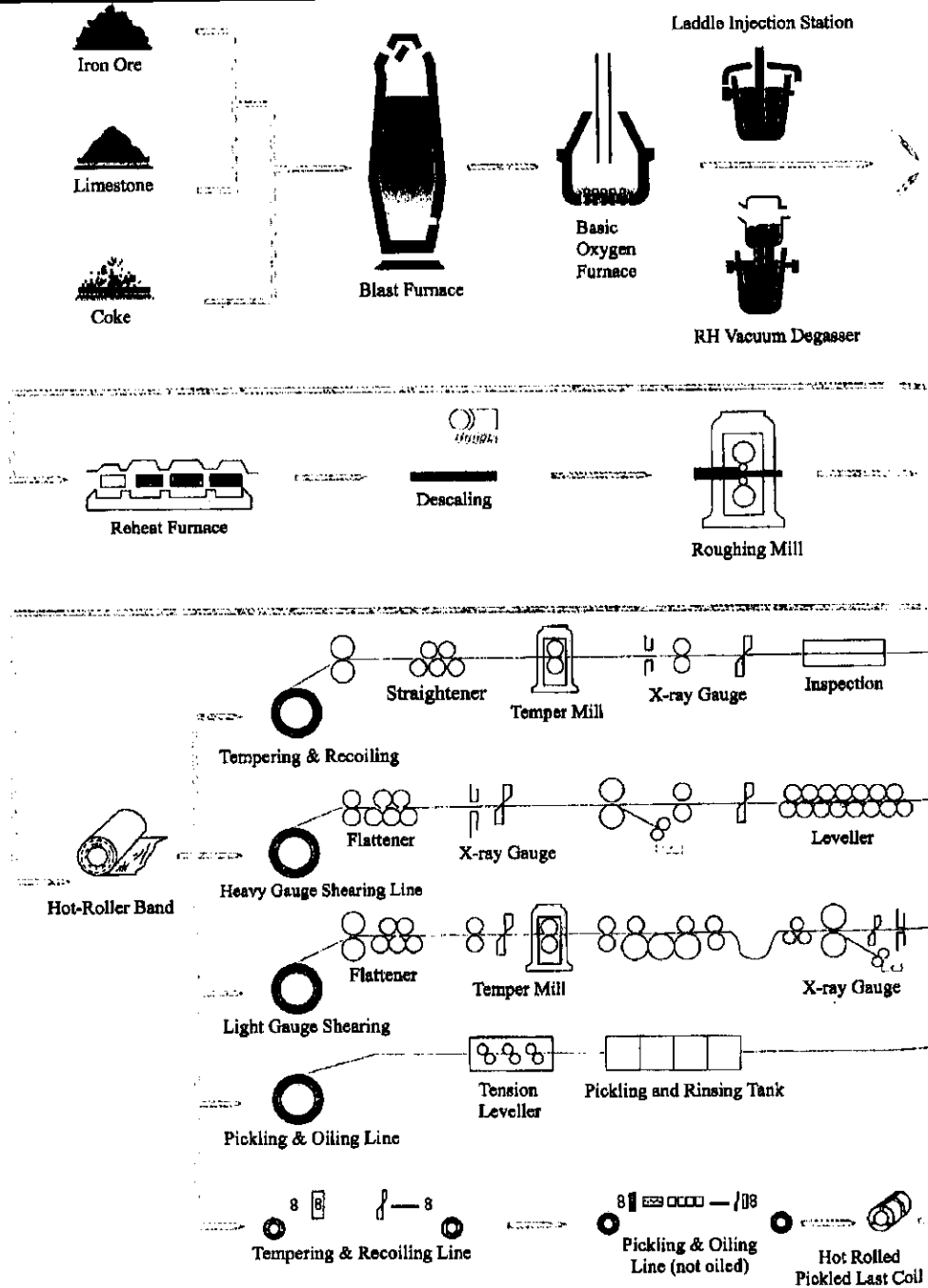
△ HSM Downcoiler

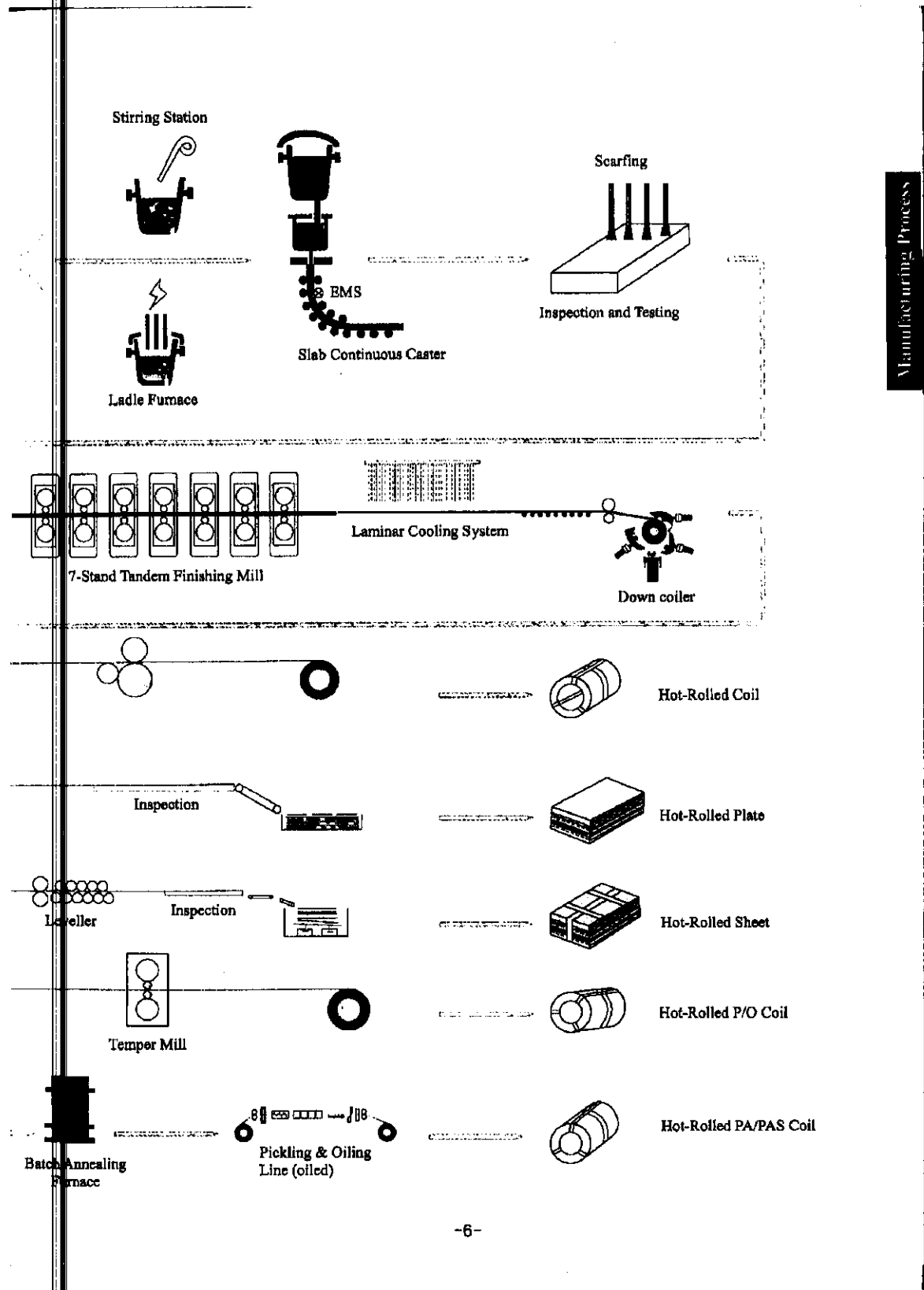


△ HSM Mill

Manufacturing Process

2. Manufacturing Process





3. Specification

The contents of this catalog are for reference only. Customers are urged to consult the specifications published by the corresponding associations. Information of the available CSC steel grades, as shown herein may be updated without notice to comply with actual production situations.

3.1 Chemical Composition and Mechanical Properties.

3.1.1 CSC ACR-TEN Superior Atmospheric Corrosion Resistance Hot-Rolled Steel Plates, Sheets and Strip

Grade	Chemical Composition %								Applicable Thickness	Tensile Test				Bend Test		
	C	Si	Mn	P	S	Cu	Cr	Ni		Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation		Bend Angle	Inside Diameter	Test Piece
ACR-TEN A	0.12 max.	0.25 0.55	0.20 0.50	0.07	0.025 max.	0.25 0.55	0.30 1.25	0.65 max.	1.50mm 12.70mm	345 min.	480 min.	No.5 in Rolling direction	25 min	180°	Thickness × 1.0	No.1 in Rolling direction
ACR-TEN AP	0.08 max.	0.15 0.45	0.15 0.45	0.15	max.	0.55	0.20 0.80	0.60 max.	1.50mm 12.70mm	285 min.	410 510					

Remark : The values specified shall not apply to the irregular portions at both ends of steel strip.

3.1.2 CSC Specifications Cr-B-V Alloy steel

Grade	Thickness	Chemical Composition %						
		C	Mn	P	S	Cr	B	V
CSC HW-50BV30	2.20—5.00mm	0.27 0.33	0.70 1.00	0.025 max.	0.015 max.	0.30 0.50	0.0005 min.	0.10 0.15

3.1.3 JIS G3101 Rolled Steel for General Structure

Grade	Chemical Composition %				Tensile Test			
	C	Mn	P	S	Yield Point or Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation %	
							No.5 Test Piece t ≤ 5 mm	No.1A Test Piece 5 mm < t ≤ 16 mm
SS330					205 min.	330 - 430	26 min.	21 min.
SS400	—	—	0.050 max.	0.050 max.	245 min.	400 - 510	21 min.	17 min.
SS490					285 min.	490 - 610	19 min.	15 min.
SS540	0.30 max.	1.60 max.	0.040 max.	0.040 max.	400min.	540min.	16 min.	13 min.

Remarks 1 : Alloy elements other than those shown in the above table may be added necessary.

2 : "t" is the thickness of material.

3.1.4 JIS G3106 Rolled Steel for Welded Structure

unit : mm

Grade	Chemical Composition %					Tensile Test				Impact Test				
	C	Si	Mn	P	S	Yield Point or Proof Strength N/mm ²	Tensile Strength N/mm ²	Elongation %		Test Temperature	Charpy Absorbed Energy J	Test Piece		
								No.5 Test Piece					No.1A Test Piece	
								Thickness(t)mm	Thickness(t)mm					
SM400A	0.23 max.	—	2.5xC min.			245 min.	400-510	23 min.	—	18 min.	0°C	27min.		
SM400B	0.20 max.	0.35 max.	0.60											
SM400C	0.18 max.		1.40											
SM490A	0.20 max.	0.55 max.	1.60 max.	0.035 max.	0.035 max.	325 min.	490-610	22 min.	—	17 min.	0°C	27min.		
SM490B	0.18 max.													
SM490C	0.18 max.													
SM490YA	0.20 max.	0.55 max.	1.60 max.	0.035 max.	0.035 max.	365 min.	490-610	19 min.	—	15min.	0°C	27min.		
SM490YB	0.20 max.													
SM520B	0.20 max.	0.55 max.	1.60 max.	0.035 max.	0.035 max.	365 min.	520-640	19 min.	—	15min.	0°C	27min.		
SM520C	0.20 max.													
SM570	0.18 max.					460 min.	570-720	—	19 min.	—	-5°C	47min.		

Specification

No.4 in rolling direction

Remarks 1 : Alloy elements other than those shown in the above table may be added necessary.
2 : Impact test is applicable to thickness over 12.0mm of steel.

3.1.5 JIS G3113 Hot-Rolled Steel Plates, Sheets and Strip for Automobile Structural Uses

Grade	Chemical Composition %		Tensile Test										Bend Test			
	P	S	Tensile Strength N/mm ²	Yield Point N/mm ²		Elongation % (rolling direction)							No.1A Test piece	Bend Angle	Inside Diameter	
				Thickness (t) mm		Thickness (t) mm									Thickness (t) mm	
				t < 6.0	6.0 ≤ t < 8.0	8.0 ≤ t < 14.0	1.6 < t ≤ 2.0	2.0 < t ≤ 2.5	2.5 < t ≤ 3.15	3.15 < t ≤ 4.0	4.0 < t ≤ 6.3	t ≥ 6.3			t < 2.0	t ≥ 2.0
SAPH310	0.040 max.	0.040 max.	310 min.	185 min.	185 min.	175 min.	33 min.	34 min.	36 min.	38 min.	40 min.	26 min.	180°	Flat on itself	Thickness × 2.0	
SAPH370			370 min.	225 min.	225 min.	215 min.	32 min.	33 min.	35 min.	36 min.	37 min.	25 min.		Thickness × 1.0	Thickness × 2.0	
SAPH400			400 min.	255 min.	235 min.	235 min.	31 min.	32 min.	34 min.	35 min.	36 min.	24 min.		Thickness × 2.0	Thickness × 2.0	
SAPH440			440 min.	305 min.	295 min.	275 min.	29 min.	30 min.	32 min.	33 min.	34 min.	22 min.		Thickness × 2.0	Thickness × 3.0	

Remark : The values specified shall not apply to the irregular portions at both ends of steel strip.

Specification

3.1.6 JIS G3116 Steel Sheets, Plate and Strip for Gas Cylinders

Grade	Chemical Composition %					Tensile Test				Bend Test		
	C	Si	Mn	P	S	Yield Point or Proof Stress N/mm ²	Tensile Strength N/mm ²	Elongation %	Test Piece	Bend Angle	Inside Diameter	Test Piece
SG255	0.20 max.	—	0.30 min.	0.040 max.	0.040 max.	255min.	400min.	28min.	No.5 in rolling direction	180°	Thickness × 2.0	No.3 in rolling direction
SG295		0.35 max.	1.00 max.			295min.	440min.	26min.			Thickness × 3.0	
SG325		0.55 max.	1.50 max.			325min.	490min.	22min.			Thickness × 3.0	
SG365						365min.	540min.	20min.			Thickness × 3.0	

Remark : The values specified shall not apply to the irregular portions at both ends of steel strip.

3.1.7 JIS G3125 Superior Atmospheric Corrosion Resisting Rolled Steels

Grade	Thickness (t) mm	Chemical Composition %									Tensile Test			Bend Test		
		C	Si	Mn	P	S	Cu	Cr	Ni	Yield Point or Proof Stress N/mm ²	Tensile Strength N/mm ²	Elongation		Bend Angle	Inside Diameter	Test Piece
SPA-H	t ≤ 6.0	0.12 max.	0.20 0.75	0.60 max.	0.070 0.150	0.035 max.	0.25 0.55	0.30 1.25	0.65 max.	355 min.	490 min.	No.5	22 min.	180°	Thickness × 1.0	No.1 in rolling direction
	t > 6.0											No.1A	15 min.		Thickness × 2.0	

Remark : Alloy elements other than those shown in the above table may be added necessary.

3.1.8 JIS G3131 Hot-Rolled Mild Steel Plate, Sheets and Strip

Grade	Chemical Composition %				Tensile Strength N/mm ²	Tensile Test						Bend Test					
	C	Mn	P	S		Elongation % (Rolling direction)						Test Piece	Bend Angle	Inside Diameter		Test Piece	
						Thickness (t) mm								Thickness (t) mm			
						1.2 ≤ t < 1.6	1.6 ≤ t < 2.0	2.0 ≤ t < 2.5	2.5 ≤ t < 3.2	3.2 ≤ t < 4.0	t ≥ 4.0				< 3.2		t ≥ 3.2
SPHC	0.15 max.	0.60 max.	0.050 max.	0.050 max.	270 min.	27 min.	29 min.	29 min.	29 min.	31 min.	31 min.	No.5 in rolling direction	180°	Flat on itself	Thickness × 1.0	No.3 in rolling direction	
SPHD	0.10 max.	0.50 max.	0.040 max.	0.040 max.		30 min.	32 min.	33 min.	35 min.	37 min.	39 min.			—	—		—
SPHE	0.10 max.	0.50 max.	0.030 max.	0.035 max.		31 min.	33 min.	35 min.	37 min.	39 min.	41 min.			—	—		—

Remark 1 : Grade SPHE is manufactured by a special process, such as made of killed steel to improve drawability.
2 : The values specified shall not apply to the irregular portions at both ends of steel strip.

3.1.9 JIS G3132 Hot-Rolled Carbon Steel Strip for Pipes and Tubes

Grade	Chemical Composition %					Tensile Test					Bend Test					
	C	Si	Mn	P	S	Tensile Strength N/mm ²	Elongation %				Test pieces	Bend Angle	Inside Diameter		Test Piece	
							Thickness (t)mm						Thickness (t) mm			
SPHT1	0.10 max.	0.35 max.	0.50 max.			270 min.	1.2 ≤ t < 1.6	1.6 ≤ t < 3.0	3.0 ≤ t < 6.0	t ≥ 6.0	37 min.	No.5 in rolling direction	180°	Flat on itself	Thickness × 1.0	No.3 in rolling direction
SPHT2	0.18 max.		0.60 max.			340 min.	1.2 ≤ t < 1.6	1.6 ≤ t < 3.0	3.0 ≤ t < 6.0	t ≥ 6.0	32 min.			Thickness × 2.0	Thickness × 3.0	
SPHT3	0.25 max.	0.35 max.	0.30 0.90	0.040 max.	0.040 max.	410 min.	1.2 ≤ t < 1.6	1.6 ≤ t < 3.0	3.0 ≤ t < 6.0	t ≥ 6.0	27 min.			Thickness × 3.0	Thickness × 4.0	
SPHT4	0.30 max.		0.30 1.00			490 min.	1.2 ≤ t < 1.6	1.6 ≤ t < 3.0	3.0 ≤ t < 6.0	t ≥ 6.0	22 min.			Thickness × 3.0	Thickness × 4.0	

Remarks 1 : The values specified shall not apply to the irregular portions at both ends of steel strip.
2 : The Si content of SPHT1 can be modified to 0.04% max. upon agreement.

3.1.10 JIS G3134 Hot-Rolled High Strength Steel Sheets with Improved Formability for Automobile Structural Uses

Grade	Tensile Strength N/mm ²	Yield Point or Proof Stress N/mm ²	Elongation %				Test Piece	Bend Angle	Bend Test		Test Piece
			Thickness (t) mm						Inside Diameter Thickness (t) mm		
			1.6 ≤ t < 2.0	2.0 ≤ t < 2.5	2.5 ≤ t < 3.25	3.25 ≤ t ≤ 6.0			1.6 ≤ t < 3.25	3.25 ≤ t < 6.0	
SPFH 490	490min.	325min.	22min.	23min.	24min.	25min.	No.5 transversely to rolling direction	180°	Thickness × 1.0	Thickness × 2.0	No.3 transversely to rolling direction
SPFH 540	540min.	355min.	21min.	22min.	23min.	24min.			Thickness × 2.0	Thickness × 3.0	
SPFH 590	590min.	420min.	19min.	20min.	21min.	22min.			Thickness × 3.0	Thickness × 3.0	
SPFH 540Y	540min.	295min.	—	24min.	25min.	26min.			Thickness × 2.0	Thickness × 3.0	
SPFH 590Y	590min.	325min.	—	22min.	23min.	24min.			Thickness × 3.0	Thickness × 3.0	

Remarks : The chemical composition shall be agreed upon by the purchaser and supplier, if necessary.

3.1.11 JIS G3136 Rolled Steels for Building Structure

Grade	Chemical Composition %					Carbon Equivalent %	Yield Point or Proof Stress N/mm ²		Tensile Strength N/mm ²	Yield Ratio %		Elongation %	
	C	Si	Mn	P	S		6.00mm ≤ t < 12.0mm	12.0mm ≤ t < 16.0mm		Test Piece No.1A			
						6.0mm ≤ t < 12.0mm				12.0mm ≤ t < 16.0mm	6.0mm ≤ t < 16.0mm		
SN400A	0.24 max.	—	—	0.050 max.	0.050 max.	—	235min.	235min.	400-510	—	—	17min.	
SN400B	0.20 max.	0.35 max.	0.60 1.40	0.030 max.	0.015 max.	0.36 max.	235min.	235-355		—	80max.	—	18min.
SN490B	0.18 max.	0.55 max.	1.60 max.			0.44 max.	325min.	325-445		490-610	—	80max.	17min.

Remarks 1 : Impact test for SN400B & SN490B is applicable to thickness over 12.0mm of steel. Test temperature at 0°C, Charpy absorption energy is 27J/min, test piece is No.4 in rolling direction.

2 : Carbon Equivalent = $C + \frac{Mn}{6} + \frac{Si}{24} + \frac{Ni}{40} + \frac{Cr}{5} + \frac{Mo}{4} + \frac{V}{14}$

3 : "t" is the thickness of material.

Specification

Specification

3.1.12 Carbon Steels for Machine Structural Use

JIS G4051					
NO.	C (%)	Si (%)	Mn (%)	P (%)	S (%)
S10C	0.08—0.13		0.30—0.60		
S12C	0.10—0.15		0.30—0.60		
S15C	0.13—0.18		0.30—0.60		
S17C	0.15—0.20		0.30—0.60		
S20C	0.18—0.23		0.30—0.60		
S22C	0.20—0.25		0.30—0.60		
S25C	0.22—0.28		0.30—0.60		
S28C	0.25—0.31	0.15	0.60—0.90		
S30C	0.27—0.33		0.60—0.90	0.030	0.035
S33C	0.30—0.36	0.35	0.60—0.90	max.	max.
S35C	0.32—0.38		0.60—0.90		
S38C	0.35—0.41		0.60—0.90		
S40C	0.37—0.43		0.60—0.90		
S43C	0.40—0.46		0.60—0.90		
S45C	0.42—0.48		0.60—0.90		
S48C	0.45—0.51		0.60—0.90		
S50C	0.47—0.53		0.60—0.90		
S53C	0.50—0.56		0.60—0.90		
S55C	0.52—0.58		0.60—0.90		
S58C	0.55—0.61		0.60—0.90		

SAE					
NO.	C (%)	Si (%)	Mn (%)	P (%)	S (%)
1006	0.08max.		0.45max.		
1008	0.10max.		0.50max.		
1009	0.15max.		0.60max.		
1010	0.08—0.13		0.30—0.60		
1012	0.10—0.15		0.30—0.60		
1015	0.13—0.18		0.30—0.60		
1016	0.13—0.18		0.60—0.90		
1017	0.15—0.20		0.30—0.60		
1018	0.15—0.20		0.60—0.90		
1019	0.15—0.20		0.70—1.00		
1020	0.18—0.23		0.30—0.60		
1021	0.18—0.23		0.60—0.90		
1022	0.18—0.23		0.70—1.00		
1023	0.20—0.25		0.30—0.60		
1025	0.22—0.28		0.30—0.60		
1026	0.22—0.28		0.60—0.90		
1030	0.28—0.34		0.60—0.90		
1033	0.30—0.36		0.70—1.00	0.030	0.050
1035	0.32—0.38		0.60—0.90	max.	max.
1037	0.32—0.38		0.70—1.00		
1038	0.35—0.42		0.60—0.90		
1039	0.37—0.44		0.70—1.00		
1040	0.37—0.44		0.60—0.90		
1042	0.40—0.47		0.60—0.90		
1043	0.40—0.47		0.70—1.00		
1045	0.43—0.50		0.60—0.90		
1046	0.43—0.50		0.70—1.00		
1049	0.46—0.53		0.60—0.90		
1050	0.48—0.55		0.60—0.90		
1055	0.50—0.60		0.60—0.90		
1060	0.55—0.65		0.60—0.90		
1065	0.60—0.70		0.60—0.90		
1070	0.65—0.75		0.60—0.90		
1513	0.10—0.16	—	1.10—1.40	0.040max.	0.050max.
1524	0.19—0.25	—	1.35—1.65	0.030max.	0.050max.
1552	0.47—0.55	—	1.20—1.50	0.030max.	0.050max.
4130	0.28—0.33	0.13—0.35	0.40—0.60	0.030max.	0.040max.

Note : SAE4130, Cr : 0.80-1.10 · Mo : 0.15-0.25 · Cu : 0.35max. · Ni : 0.25max.

3.1.13 SAE J1392 High Strength Steel

Grade	Chemical Composition %		Yield Strength N/mm ²	Tensile Strength N/mm ²	Elongation %	Test Piece	Bend Test			
	C	Mn					Bend Angle	Inside Radius		Test Piece
								Thickness ≤ 4.55mm	Thickness ≥ 4.56mm	
050XLF	0.13 max.	0.90 max.	340 min.	410 min.	22min.	In rolling direction	90°	Thickness × 1.0	Thickness × 2.0	transversely to rolling direction
060XLF			410 min.	480 min.	20min.					
070XLF	0.13 max.	1.65 max.	480 min.	550 min.	17min.					
080XLF			550 min.	620 min.	14min.					

Specification

3.1.14 JIS G4053 Cr-Mo Steels

Grade	Chemical Composition %						
	C	Si	Mn	P	S	Cr	Mo
SCM415	0.13~0.18	0.15 ~ 0.35	0.60~0.85	0.030max.	0.030max.	0.90~1.20	0.15 ~ 0.25
SCM418	0.16~0.21						
SCM420	0.18~0.23						
SCM421	0.17~0.23						
SCM430	0.28~0.33		0.60~0.85			0.15~0.30	
SCM432	0.27~0.37						
SCM435	0.33.0.38						
SCM440	0.38.0.43						

Remark : As impurities, Cu and Ni shall not exceed 0.30% and 0.25%, respectively, throughout all classes.

3.1.15 ASTM A36 · A283 Carbon Steel for Structural Use

ASTM No (Description)	Chemical Composition %					Tensile Test					
	C	Si	Mn	P	S	Yield Point ksi(N/mm ²)	Tensile Strength ksi (N/mm ²)	Elongation			
								Gage Length in (mm)	% min		
A36 (Structural Quality)	0.25 max.	0.40 max.	—	0.04 max.	0.05 max.	36 (250) min.	58~80 (400~550)	8(200)	20		
								2(50)	23		
A283 (Low and Intermediate Tensile Strength)	0.14 max.	0.40 max.	0.90 max.	0.035 max.	0.04 max.	24 (165) min.	45~60 (310~415)	8(200)	27		
								2(50)	30		
								27 (185) min.	50~65 (345~450)	8(200)	25
								2(50)	28		
Grade C	0.24 max.	0.40 max.	0.90 max.	0.035 max.	0.04 max.	30 (205) min.	55~75 (380~515)	8(200)	22		
								2(50)	25		
Grade D	0.27 max.	0.40 max.	0.90 max.	0.035 max.	0.04 max.	33 (230) min.	60~80 (415~550)	8(200)	20		
								2(50)	23		

Remark : Cu is 0.20% min. when specified.

3.1.16 ASTM A569 · A622 Carbon Steel Sheet and Strip for Commercial or Drawing Quality

ASTM (Description)		Chemical Composition %					Bend Test
Type		C	Mn	P	S	Al	
A569 (Commercial Quality)	A	0.10max.	0.60max.	0.030max.	0.035max.	—	180° Flat
	B	0.02 ~0.15					
	C	0.08max.					
A622 (Drawing Quality, Special Killed)	A	0.08max.	0.50max.	0.020max.	0.030max.	0.01min.	—
	B	0.02 ~0.08				0.02min.	—

Remarks 1 : The Cu content of ASTM A569 can be 0.20% min. when specified.
2 : As impurities, Cu, Ni, Cr, Mo, V, Nb and Ti shall not exceed 0.20%, 0.20%, 0.15%, 0.06%, 0.008%, 0.008% and 0.008%.

3.1.17 ASTM A570 Carbon Steel for Structural Use

ASTM No (Description)		Chemical Composition %					Tensile Test				Bend Test 90° Inside Radius		
Grade	Type	C	Si	Mn	P	S	Yield Point min. ksi (N/mm ²)	Tensile Strength min. ksi (N/mm ²)	Elongation min (%)				
									G.L.=2 inch (50mm)			G.L.=8 inch (200mm)	
									Thickness inch				
0.025	0.064	0.097	0.097										
0.063	0.096	0.230	0.230										
A570	30	—	0.40 max.	0.90 max.	0.035 max.	0.04 max.	30 (205)	49 (340)	21	24	25	19	1t
	33	—					33 (230)	52 (360)	18	22	23	18	1t
	36	1					36 (250)	53 (365)	17	21	22	17	1.5t
	40	—					40 (275)	55 (380)	16	20	21	16	2t
	36	2					36 (250)	58-80 (400-550)	16	20	21	16	2t
	45	—					45 (310)	60 (415)	13	18	19	14	2t
	50	—					50 (345)	65 (450)	11	16	17	12	2.5t
	55	—					55 (380)	70 (480)	9	14	15	10	3t

Remarks 1 : Cu is 0.20% min. when specified.
2 : "t" is the thickness of material.

3.1.18 ASTM A607 High-Strength Low-Alloy Steel for Structural Use

ASTM (Description)		Chemical Composition %							Tensile Test				Bend Test 90° Inside Radius (transversely to rolling direction)	Note	
Grade	Class	C	Mn	P	S	Nb or V		N	Yield Point min. ksi (N/mm ²)	Tensile Strength min. ksi (N/mm ²)	Elongation min. %				
						Nb	V				G.L. = 2 inch				
											Thickness inch				
0.025	0.098	0.097	0.229												
A607	45	1	0.22 max.	1.35 max.	0.04 max.	0.04 max.	0.005 min.	0.01 min.	—	45 (310)	60 (410)	23	25	1.5 t	
		2	0.15 max.								55 (380)				
	50	1	0.23 max.						0.020 max.	—	50 (340)	65 (450)	20	22	2 t
		2	0.15 max.									60 (410)			1.5 t
	55	1	0.25 max.						0.012 max.	—	55 (380)	70 (480)	18	20	2 t
		2	0.15 max.									65 (450)			2 t
	60	1	0.26 max.						0.020 max.	—	60 (410)	75 (520)	16	18	2.5 t
		2	0.15 max.									70 (480)			2 t
	65	1	0.26 max.						0.012 max.	0.012 max.	65 (450)	80 (550)	14	16	3 t
		2	0.15 max.									75 (520)			2.5 t
	70	1	0.26 max.						0.020 max.	0.012 max.	70 (480)	85 (590)	12	14	3.5 t
		2	0.15 max.									80 (550)			3 t

Remarks 1 : Cu is 0.20% min. when specified.
2 : "t" is the thickness of material.

Specification

3.1.19 ASTM A1011 Carbon, structural, High-Strength Low-Alloy Steel and High-Strength Low-Alloy with Improved Formability.

Grade	Chemical Composition %											
	C	Mn	P	S	Al	Cu	Ni	Cr	Mo	V	Nb	Ti
CS Type A	0.10max.		0.030max.									
CS Type B	0.02/0.15	0.60max.		0.035max.								0.025max.
CS Type C	0.08max.		0.10max.					*1				
CS Type D	0.10max.	0.70max.	0.030max.					0.15max.				0.008max.
DS Type A	0.08max.											
DS Type B	0.02/0.08	0.50max.	0.020max.	0.030max.	0.01min.							0.025max.
SS Gr. 30												
SS Gr. 33		0.90max.										
SS Gr.36 Type 1										0.008max.	0.008max.	
SS Gr. 36 Type 2		1.35max.										
SS Gr. 40		0.90max.										
SS Gr. 45	0.25max.		0.035max.									0.008max.
SS Gr. 50												
SS Gr. 55		1.35max.							0.06max.			
SS Gr. 60												
SS Gr. 70												
SS Gr. 80						0.020max.	0.020max.					
HSLAS Gr.45 C1.1	0.22max.			0.04max.								
HSLAS Gr.45 C1.2	0.15max.											
HSLAS Gr.50 C1.1	0.23max.							0.15max.				
HSLAS Gr.50 C1.2	0.15max.	1.35max.										
HSLAS Gr.55 C1.1	0.25max.											
HSLAS Gr.55 C1.2	0.15max.		0.04max.									
HSLAS Gr.60 C1.1	0.26max.											
HSLAS Gr.60 C1.2	0.15max.	1.50max.								0.005min.	0.005min.	0.005min.
HSLAS Gr.65 C1.1	0.26max.											
HSLAS Gr.65 C1.2	0.15max.											
HSLAS Gr.70 C1.1	0.26max.									0.16max.		
HSLAS Gr.70 C1.2	0.15max.											
HSLAS-F Gr.50		1.65max.								0.16max.		
HSLAS-F Gr.60												
HSLAS-F Gr.70	0.15max.		0.020max.	0.025max.								
HSLAS-F Gr.80										0.16max.		

Thickness unit : mm

Grade	Tensile Strength MPa	Yield Strength Mpa	Elongation % G.L.=2 inch				Test Piece	Bend Test (Inside Radius)	Test Piece
			t<6.0mm	t<1.6mm	1.6mm≤ t<2.5mm	t=2.5mm			
CS Type A	—	205/340	25min.	25min.	25min.	25min.	—		
CS Type B	—	205/340	25min.	25min.	25min.	25min.	—		
CS Type C	—	205/340	25min.	25min.	25min.	25min.	—		
CS Type D	—	205/340	25min.	25min.	25min.	25min.	—		
DS Type A	—	205/310	28min.	28min.	28min.	28min.	—		
DS Type B	—	205/310	28min.	28min.	28min.	28min.	—		
SS Gr. 30	340min.	205min.	21min.	24min.	25min.	25min.	1.0t		
SS Gr. 33	360min.	230min.	18min.	22min.	23min.	23min.	1.0t		
SS Gr. 36 Type1	365min.	250min.	17min.	21min.	22min.	22min.	1.5t		
SS Gr. 36 Type2	400/550	250min.	16min.	20min.	21min.	21min.	2.0t		
SS Gr. 40	380min.	275min.	15min.	20min.	21min.	21min.	2.0t		
SS Gr. 45	410min.	310min.	13min.	18min.	19min.	19min.	2.0t		
SS Gr. 50	450min.	340min.	11min.	16min.	17min.	17min.	2.5t		
SS Gr. 55	480min.	380min.	9min.	14min.	15min.	15min.	3.0t		
SS Gr. 60	520min.	410min.	8min.	13min.	14min.	14min.	3.5t		
SS Gr. 70	585min.	480min.	7min.	12min.	13min.	13min.	4.0t		
SS Gr. 80	620min.	550min.	6min.	11min.	12min.	12min.	4.0t		
HSLAS Gr.45 C1.1	410min.	310min.	23min.	23min.	23min.	25min.	1.5t	transversely to rolling direction	
HSLAS Gr.45 C1.2	380min.	310min.	23min.	23min.	23min.	25min.	1.5t		
HSLAS Gr.50 C1.1	450min.	340min.	20min.	20min.	20min.	22min.	2.0t		
HSLAS Gr.50 C1.2	410min.	340min.	20min.	20min.	20min.	22min.	1.5t		
HSLAS Gr.55 C1.1	480min.	380min.	18min.	18min.	18min.	20min.	2.0t		
HSLAS Gr.55 C1.2	450min.	380min.	18min.	18min.	18min.	20min.	2.0t		
HSLAS Gr.60 C1.1	520min.	410min.	16min.	16min.	16min.	18min.	2.5t		
HSLAS Gr.60 C1.2	480min.	410min.	16min.	16min.	16min.	18min.	2.0t		
HSLAS Gr.65 C1.1	550min.	450min.	14min.	14min.	14min.	16min.	3.0t		
HSLAS Gr.65 C1.2	520min.	450min.	14min.	14min.	14min.	16min.	2.5t		
HSLAS Gr.70 C1.1	585min.	480min.	12min.	12min.	12min.	14min.	3.5t		
HSLAS Gr.70 C1.2	550min.	480min.	12min.	12min.	12min.	14min.	3.0t		
HSLAS-F Gr.50	410min.	340min.	22min.	22min.	22min.	24min.	1.0t		
HSLAS-F Gr.60	480min.	410min.	20min.	20min.	20min.	22min.	1.5		
HSLAS-F Gr.70	550min.	480min.	18min.	18min.	18min.	20min.	2.0t		
HSLAS-F Gr.80	620min.	550min.	16min.	16min.	16min.	18min.	2.0t		

Remarks 1 : Cr is 0.25% maximum when the carbon content is less than or equal to 0.05%.

2 : "t" is the thickness of material.

Specification

3.1.20 ASTM A1018 Heavy-thickness for Carbon, Commercial, drawing, structural steel · High-Strength Low-Alloy, and High-Strength Low-Alloy Steel with Improved Formability

Grade	C	Mn	P	S	Cu	Ni	Cr	Mo	V	Nb	Ti	N											
SS Gr. 30	0.25max.	1.50 max.	0.035 max.						0.008 max.	0.008 max.	0.008 max.	0.014 max.											
SS Gr. 33																							
SS Gr. 36																							
SS Gr. 40																							
HSLAS Gr.45 C1.1	0.22max.	1.50 max.	0.04 max.	0.04 max.	0.20 max.	0.20 max.	0.15 max.	0.06 max.	0.005 min.	0.005 min.	0.005 min.												
HSLAS Gr.45 C1.2	0.15max.																						
HSLAS Gr.50 C1.1	0.23max.																						
HSLAS Gr.50 C1.2	0.15max.																						
HSLAS Gr.55 C1.1	0.25max.																						
HSLAS Gr.55 C1.2	0.15max.																						
HSLAS Gr.60 C1.1	0.26max.																						
HSLAS Gr.60 C1.2	0.15max.																						
HSLAS Gr.65 C1.1	0.26max.																						
HSLAS Gr.65 C1.2	0.15max.																						
HSLAS Gr.70 C1.1	0.26max.												1.65 max.										
HSLAS Gr.70 C1.2	0.15max.																						
HSLAS-F Gr.50	0.15max.	1.65 max.	0.025 max.	0.035 max.																			
HSLAS-F Gr.60													0.06 max.										
HSLAS-F Gr.70													0.16 max.										
HSLAS-F Gr.80													0.16 max.										

Thickness unit : mm

Grade	Tensile Strength MPa	Yield Strength Mpa	Elongation % G.L.=2"		Test Piece	Bend Test (Inside Radius)	Test Piece
			t ≤ 25mm	G.L.=2" t ≤ 25mm			
SS Gr. 30	340min.	205min.	22min.	17min.	transversely to rolling direction	1.0t	transversely to rolling direction
SS Gr. 33	360min.	230min.	22min.	16min.		1.0t	
SS Gr. 36	365min.	250min.	21min.	15min.		1.5t	
SS Gr. 40	380min.	275min.	19min.	14min.		2.0t	
HSLAS Gr.45 C1.1	410min.	310min.	22min.	17min.		1.5t	
HSLAS Gr.45 C1.2	380min.	310min.	22min.	17min.		1.5t	
HSLAS Gr.50 C1.1	450min.	340min.	20min.	16min.		2.0t	
HSLAS Gr.50 C1.2	410min.	340min.	20min.	16min.		1.5t	
HSLAS Gr.55 C1.1	480min.	380min.	18min.	15min.		2.0t	
HSLAS Gr.55 C1.2	450min.	380min.	18min.	15min.		2.0t	
HSLAS Gr.60 C1.1	520min.	410min.	16min.	14min.		2.5t	
HSLAS Gr.60 C1.2	480min.	410min.	16min.	14min.		2.0t	
HSLAS Gr.65 C1.1	550min.	450min.	14min.	12min.		3.0t	
HSLAS Gr.65 C1.2	520min.	450min.	14min.	12min.		2.5t	
HSLAS Gr.70 C1.1	590min.	480min.	12min.	10min.		3.5t	
HSLAS Gr.70 C1.2	550min.	480min.	12min.	10min.		3.0t	
HSLAS-F Gr.50	410min.	340min.	22min.	16min.		1.0t	
HSLAS-F Gr.60	480min.	410min.	16min.	14min.		1.5t	
HSLAS-F Gr.70	550min.	480min.	12min.	10min.		2.0t	
HSLAS-F Gr.80	620min.	550min.	12min.	10min.		2.0t	

Specification

Remarks 1 : Cu + Ni + Cr + Mo ≤ 0.50
2 : "t" is the thickness of material.

3.1.21 JFS A1001 Hot rolled steel sheets and strip for automobile use

Grade	C	Mn	P	S	Si	Al	Nb	Ti	B					
JSH270C	0.15max.		0.050max.	0.050max.										
JSH270D	0.10max.	0.60max.	0.030max.	0.035max.	0.05max.									
JSH270E														
JSH310W	0.25max.	2.00max.	0.050max.	0.030max.	0.60max.	0.10max.	0.10max.	0.10max.	0.10max.					
JSH370W														
JSH400W														
JSH440W														
JSH490W														
JSH540W														
JSH370J					0.60max.									
JSH400J														
JSH440J					1.00max.									
JSH370A														
JSH440A														
JSH540A					0.050max.					0.020max.	1.20max.			
JSH590A												0.20max.	2.30max.	0.20max.
JSH440B												0.25max.	2.00max.	1.00max.
JSH540B	0.10max.													
JSH590B	0.20max.	2.30max.	0.030max.	1.00max.	1.20max.	0.20max.								
JSH440R														
JSH490R		2.00max.												
JSH540R														
JSH590R		3.00max.												
JSH780R														
JSH540Y														
JSH590Y														
JSH780Y														

Specification

Thickness unit : mm

Grade	Tensile Strength Mpa	Yield point or proof stress Mpa								Elongation %								Test Piece JIS No.5	Hole expandability % min.	Bend Test (Inside Radius)		Test Piece JIS No. 3
		1.2 ≤ t < 1.6	1.6 ≤ t < 2.0	2.0 ≤ t < 2.5	2.5 ≤ t < 3.2	3.2 ≤ t < 4.0	4.0 ≤ t < 5.3	6.3 ≤ t < 8.0	8.0 ≤ t < 14.0	1.2 ≤ t < 1.6	1.6 ≤ t < 2.0	2.0 ≤ t < 2.5	2.5 ≤ t < 3.2	3.2 ≤ t < 4.0	4.0 ≤ t < 5.3	6.3 ≤ t < 8.0	8.0 ≤ t < 14.0			2.6 ≤ t < 3.2	3.2 ≤ t < 14	
JSH270C	270min.	205/215	195/215	185/205	185/205	175/295	175/295	165/285	165/285	3549	3630	37/51	37/51	38/52	38/52	39min.	39min.	—	0t	0.5t	L	
JSH270D	270min.	195/205	185/205	175/285	175/285	165/275	165/275	155/265	155/265	3751	3852	39/53	39/53	40/54	41/55	41min.	41min.	—	0t	0t		
JSH270E	270min.	175/275	165/265	155/255	155/255	145/245	145/245	—	—	4033	4154	42/55	42/55	43/56	43/56	—	—	—	0t	0t		
JSH310W	310min.	205/225	195/215	185/205	185/205	175/295	175/295	165/285	165/285	3630	3751	38/52	38/52	39/53	40/54	41min.	41min.	—	1.0t	1.0t	L	
JSH370W	370min.	235/255	225/245	215/235	215/235	205/225	205/225	195/215	195/215	3346	3447	35/48	35/48	36/49	37/50	40min.	40min.	—	1.0t	1.0t		
JSH400W	400min.	255/275	245/265	235/255	235/255	225/245	225/245	215/235	215/235	3144	3245	33/46	34/47	35/48	36/49	38min.	38min.	—	1.0t	1.0t		
JSH440W	440min.	295/310	285/300	275/290	275/290	265/280	265/280	255/270	255/270	2841	2942	30/43	32/45	33/46	34/47	35min.	35min.	—	1.0t	1.0t	T	
JSH490W	490min.	—	325/340	325/340	325/340	315/440	315/440	305/430	305/430	—	25/39	26/40	26/40	27/41	27/41	28min.	28min.	—	1.0t	1.0t		
JSH540W	540min.	—	375/510	365/500	365/500	355/490	355/490	345/480	345/480	—	22/36	23/37	23/37	24/38	24/38	25min.	25min.	—	1.0t	1.5t		
JSH370J	370min.	—	225/265	225/265	225/265	225/265	225/265	215/235	215/235	—	32/47	33/48	35/48	36/49	37/50	40min.	40min.	—	1.0t	1.0t	L	
JSH400J	400min.	—	255/295	255/295	255/295	255/295	255/295	235/275	235/275	—	31/45	32/46	34/47	35/48	36/49	38min.	38min.	—	1.0t	1.0t		
JSH440J	440min.	—	305/445	305/445	305/445	305/445	275/415	275/415	—	28/42	30/43	32/45	33/46	34/47	35min.	35min.	—	1.0t	1.0t			
JSH370A	370min.	235/255	225/245	215/235	215/235	205/225	205/225	—	—	33/46	34/47	35/48	35/48	36/49	37/50	—	—	90	1.0t	1.0t	T	
JSH440A	440min.	295/310	285/300	275/290	275/290	265/280	265/280	—	—	28/41	29/42	30/43	32/45	33/46	34/47	—	—	80	1.0t	1.0t		
JSH540A	540min.	—	375/510	365/500	365/500	355/490	355/490	—	—	22/36	23/37	23/37	24/38	24/38	—	—	60	1.0t	1.5t			
JSH590A	590min.	—	460/610	450/600	450/600	440/590	440/590	—	—	17/31	18/32	18/32	19/33	19/33	—	—	55	1.0t	1.5t	T		
JSH440B	440min.	295/310	285/300	275/290	275/290	265/280	265/280	—	—	28/41	29/42	30/43	32/45	33/46	34/47	—	—	100	1.0t		1.0t	
JSH540B	540min.	—	375/510	365/500	365/500	355/490	355/490	—	—	22/36	23/37	23/37	24/38	24/38	—	—	80	1.0t	1.5t			
JSH590B	590min.	—	460/610	450/600	450/600	440/590	440/590	—	—	17/31	18/32	18/32	19/33	19/33	—	—	75	1.0t	1.5t			
JSH440R	440min.	345/460	335/450	325/440	325/440	315/430	315/430	305/420	305/420	25/38	26/39	27/40	27/40	28/41	28/41	29min.	29min.	—	1.0t	1.0t	L	
JSH490R	490min.	—	375/500	365/490	365/490	355/480	355/480	345/470	345/470	—	22/36	23/37	23/37	24/38	24/38	25min.	25min.	—	1.0t	1.0t		
JSH540R	540min.	—	430/570	420/560	420/560	410/550	410/550	400/540	400/540	—	19/33	20/34	20/34	21/35	21/35	22min.	22min.	—	1.0t	1.5t		
JSH590R	590min.	—	460/610	450/600	450/600	440/590	440/590	430/580	430/580	—	17/31	18/32	18/32	19/33	19/33	20min.	20min.	—	1.5t	1.5t		
JSH780R	780min.	—	—	685/835	685/835	675/825	675/825	—	—	—	—	14/29	14/29	15/30	15/30	—	—	—	2.0t	2.0t	T	
JSH540Y	540min.	—	305/430	295/440	295/440	285/430	285/430	—	—	—	24/39	25/40	25/40	26/41	26/41	—	—	—	1.0t	1.5t		
JSH590Y	590min.	—	325/480	315/480	315/480	305/470	305/470	—	—	—	22/37	23/38	23/38	24/39	24/39	—	—	—	1.5t	1.5t		
JSH780Y	780min.	—	—	390/635	390/635	380/625	380/625	—	—	—	—	16/30	16/30	17/31	17/31	—	—	—	2.0t	2.0t		

Remarks 1 : Hole expanding test piece shall be in accordance with JPS T1001
 2 : The test piece L is in rolling direction
 3 : The test piece T is transversely to rolling direction.
 4 : " t " is the thickness of material.

Specification

3.1.22 Hot Rolled Steel for API 5L Line Pipe Use

Type of pipe	Level	Grade	Chemical Composition (%)				Tensile Test	
			C max.	Mn max.	P max.	S max.	Yield Strength ksi (N/mm ²)	Tensile Strength ksi (N/mm ²)
Welded	PSL 1	A	0.22	0.90	0.030	0.030	30 (207) min.	48 (331) min.
		B		1.20			35 (241) min.	60 (414) min.
		X42		1.30			42 (290) min.	60 (414) min.
		X46		1.40			46 (317) min.	63 (434) min.
		X52					52 (359) min.	66 (455) min.
		X56					56 (386) min.	71 (490) min.
		X60					60 (414) min.	75 (517) min.
		X65		1.45			65 (448) min.	77 (531) min.
	X70	1.65	70 (483) min.	82 (565) min.				
	PSL 2	B	0.22	1.20	0.025	0.015	35~65 (241~448)	60~110 (414~758)
		X42		1.30			42~72 (290~496)	60~110 (414~758)
		X46		1.40			46~76 (317~524)	63~110 (434~758)
		X52					52~77 (359~531)	66~110 (455~758)
		X56					56~79 (386~544)	71~110 (490~758)
		X60					60~82 (414~565)	75~110 (517~758)
		X65		1.45			65~87 (448~600)	77~110 (531~758)
X70		1.45		70~90 (483~621)			82~110 (565~758)	

- Remarks 1 : For each reduction of 0.01% below the specified maximum carbon content, an increase of 0.05% above the specified maximum manganese content is permissible, up to a maximum of 1.50% for Grade X42 though X52, up to a maximum of 1.65% for Grade higher than X52 but less than X70, and up to a maximum of 2.0% for Grades x70 and higher.
- 2 : For Grade B, Nb, V, Ti, or combinations thereof may be used by agreement between the purchaser and the manufacturer.
- 3 : For Grade X42 though X70, Nb, V, Ti, or combinations thereof may be used at the discretion of the manufacturer.
- 4 : The sum of the Nb, V, Ti contents shall not exceed 0.15%.
- 5 : For Grade X60 though X70, other chemical composition may be furnished by agreement between the purchaser and the manufacturer.

3.1.23 Hot Rolled Steel for API 5CT Line Pipe Use

Grade	Chemical Composition (%)				Tensile Test	
	C	Mn	P max.	S max.	Yield Strength ksi (N/mm ²)	Tensile Strength ksi (N/mm ²) min.
J55	—	—	0.030	0.030	55—80 (380—551)	75 (518)

3.2 Tolerances

3.2.1 JIS G3113 Thickness Tolerances of Hot-Rolled Plates, Sheets and Coils

Unit : mm

Width(w) Thickness(t)	$w \leq 1199$ max.	$1200 \leq w \leq 1499$	$1500 \leq w \leq 1799$	$1800 \leq w \leq 2300$
$1.60 \leq t \leq 1.99$	± 0.16	± 0.17	± 0.18	—
$2.00 \leq t \leq 2.49$	± 0.17	± 0.19	± 0.21	—
$2.50 \leq t \leq 3.14$	± 0.19	± 0.21	± 0.24	—
$3.15 \leq t \leq 3.99$	± 0.21	± 0.23	± 0.26	—
$4.00 \leq t \leq 4.99$	± 0.24	± 0.26	± 0.28	± 0.29
$5.00 \leq t \leq 5.99$	± 0.26	± 0.28	± 0.29	± 0.31
$6.00 \leq t \leq 7.99$	± 0.29	± 0.30	± 0.31	± 0.35
$8.00 \leq t \leq 9.99$	± 0.32	± 0.33	± 0.34	± 0.40
$10.0 \leq t \leq 12.49$	± 0.35	± 0.36	± 0.37	± 0.45
$12.5 \leq t \leq 14.0$	± 0.38	± 0.39	± 0.40	± 0.50

Remarks 1 : The above table applies to SAPH grades.

2 : The positions where the thickness is to be measured shall be as follows:

(A) For mill-edged products, any point 25mm and over inward from the edge.

(B) For cut-edged products, any point 15mm and over inward from the edge.

3 : The values specified shall not apply to the irregular portions at both ends of steel coils.

3.2.2 JIS G3116 Thickness Tolerances of Hot-Rolled Steel Plates, Sheets and Coils

Unit : mm

Width(w) Thickness (t)	$600 \leq w \leq 1199$	$1200 \leq w \leq 1499$	$1500 \leq w \leq 1799$	$1800 \leq w \leq 1999$
$2.30 \leq t \leq 2.49$	± 0.17	± 0.19	± 0.21	± 0.25
$2.50 \leq t \leq 3.14$	± 0.19	± 0.21	± 0.24	± 0.26
$3.15 \leq t \leq 3.99$	± 0.21	± 0.23	± 0.26	± 0.27
$4.00 \leq t \leq 4.99$	± 0.24	± 0.26	± 0.28	± 0.29
$5.00 \leq t \leq 5.99$	± 0.26	± 0.28	± 0.29	± 0.31
$t \geq 6.00$	± 0.29	± 0.30	± 0.31	± 0.35

Remarks 1 : The above table applies to SG255 and SG295.

2 : Thickness shall be measured at any point of 20mm and over inside the edges.

3 : The values specified shall not apply to the irregular portions at both ends of steel coils.

Specification

3.2.3 JIS G3131 Thickness Tolerances of Hot-Rolled Steel Plates, Sheets and Coils

Unit : mm

Thickness (t) \ Width(w)	$w \leq 1199$	$1200 \leq w \leq 1499$	$1500 \leq w \leq 1799$
$t \leq 1.59$	± 0.14	± 0.15	± 0.16 (*1)
$1.60 \leq t \leq 1.99$	± 0.16	± 0.17	± 0.18
$2.00 \leq t \leq 2.49$	± 0.17	± 0.19	± 0.21
$2.50 \leq t \leq 3.14$	± 0.19	± 0.21	± 0.24
$3.15 \leq t \leq 3.99$	± 0.21	± 0.23	± 0.26
$4.00 \leq t \leq 4.99$	± 0.24	± 0.26	± 0.28
$5.00 \leq t \leq 5.99$	± 0.26	± 0.28	± 0.29
$6.00 \leq t \leq 7.99$	± 0.29	± 0.30	± 0.31
$8.00 \leq t \leq 9.99$	± 0.32	± 0.33	± 0.34
$10.0 \leq t \leq 12.49$	± 0.35	± 0.36	± 0.37
$12.5 \leq t \leq 14.0$	± 0.38	± 0.39	± 0.40

Remarks 1 : The above table applies to SPHC,SPHD and SPHE grades.

2 : Thickness shall be measured at any point of 20mm and over inside the edges.

3 : The values specified shall not apply to the irregular portions at both ends of steel coils.

Note (1) : The value shall be applied to the steel sheet and coil up to and excluding 1600mm in width.

3.2.4 JIS G3132 Thickness Tolerances of Hot-Rolled Steel Coils (SPHT1~ SPHT3)

unit : mm

Thickness (t) \ Width(w)	$w \leq 1199$	$1200 \leq w \leq 1499$	$1500 \leq w \leq 1799$
$t \leq 1.59$	± 0.14	± 0.15	± 0.16 (*1)
$1.60 \leq t \leq 1.99$	± 0.16	± 0.17	± 0.18
$2.00 \leq t \leq 2.49$	± 0.17	± 0.19	± 0.21
$2.50 \leq t \leq 3.14$	± 0.19	± 0.21	± 0.24
$3.15 \leq t \leq 3.99$	± 0.21	± 0.23	± 0.26
$4.00 \leq t \leq 4.99$	± 0.24	± 0.26	± 0.28
$5.00 \leq t \leq 5.99$	± 0.26	± 0.28	± 0.29
$6.00 \leq t \leq 7.99$	± 0.29	± 0.30	± 0.31
$8.00 \leq t \leq 9.99$	± 0.32	± 0.33	± 0.34
$10.0 \leq t \leq 12.49$	± 0.35	± 0.36	± 0.37
$12.5 \leq t \leq 13.0$	± 0.38	± 0.39	± 0.40

Remarks 1 : The above table applies to SPHT1-3 and CSC ACR-TEN grades.

2 : Thickness shall be measured at any point 20mm and over inside the edges.

3 : The values specified shall not apply to the irregular portions at both ends of steel coils.

Note (1) : The value shall be applied to the steel strip under 1600mm in width.

Specification

3.2.5 JIS G3132 Thickness Tolerances of Hot-Rolled Steel Coils (SPHT4)

unit : mm

Thickness (t) \ Width (w)	w ≤ 1199	1200 ≤ w ≤ 1499	1500 ≤ w ≤ 1799
t ≤ 1.59	±0.14	±0.15	±0.16 (*1)
1.60 ≤ t ≤ 1.99	±0.16	±0.19	±0.20
2.00 ≤ t ≤ 2.49	±0.18	±0.22	±0.23
2.50 ≤ t ≤ 3.14	±0.20	±0.24	±0.26
3.15 ≤ t ≤ 3.99	±0.23	±0.26	±0.28
4.00 ≤ t ≤ 4.99	±0.26	±0.29	±0.31
5.00 ≤ t ≤ 5.99	±0.29	±0.31	±0.32
6.00 ≤ t ≤ 7.99	±0.32	±0.33	±0.34
8.00 ≤ t ≤ 9.99	±0.35	±0.36	±0.34
10.0 ≤ t ≤ 12.49	±0.38	±0.40	±0.41
12.5 ≤ t ≤ 13.0	±0.41	±0.44	±0.45

Remarks 1 : The above table applies to SPHT4 and CSC ACR-TEN grades.

2 : Thickness shall be measured at any point 20mm and over inside the edges.

3 : The values specified shall not apply to the irregular portions at both ends of steel coils.

Note (1) : The value shall be applied to the steel strip under 1600mm in width.

3.2.6 JIS G3134 Hot-Rolled High Strength Steel Sheets with Improved for Formability for Automobile Structural Uses

Unit : mm

Thickness (t) \ Width (w)	w ≤ 1199	1200 ≤ w ≤ 1499	1500 ≤ w ≤ 1799
1.60 ≤ t ≤ 1.99	±0.16	±0.19	±0.20 (*1)
2.00 ≤ t ≤ 2.49	±0.18	±0.22	±0.23 (*1)
2.50 ≤ t ≤ 3.14	±0.20	±0.24	±0.26 (*1)
3.15 ≤ t ≤ 3.99	±0.23	±0.26	±0.28
4.00 ≤ t ≤ 4.99	±0.26	±0.29	±0.31
5.00 ≤ t ≤ 5.99	±0.29	±0.31	±0.32
t ≥ 6.00	±0.32	±0.33	±0.34

Remarks 1: The positions where the thickness is to be measured shall be as follows:

(A) For mill-edged products, any point 25mm and over inward from the edges.

(B) For cut-edged products, any point 15mm and over inward from the edges.

2 : The values specified shall not apply to the irregular portions at both ends of steel Coils.

Note (1) : The values are applicable to the steel sheets and coils under 1600 mm in width.

Specification

3.2.7 JIS G3136 Rolled Steel for Building Structure

Unit : mm

Thickness (t)	Width (w)	
	$w \leq 1599$	$1600 \leq w \leq 1999$
$6.00 \leq t \leq 6.29$	+0.70 -0.30	+0.90 -0.30
$6.30 \leq t \leq 9.99$	+0.80 -0.30	+1.00 -0.30
$10.0 \leq t \leq 15.99$	+0.80 -0.30	+1.0 -0.30

Remarks 1 : The above table applies to SN400A, SN400B, and SN490B grades.

2 : The positions where the thickness is to be measured shall be as follows:

- (A) For mill-edged products, any point 25mm and over inward from the edges.
- (B) For cut-edged products, any point 15mm and over inward from the edges.

3.2.8 JIS G3193 Thickness Tolerances of Hot-Rolled Steel Plates, Sheets and Coils

Unit : mm

Thickness (t)	Width(w)	
	$w \leq 1599$	$1600 \leq w \leq 1999$
$t \leq 1.24$	± 0.16	—
$1.25 \leq t \leq 1.59$	± 0.18	—
$1.60 \leq t \leq 1.99$	± 0.19	± 0.23
$2.00 \leq t \leq 2.49$	± 0.20	± 0.25
$2.50 \leq t \leq 3.14$	± 0.22	± 0.29
$3.15 \leq t \leq 3.99$	± 0.24	± 0.34
$4.00 \leq t \leq 4.99$	± 0.45	± 0.55
$5.00 \leq t \leq 6.29$	± 0.50	± 0.60
$6.30 \leq t \leq 9.99$	± 0.55	± 0.65
$10.0 \leq t \leq 15.99$	± 0.55	± 0.65
$16.0 \leq t \leq 24.99$	± 0.65	± 0.75

Remarks 1 : The above table applies to SS, SM, SMA, SPA-H, and SXXC grades.

2 : The positions where the thickness is to be measured shall be as follows :

- (A) For mill-edged products, any point 25mm and over inward from the edges.
- (B) For cut-edged products, any point 15mm and over inward from the edges.

3 : The values specified shall not apply to the irregular portions at both ends of steel coils.

3.2.9 JIS G3193 Width Tolerances of Hot-Rolled Steel Plates, Sheets and Coils

Unit : mm

Width (w)	Thickness (t)	Tolerance			
		Mill edge		Cut edge (by ordinary cutting)	
		max.	min.	max.	min.
$630 \leq w \leq 999$	$1.20 \leq t \leq 12.7$	25	0	10	0
$1000 \leq w \leq 1249$	$t \leq 5.99$	30	0	10	0
	$t \geq 6.00$			15	
$1250 \leq w \leq 1599$	$t \leq 5.99$	35	0	10	0
	$t \geq 6.00$			15	
$w \geq 1600$	$t \leq 5.99$	40	0	10	0
	$t \geq 6.00$			1.2%	

3.2.10 JIS G3193 Length Tolerances of Hot-Rolled Steel Plates and Sheets

Unit : mm

Length (l)	Tolerances	
	(by ordinary cutting)	
	max.	min.
$l < 6299$	25	0
$l \geq 6300$	0.5%	0

Example : The length tolerances of steel plate with size 4mm×Width×6300mm
is - 0/+31.5mm(6300mm×0.5%=31.5mm)

3.2.11 JIS G3193 Camber Tolerances of Hot-Rolled Steel Strip

Unit : mm

Width (w)	Maximum value
$w \geq 250$	5 in any 2000 length

3.2.12 JIS G3193 JIS G3193 Camber Tolerances of Hot-Rolled Steel Plates and Sheets

Unit : mm

Length (l)	Width (w)	
	$630 \leq w \leq 999$	$w \geq 1000$
$l \leq 2499$	4max.	3max.
$2500 \leq l \leq 3999$	6max.	5max.
$4000 \leq l \leq 6299$	10max.	8max.
$6300 \leq l \leq 9999$	16max.	12max.
$l \geq 10000$	16 in any 10000 length	12 in any 10000 length

Remark : This table does not apply to as-rolled steel plates and sheets with untrimmed edge.