JFE

HOT ROLLED STEEL SHEET

JFE Steel Corporation

JFE Steel Corporation produces a wide range of hot rolled steel sheets at its steel works. Supported by advanced facilities, abundant know-how, and a high level of operational technology, JFE has developed a wide range of new products which meet customer requirements for dimensional accuracy, mechanical properties and available size range.

Characteristics

1. Consistent high quality

JFE products consistently realize the world's highest levels of quality thanks to an integrated quality control system which extends from order receiving through product shipment. JFE's production system is fully computerized and boasts advanced equipment and technologies.

2. Wide product line-up

Hot rolled products are produced under various public and JFE standards, and include the full line-up from general use to high strength steel. Regarding surface of products, JFE supplies non-pickled and pickled products.

3. Wide size range and superior dimensional accuracy

With a 4-mill production system, JFE produces a wide range of hot strip sizes, including thickness from 1.2mm to 25.4mm and widths from 610mm to 2,175mm, which is the world's widest hot rolled strip. Advanced production technologies ensure high dimensional accuracy.

4. Outstanding technical servicing system

JFE works closely with customers in selecting the optimum material for the user's application, and advises customers on production methods, considering property requirements. The company also cooperates in pre-use trials and provides technical assistance and follow-up on quality information.

HOT ROLLED STEEL SHEET **Contents**

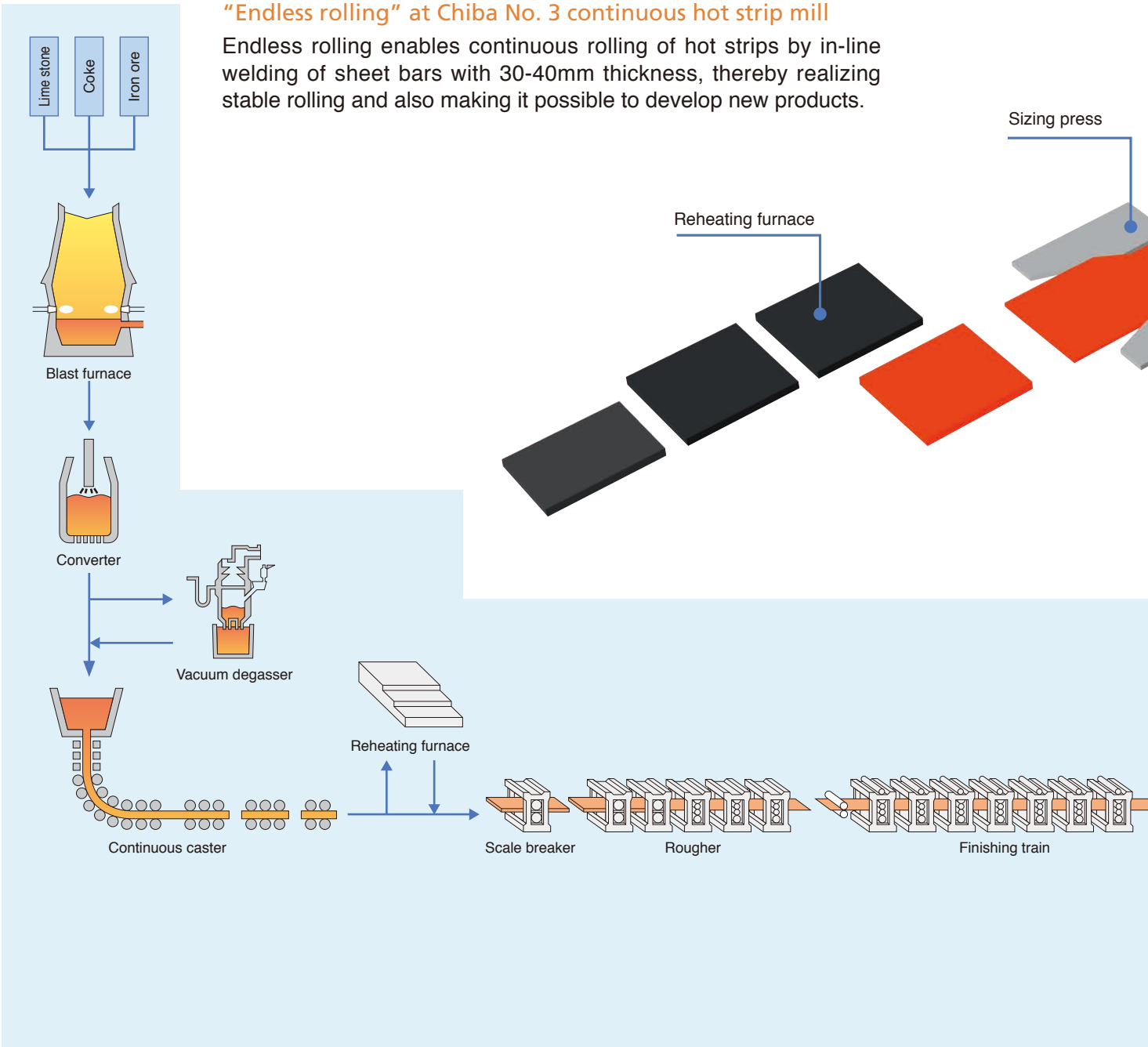
Manufacturing process

JFE produces highest quality products with high end technologies.

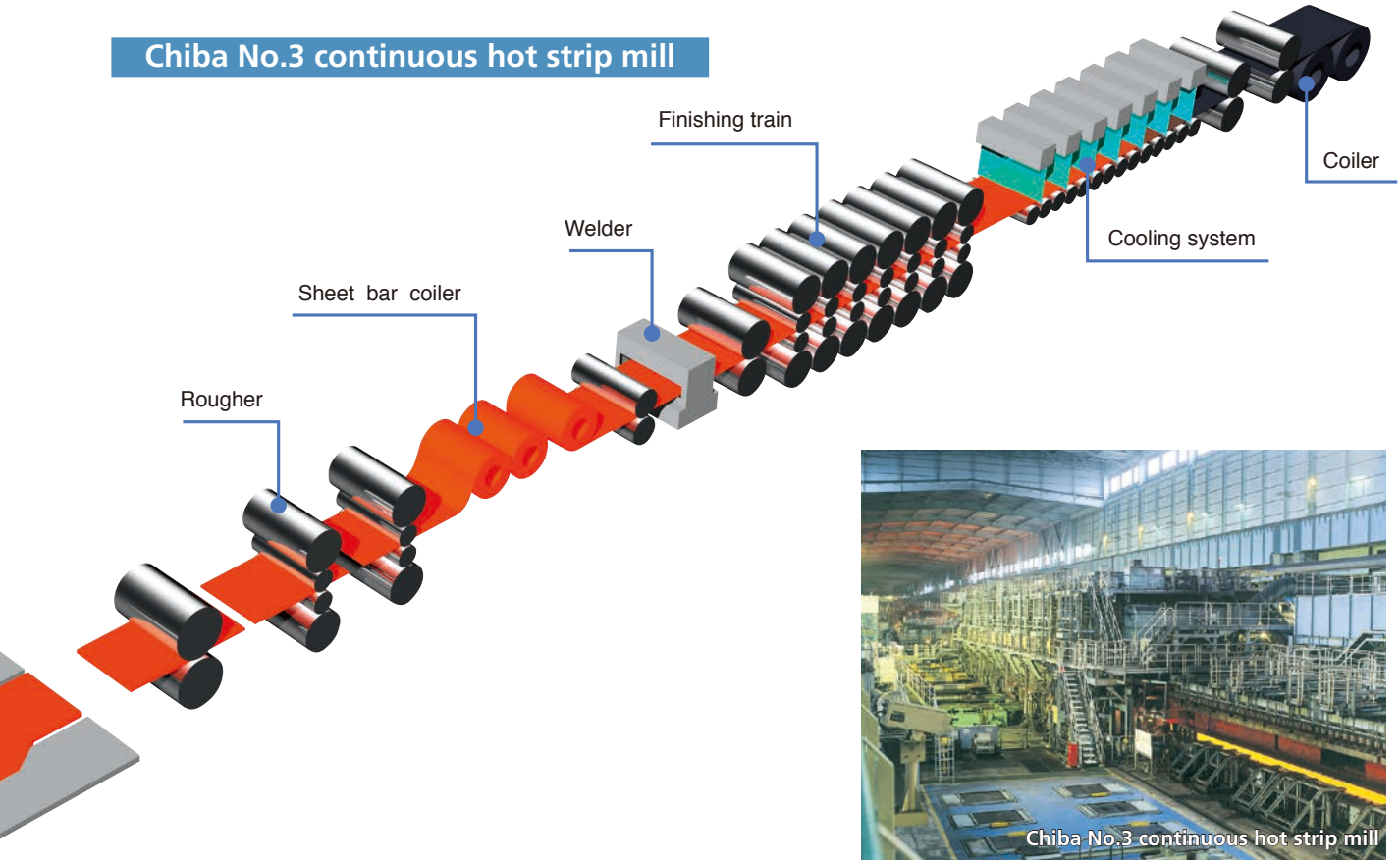

Chiba No.3 continuous hot strip mill

"Endless rolling" at Chiba No. 3 continuous hot strip mill

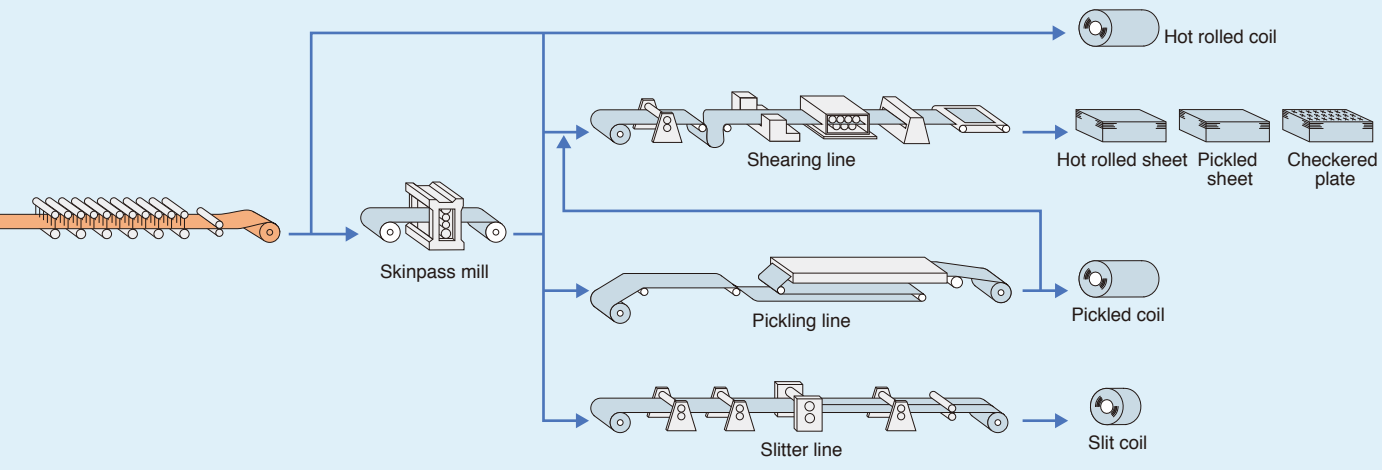
Endless rolling enables continuous rolling of hot strips by in-line welding of sheet bars with 30-40mm thickness, thereby realizing stable rolling and also making it possible to develop new products.



Chiba No.3 continuous hot strip mill



Chiba No.3 continuous hot strip mill



Products, characteristics and application

JFE produces various kinds of products based on the public standards (Japanese Industrial Standard, The Japan Iron and Steel Federation Standard, foreign standards and ship's classification standards) and JFE standard.

Public Standard

Japanese Industrial Standard (JIS)

Classification		Designation	Characteristics and Application
G 3101	Rolled steels for general structure	SS	Having each strength level, it is applied to structural materials for architecture, bridge, ship, rolling stock body, etc.
G 3103	Carbon steel and molybdenum alloy steel plates for boilers and other pressure vessels	SB	For boiler and pressure vessel using at high temperature.
G 3106	Rolled steel for welded structure	SM	Having superior strength and weldability, it is applicable to architecture, bridge, ship, rolling stock body, oil holder and other structures.
G 3113	Hot rolled steel plates, sheets and strip for automobile structural uses	SAPH	Having strength and press formability, it is applied to automobile frame, wheel and other parts.
G 3114	Hot rolled atmospheric corrosion resisting steels for welded structure	SMA	Having corrosion resistance with strength and weldability, it is applied to bridge, architecture and other structures.
G 3115	Steel plates for pressure vessels for intermediate temperature service	SPV	Pressure vessel and high pressure equipment used except at high and low temperature.
G 3116	Steel, sheets, plates, and strip for gas cylinders	SG	Welded containers for high pressure gas holder of volume less than 500 l for LPG, acetylene and propane gases.
G 3125	Superior atmospheric corrosion resisting rolled steels	SPA-H	Having superior atmospheric corrosion resistance, it is applied to rolling stock body, architecture, steel tower and other structures.
G 3131	Hot rolled mild steel plates, sheets and strip	SPHC SPHD SPHE SPHF	General steels used for general forming, deep drawing.
G 3132	Hot rolled carbon steel strip for pipes and tubes	SPHT	Welded pipes with low and high frequency welding.
G 3134	Hot rolled high strength steel sheets with improved formability for automobile	SPFH	Having superior workability of high strength steels, it is applied to automobiles.
G 3136	Rolled steels for building structure	SN	Hot rolled steels for architecture structures.
G 4051	Carbon steels for machine structure	S-C S-CK	Carbon steels for machinery structure produced by hot process and used with forging, shaving and with heat treatment.
G 4053	Low-alloyed steels for machine structural use	SCr SCM	Alloy steels for machinery structure produced by hot process and used with forging, shaving and with heat treatment.
G 4401	Carbon tool steels	SK	Carbon tools steel made by hot rolling and forging.
G 4404	Alloy tool steels	SKS	Alloy tools steel made by hot rolling and forging.
C 2555	Steel sheets and strip for pole core	PCYH	For magnetic pole of rotating electric machine.

The Japan Iron and Steel Federation Standard (JFS)

Classification		Designation	Characteristics and Application
A1001	Hot rolled steel sheets and strip for automobile uses	JSH	The Japan Iron and Steel Federation Standard of hot rolled steel sheets and strips for automobile use

Foreign Standards

Classification
ASTM Standard
EN Standard
ISO Standard
SAE Standard
IS Standard
API Standard

Ship's Class Standard

JFE Steel produces the products based on following society's standards.

Society
NK

Please refer to the latest standard document for details.
For Foreign Standards inquiries, JFE Steel may propose modified standard.
(Please contact JFE Steel for details)

JFE Standard

Classification	Designation	Page	Characteristics and Application
Hot rolled steel sheets for automobile use	JFE-HA	6	Quality with wide range of formability. Various types of hot rolled steels are available, not limited to the automotive sector.
Hot rolled steel sheets with good press formability	JFE-HDN JFE-HEN JFE-HFN	8	Because of good formability same as cold rolled one, press formability is improved. Low carbon steel is suitable to extra deep drawing parts like compressor chambers.
Hot rolled corrosion resistance steel sheets	JFE-ASA	9	High corrosion resistance to sulfuric or hydrochloric acid. It is suitable to equipments exposed to sulfuric corrosion atmosphere. Also it has superior atmospheric corrosion resistance, formability and weldability.
Hot rolled flat steel sheets for exposed use	JFE-HDH	10	Steel aiming good flatness and appearance. Having superior surface appearance and shape, it is suitable to application needs good shape and fine appearance as exposed parts.
Hot rolled steel sheets for porcelain enameling	JFE-HPE	10	Both-side porcelain enameling is possible. It has also superior porcelain properties like anti-fish tail, adhesionability and anti-strain during baking.
Hot rolled high strength steel sheets	JFE-HITEN	11	Specifying tensile strength levels. It is used as rolled. It has superior formability and weldability. It contributes to weight saving by inducing higher strength.
Hot rolled checkered plate	JFE-HCP	12	With simple and beautiful stripe patterns , it has good anti-slip and good water-cut property with good weldability and formability.
Hot rolled steel sheets for electric resistance welded pipe and tube	JFE-HP	14	By specifying finer strength levels than JIS, it is suitable to various application.
Hot rolled atmospheric corrosion resistance steel sheets	JFE-HCUP	15	Having superior atmospheric corrosion resistance and corrosion resistance, it has also sufficient strength, weldability and formability for structural uses. Stabilized rust after two years has no progress. It is applied to exposed parts of buildings.

Container

Gas cylinder

JFE Standard

Hot rolled sheets for automobile use JFE-HA

JFE prepares various kinds of hot rolled high strength steels for automobile use, not limited to the automotive sector, with the general processing quality to the quality having same formability as those of cold rolled sheets.

Mechanical Properties

Classification	Designation		Applied Thickness mm (min.-max.)	Yield Point min. (N/mm²)	Tensile Strength min. (N/mm²)			
						1.2 ≦ < 1.6	1.6 ≦ < 2.0	2.0 ≦ < 2.5
Commercial quality	JFE-HA…	440	1.2-14.0	255	440	28	29	30
		490	1.4-14.0	305	490	(24)	25	26
		540	1.4-14.0	345	540	(21)	22	23
High yield ratio type (HSLA)	JFE-HA…R	440	1.2-14.0	305	440	25	26	27
		490	1.4-14.0	345	490	(21)	22	23
		540	1.4-14.0	400	540	(18)	19	20
		590	1.4-14.0	430	590	(16)	17	18
		780	2.0-6.0	665	780	—	—	14
		980	2.0-5.0	780	980	—	—	10
		1180	2.0-4.0	—	1180	—	—	—
Low yield ratio type (DP)	JFE-HA…D	540	1.4-6.0	(YR ≦ 75%)	540	23	24	25
		590	1.4-6.0	(YR ≦ 75%)	590	21	22	23
Excellent stretch flange formability type A (Equivalent JFS A)	JFE-HA…SA	440	1.4-6.0	305	440	28	29	30
		540	1.4-6.0	345	540	21	22	23
		590	1.4-6.0	400	590	18	19	20
		780	2.0-4.5	665	780	—	—	14
		980	2.0-5.0	780	980	—	—	10
Excellent stretch flange formability type B (Equivalent JFS B)	JFE-HA…SB	440	1.4-6.0	305	440	28	29	30
		540	1.4-6.0	345	540	21	22	23
		590	1.4-6.0	400	590	18	19	20
		780	2.0-4.5	665	780	—	—	14
		980	2.0-4.0	780	980	—	—	10
High elongation type (Retained austenite)	JFE-HA…E	590	1.8-3.2	390	590	—	25	26
High corrosion resistance type	JFE-HA…C	440	1.6-6.0	305	440	—	29	30
		490	2.0-6.0	325	490	—	22	23
		540	2.0-4.0	355	540	—	21	22
		590	2.0-4.0	420	590	—	19	20
		780	2.0-4.0	—	780	—	—	14
High corrosion resistance type with excellent stretch flange formability	JFE-HA…CS	440	1.6-6.0	305	440	—	29	30
		490	2.0-6.0	325	490	—	—	23
		540	2.0-4.0	355	540	—	—	22
		590	2.0-4.0	420	590	—	—	20
		780	2.0-4.0	—	780	—	—	14
Extra stretch flange formability type NANOHITEN™	JFE-HA…NANO	780	1.4-4.5	685	780	14	14	15
High fatigue strength type	JFE-HA…H	780	2.3-6.0	500	780	—	—	16
Bake hardenability type (TS Increase)	JFE-HA…BHT	370	1.2-4.5	205	370	33	34	35
		440	1.2-4.5	265	440	28	29	30
		490	1.4-4.5	315	490	24	25	26
		590	1.4-4.5	400	590	16	17	18

Dimension tolerance

Dimensional tolerances are subject to negotiation. Please consult with JFE Steel.

Available product size range

Available product sizes are subject to negotiation. Please consult with JFE Steel.

Reference :
1. The values in parentheses are reference values.
2. BHT means the increase in tensile strength during the baking process.
3. The YR means the ratio of the yield point to the tensile strength.
4. Rolling or Transverse in the column of Testing Direction indicates test piece taken for the tensile test in the rolling direction or transverse to the rolling direction.
5. The bend test is available depending on a demand.

Tensile Test					Test Piece	Testing Direction	Hole Expanding Ratio % min.	Other Specification
Elongation min. (%)								
Thickness mm								
2.5 ≦ < 3.2	3.2 ≦ < 4.0	4.0 ≦ < 6.3	6.3 ≦ < 8.0	8.0 ≦ ≦ 14.0				
32	33	34	35	35	JIS No.5	Rolling	—	
26	27	27	28	28		Transverse	—	
23	24	24	25	25		Transverse	—	
27	28	28	29	29	JIS No.5	Rolling	—	
23	24	24	25	25		Transverse	—	
20	21	21	22	22		Transverse	—	
18	19	19	20	20		Transverse	—	
14	15	15	—	—		Transverse	—	
10	11	11	—	—		Transverse	—	
—	—	—	—	—		Transverse	—	
25	26	26	—	—	JIS No.5	Transverse	—	
23	24	24	—	—		Transverse	—	
32	33	34	—	—	JIS No.5	Rolling	80	
23	24	24	—	—		Transverse	60	
21	22	22	—	—		Transverse	55	
14	15	15	—	—		Transverse	50	
10	11	11	—	—		Transverse	20	
32	33	34	—	—	JIS No.5	Rolling	100	
23	24	24	—	—		Transverse	80	
21	22	22	—	—		Transverse	75	
14	15	15	—	—		Transverse	60	
10	11	11	—	—		Transverse	50	
27	28	—	—	—	JIS No.5	Transverse	—	
32	33	33	—	—	JIS No.5	Rolling	—	
24	25	25	—	—		Transverse	—	
23	24	24	—	—		Transverse	—	
21	22	22	—	—		Transverse	—	
14	15	15	—	—		Transverse	—	
32	33	33	—	—	JIS No.5	Rolling	80	
24	25	25	—	—		Transverse	60	
23	24	24	—	—		Transverse	60	
21	22	22	—	—		Transverse	55	
14	15	15	—	—		Transverse	45	
15	16	16	—	—	JIS No.5	Transverse	60	
16	17	17	—	—	JIS No.5	Transverse	—	
35	36	37	—	—	JIS No.5	Rolling	—	10%Pre-StrainBHT ≧ 40MPa
32	33	34	—	—		Rolling	—	10%Pre-StrainBHT ≧ 40MPa
26	27	27	—	—		Transverse	—	10%Pre-StrainBHT ≧ 40MPa
18	19	19	—	—		Transverse	—	10%Pre-StrainBHT ≧ 40MPa

Hot rolled steel sheets with good press formability JFE-H＊N

Improved press formability is attained by good ductility same as that of cold rolled steel.
This is suitable for deep drawing parts such as a compressor chamber.

● Characteristics

Classification	Designation	Reference
Low carbon steel	JFE-HDN	Drawing quality
Low carbon steel	JFE-HEN	Deep drawing quality
Ultra low carbon steel	JFE-HFN	Extra deep drawing quality

● Mechanical Properties

Designation	Applied Thickness mm (min.-max.)	Tensile Test								
		Yield Point min. (N/mm²)	Tensile Strength min. (N/mm²)	Elongation min. (%) Thickness mm						
				1.2 ≦ < 1.6	1.6 ≦ < 2.0	2.0 ≦ < 2.5	2.5 ≦ < 3.2	3.2 ≦ < 4.0	4.0 ≦ < 6.3	6.3 ≦ < 8.0	8.0 ≦ ≦ 14.0
JFE-HDN	1.6-14.0	—	270	—	35	37	39	41	42	43	44
JFE-HEN	1.2-6.0	—	270	40	41	42	42	43	44	—	—
JFE-HFN	2.0-6.0	—	260	—	—	42	43	45	47	—	—

Reference : JIS No.5 test piece for the tensile test taken to the rolling direction.

● Dimension tolerance

Dimensional tolerances are subject to negotiation. Please consult with JFE Steel.

● Available product size range

Available product sizes are subject to negotiation. Please consult with JFE Steel.

Hot rolled corrosion resistance steel sheets JFE-ASA

Optimum addition of special alloying elements to SS400 equivalent material secures high corrosion resistance against sulfuric and hydrochloric acids, as well as atmospheric environments, combined with good formability and weldability. Main applications include air preheaters for oil boilers, chimneys, and incinerators.

Chemical Composition

Designation	Chemical Composition (wt%)										
	C	Si	Mn	P	S	Cu	Ni	Cr	Mo	Sb	Sn
JFE-ASA400D	0.14 max.	0.55 max.	0.30 - 0.70	0.030 max.	0.020 max.	0.25 - 0.50	0.50 max.	—	—	0.05 - 0.20	0.10 max.
JFE-ASA400H	0.14 max.	0.55 max.	0.30 - 0.70	0.030 max.	0.020 max.	0.25 - 0.50	0.50 max.	0.50 - 1.00	0.10 max.	—	—
JFE-ASA400W	0.14 max.	0.55 max.	0.30 - 0.70	0.030 max.	0.020 max.	0.25 - 0.50	0.50 max.	0.50 - 1.00	0.10 max.	0.05 - 0.20	0.10 max.
JFE-ASA440D	0.17 max.	0.55 max.	0.30 - 0.70	0.030 max.	0.020 max.	0.25 - 0.50	0.50 max.	—	—	0.05 - 0.20	0.10 max.
JFE-ASA440H	0.17 max.	0.55 max.	0.30 - 0.70	0.030 max.	0.020 max.	0.25 - 0.50	0.50 max.	0.50 - 1.00	0.10 max.	—	—
JFE-ASA440W	0.17 max.	0.55 max.	0.30 - 0.70	0.030 max.	0.020 max.	0.25 - 0.50	0.50 max.	0.50 - 1.00	0.10 max.	0.05 - 0.20	0.10 max.

Mechanical Properties

Designation	Applied Thickness mm (min.-max.)	Tensile Test						
		Yield Point min. (N/mm^2)	Tensile Strength min. (N/mm^2)	Elongation min. (%)		Test Piece		Testing Direction
				Thickness mm		Thickness mm		
				≦ 5	5< ≦ 16	≦ 5	5< ≦ 16	
JFE-ASA400D	1.6-16.0	245	400	22	18	JIS No.5	JIS No.1A	Transverse to rolling direction
JFE-ASA400H	1.6-16.0	245	400	22	18			
JFE-ASA400W	1.6-16.0	245	400	22	18			
JFE-ASA440D	1.6-16.0	265	440	22	17			
JFE-ASA440H	1.6-16.0	265	440	22	17			
JFE-ASA440W	1.6-16.0	265	440	22	17			

Reference : The bend test is available depending on a demand.

Dimension tolerance

Dimensional tolerances are subject to negotiation. Please consult with JFE Steel.

Available product size range

Available product sizes are subject to negotiation. Please consult with JFE Steel.

Chemical Composition and applied environment of D, H, W type

Designation	Chemicals	Applied environment
JFE-ASA···D	Cu-Ni-Sn-Sb	Surface temperature less than 120-130˚C. Mainly considered on the sulfuric acid corrosion.
JFE-ASA···H	Cr-Cu-Ni	Resistance against sulfuric acid corrosion is less than that of JFE-ASA···D. Considered on the strength in comparatively high temperature atmosphere.
JFE-ASA···W	Cr-Cu-Ni-Sn-Sb	Condition of the environment is not decisive.

Hot rolled flat steel sheets for exposed use JFE-HDH

The steel sheet mainly produced in the stand point of flatness and attractive appearance. It has superior attractive appearance and strip shape. It is suitable for application which require good shape and appearance as exposed parts.

Chemical Composition and Mechanical Properties

Designation	Applied Thickness mm (min.-max.)	Chemical Composition (wt%)	
		P	S
JFE-HDH	1.6-4.5	0.040 max.	0.040 max.

Reference : The bend test is available depending on a demand.

Dimension tolerance

Dimensional tolerances are subject to negotiation. Please consult with JFE Steel.

Flatness tolerance

As a guideline, the flatness tolerance is 1/2 of the maximum value of flatness given in JIS G 3193-2019. However, details are subject to negotiation.

Available product size range

Available product sizes are subject to negotiation. Please consult with JFE Steel.

Hot rolled steel sheets for porcelain enameling JFE-HPE

It is possible to apply both-side porcelain enameling and it has superior anti-fish tail property, excellent adhesionability, and less distortion during baking.

Characteristics

1. Superior anti-fish tail property
2. Good adhesionability
3. Less distortion and residual strain during baking
4. Superior formability
5. Superior weldabilit

Chemical Composition

Designation	Applied Thickness mm (min.-max.)	Chemical Composition (wt%)					
		C	Si	Mn	P	S	Others
JFE-HPE	1.2 - 13.0	0.10 max.	0.10 max.	0.70 max.	0.035 max.	0.035 max.	Special additives

Dimension tolerance

Dimensional tolerances are subject to negotiation. Please consult with JFE Steel.

Available product size range

Available product sizes are subject to negotiation. Please consult with JFE Steel.

Typical Chemical Composition (wt%)

Designation	C	Si	Mn	P	S	Sol.Al	Ti
JFE-HPE	0.025	0.02	0.25	0.012	0.008	0.010	0.17

Typical Mechanical Properties

Typical mechanical properties are shown below.
The strength level comes to negotiation.

Designation	Thickness mm	Yield Point (N/mm^2)	Tensile Strength (N/mm^2)	Elongation %
JFE-HPE	3.2	436	512	23

Hot rolled high strength steel sheets JFE-HITEN

Used as-rolled in applications which require high strength with specified tensile strength levels. Also has superior formability and weldability. High strength contributes to weight reduction.

Chemical Composition

Designation	Chemical Composition (wt%)				
	C	Si	Mn	P	S
JFE-HITEN490	0.18 max.	0.50 max.	1.50 max.	0.035 max.	0.035 max.
JFE-HITEN540	0.20 max.	0.50 max.	1.60 max	0.035 max.	0.035 max.
JFE-HITEN590	0.20 max.	0.50 max.	1.60 max	0.035 max.	0.035 max.
JFE-HITEN690	0.20 max.	0.60 max.	2.00 max.	0.030 max.	0.015 max.
JFE-HITEN780	0.20 max.	0.60 max.	2.00 max.	0.020 max.	0.010 max.

Mechanical Properties

Designation	Applied Thickness mm (min.-max.)	Tensile Test						
		Yield Point min. (N/mm^2)	Tensile Strength min. (N/mm^2)	Elongation min. (%) Thickness mm				
				1.6 ≦ < 2.3	2.3 ≦ < 3.0	3.0 ≦ < 6.3	6.3 ≦ ≦ 8.0	8.0< ≦ 10.0
JFE-HITEN490	1.6-10.0	305	490	22	22	24	25	25
JFE-HITEN540		345	540	20	20	22	23	23
JFE-HITEN590	1.6-8.0	430	590	16	16	18	20	—
JFE-HITEN690		550	690	14	15	16	18	—
JFE-HITEN780	2.3-8.0	665	780	—	14	15	16	—

Reference : 1. JIS No.5 test piece for the tensile test taken transverse to the rolling direction.
2. JIS No.3 test piece for the bend test taken transverse to the rolling direction.
3. The bend test is available depending on a demand.

Dimension tolerance

Dimensional tolerances are subject to negotiation. Please consult with JFE Steel.

Available product size range

Available product sizes are subject to negotiation. Please consult with JFE Steel.

Hot rolled checkered plate JFE-HCP

JFE checkered plate has an attractive design and good anti-slip and water draining properties, combined with excellent dimensional accuracy, weldability, and formability. Suitable for floors, stairs, and landings, and for rolling stock bodies.

Characteristics

1. Attractive stripe pattern
2. Excellent anti-slip property
3. Excellent water draining property
4. High weldability and formability

Chemical Composition

Designation	Application	Chemical Composition (wt%)	
		P	S
JFE-HCP-1	General use	—	—
JFE-HCP400-1	Structural use	0.050 max.	0.050 max.

Mechanical Properties

Designation	Applied Thickness mm (min.-max.)	Tensile Test						
		Yield Point min. (N/mm²)	Tensile Strength min. (N/mm²)	Elongation min. (%)		Test Piece		Testing Direction
				Thickness mm		Thickness mm		
				≦ 5	5 < ≦ 13	≦ 5	5 < ≦ 13	
JFE-HCP-1	2.3-12.7	—	—	—	—	—	—	—
JFE-HCP400-1		245	400～510	(21)	(17)	JIS No.5	JIS No.1A	Rolling direction

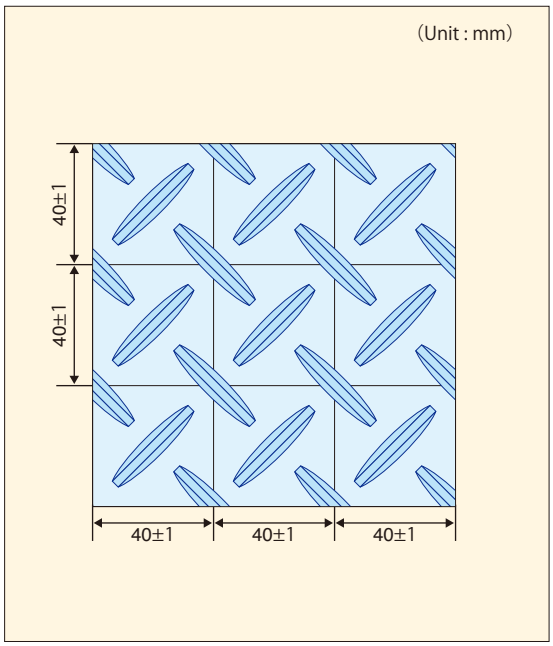
Reference : 1. The figures in the parentheses are the reference values.
2. The bend test is available depending on a demand.

Mass of cut sheet

Thickness mm	W× L mm / Area m² / Unit mass kg/m²	914 ×1,829	1,219 ×2,438	1,524 ×3,048	1,829 ×9,144
		1.672	2.972	4.645	16.72
2.3	19.42	32.5	57.7	—	—
3.2	26.48	44.3	78.7	123	443
4.5	36.69	61.3	109	170	613
6	48.46	81.0	144	225	810
8	64.16	107	191	298	1,073
9	72.01	120	214	334	1,204
12	95.56	160	284	444	1,598

JFE Standard

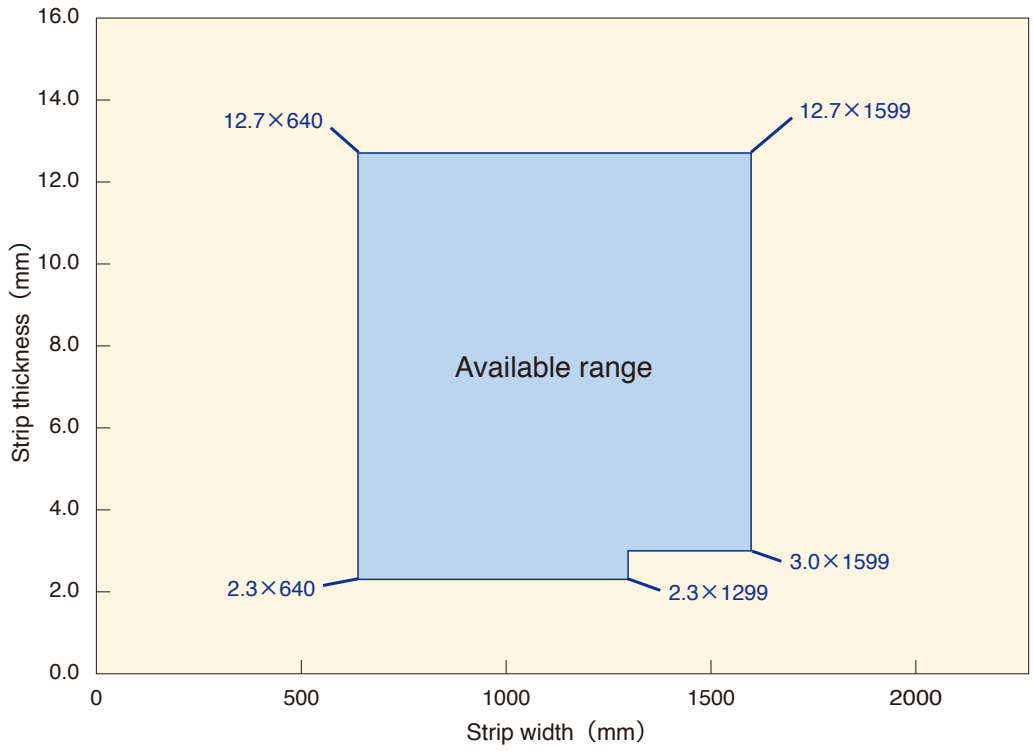
Striped surface pattern
of JFE-HCP-1 and JFE-HCP400-1



Dimension tolerance

JIS G 3193 is applied.

Available product size range (JFE-HCP-1, JFE-HCP400-1)



- Product thickness: Regarding 2.3mm ≦ t < 2.5mm and 10mm ≦ t ≦ 12.7mm, for manufacturing reasons, it is necessary to consolidate lots of products in these size ranges. Please inquire about the current status of production before ordering.
- Because the available size range may vary slightly depending on the customer's intended application and processing method, please consult with JFE Steel. Products outside the standard size range and products in sheets or slit coils form are also subject to negotiation. Please do not hesitate to consult with us concerning any special requirements.

Hot rolled steel sheets for electric resistance welded pipe and tube JFE-HP

By specifying finer strength levels than JIS, it is suitable to various applications.

Chemical Composition

Designation	Chemical Composition (wt%)					
	C	Si	Mn	P	S	Al total
JFE-HP290	0.10 max.	0.35 max.	0.50 max.	0.035 max.	0.035 max.	—
JFE-HP320	0.18 max.	0.35 max.	0.60 max.	0.035 max.	0.035 max.	—
JFE-HP340	0.18 max.	0.35 max.	0.60 max.	0.035 max.	0.035 max.	—
JFE-HP370	0.25 max.	0.35 max.	0.30 - 0.90	0.035 max.	0.035 max.	—
JFE-HP410	0.25 max.	0.35 max.	0.30 - 0.90	0.035 max.	0.035 max.	—
JFE-HP440	0.30 max.	0.35 max.	0.30 - 1.00	0.035 max.	0.035 max.	—
JFE-HP490	0.30 max.	0.35 max.	0.30 - 1.00	0.035 max.	0.035 max.	—
JFE-HP540	0.23 max.	0.35 max.	1.50 max.	0.035 max.	0.035 max.	0.080 max.

Mechanical Properties

Designation	Applied Thickness mm (min.-max.)	Tensile Test							
		Yield Point min. (N/mm^2)	Tensile Strength min. (N/mm^2)	Elongation min. (%) Thickness mm					Test Piece and Testing Direction
				1.2 ≦ < 1.6	1.6 ≦ < 3.0	3.0 ≦ < 6.0	6.0 ≦ < 13.0	13.0 ≦ ≦ 16	
JFE-HP290	1.2-16.0	—	290	30	32	35	37	38	JIS No.5 Rolling Direction
JFE-HP320	1.2-16.0	175	320	28	30	33	36	37	
JFE-HP340	1.2-16.0	205	340	26	28	31	34	36	
JFE-HP370	1.6-16.0	215	370	—	25	28	31	33	
JFE-HP410	1.6-16.0	245	410	—	22	25	28	30	
JFE-HP440	1.6-16.0	305	440	—	21	24	27	29	
JFE-HP490	1.6-16.0	345	490	—	19	23	25	27	
JFE-HP540	3.0-16.0	390	540	—	—	18	20	22	

Reference : The bend test is available depending on a demand.

In addition to above materials, JFE-HP * * * B for boiler tubes is also available.

JFE-HP290B, JFE-HP320B, JFE-HP340B, JFE-HP370B, JFE-HP410B

Dimension tolerance

Dimensional tolerances are subject to negotiation. Please consult with JFE Steel.

Available product size range

Available product sizes are subject to negotiation. Please consult with JFE Steel.

Hot rolled atmospheric corrosion resistance steel sheets JFE-HCUP

Superior atmospheric corrosion resistance and general corrosion resistance, combined with adequate strength, weldability, and formability for structural applications. Rust stabilizes and does not progress after approximately 2 years. Suitable for exposed parts of buildings and structures.

Chemical Composition

Designation	Chemical Composition (wt%)							
	C	Si	Mn	P	S	Cu	Ni	Cr
JFE-HCUP	0.12 max.	0.25 - 0.75	0.20 - 0.50	0.07 - 0.15	0.035 max.	0.25 - 0.55	0.45 max.	0.30 - 1.00

Mechanical Properties

Designation	Applied Thickness mm (min.-max.)	Thickness mm	Tensile Test				
			Yield Point min. (N/mm²)	Tensile Strength min. (N/mm²)	Elongation min. (%)	Test Piece	Testing Direction
JFE-HCUP	1.6-16.0	1.6 ≦ ≦ 6.0	345	480	22	JIS No.5	Rolling direction
		6.0 < ≦ 16.0	355	490	15	JIS No.1A	

Reference : 1. JIS No.3 test piece for the bend test can be used in case of sheet thickness equal to or less than 5mm.
2. In case of the sheet thicker than 6.0mm of JFE-HCUP, maximum Mn content becomes 0.60%.
3. The bend test is available depending on a demand.

Dimension tolerance

Dimensional tolerances are subject to negotiation. Please consult with JFE Steel.

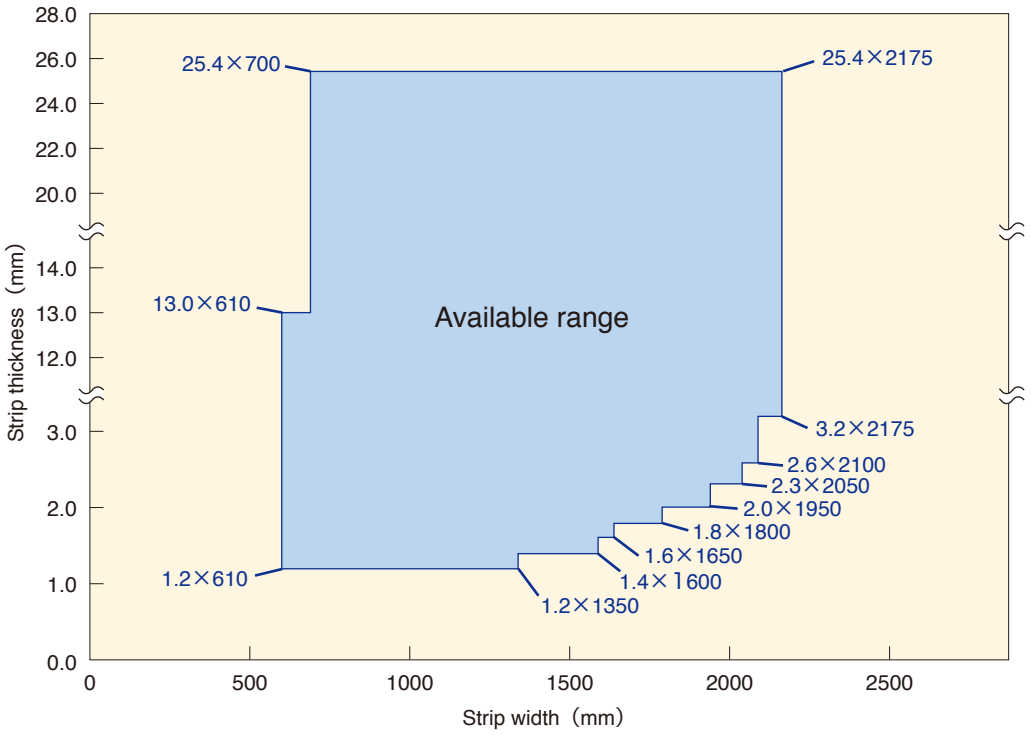
Available product size range

Available product sizes are subject to negotiation. Please consult with JFE Steel.

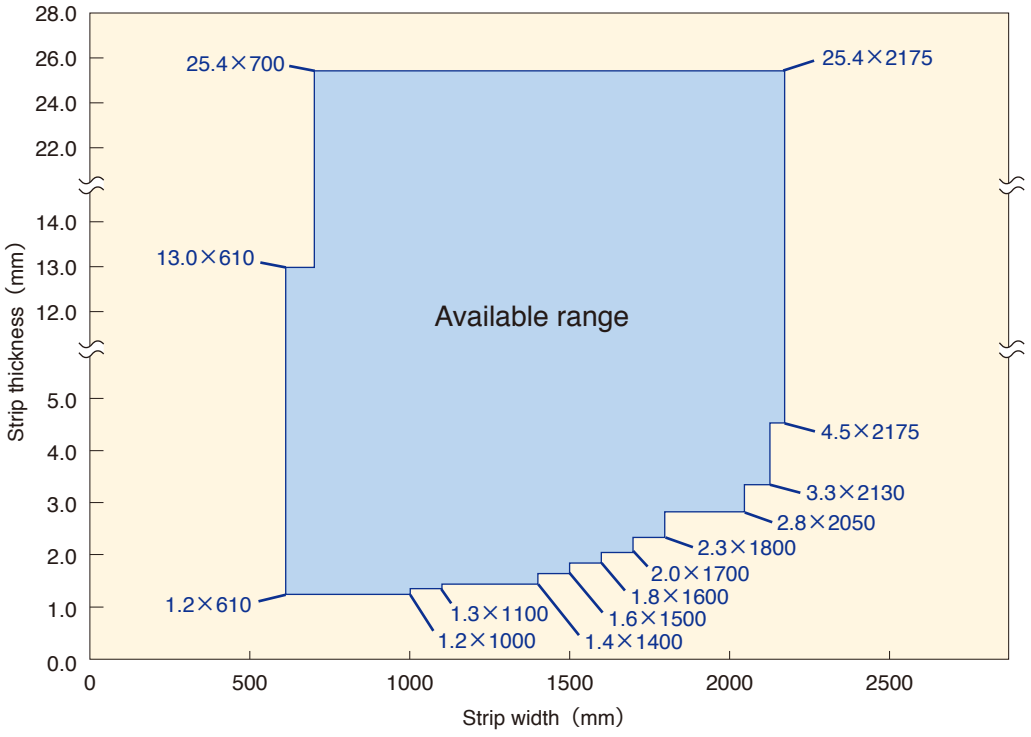
Available product size range (1)

Non pickled coil

Applicable standard: 270N/mm^2 Class



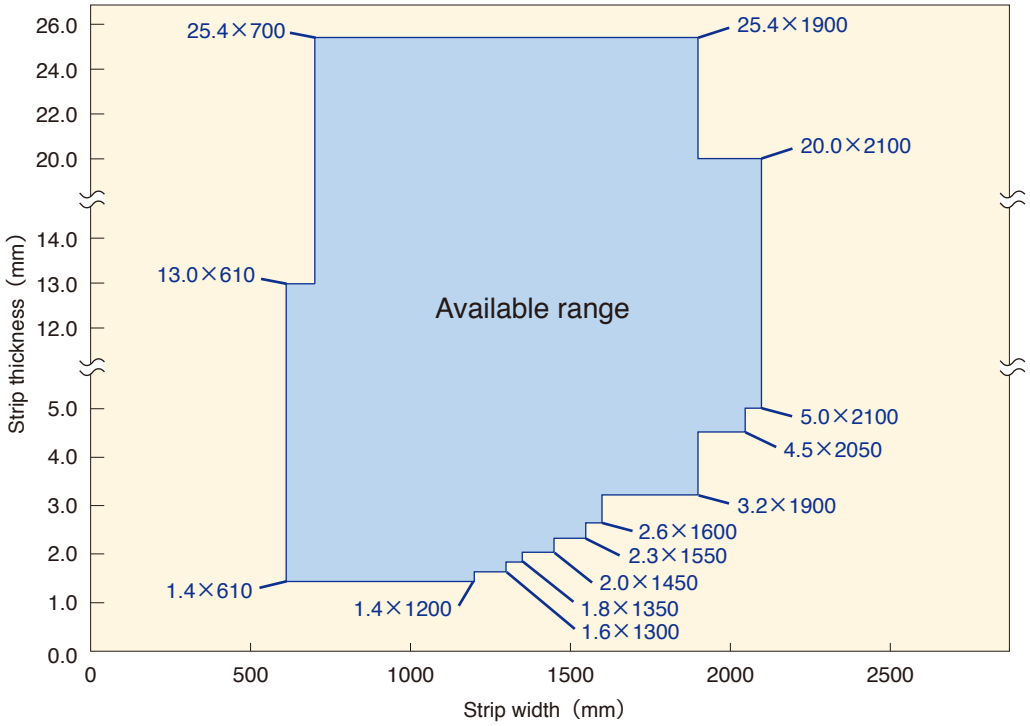
Applicable standard: 440N/mm^2 Class



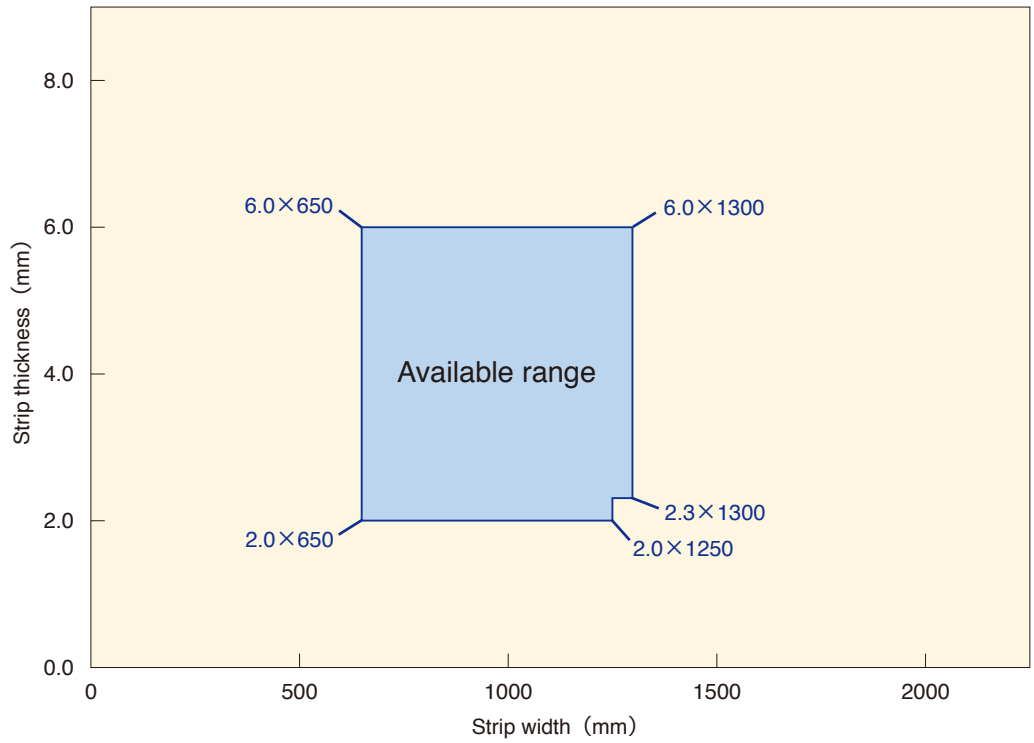
As there may be minor changes of the available product size range according to standard, application and method of working, contact and negotiation will be welcomed.

Size outside the available range is subject to negotiation. Available size for cut-length sheets or slit coil is also subject to negotiation.

Applicable standard: 590N/mm^2 Class



Applicable standard: 780N/mm^2 Class



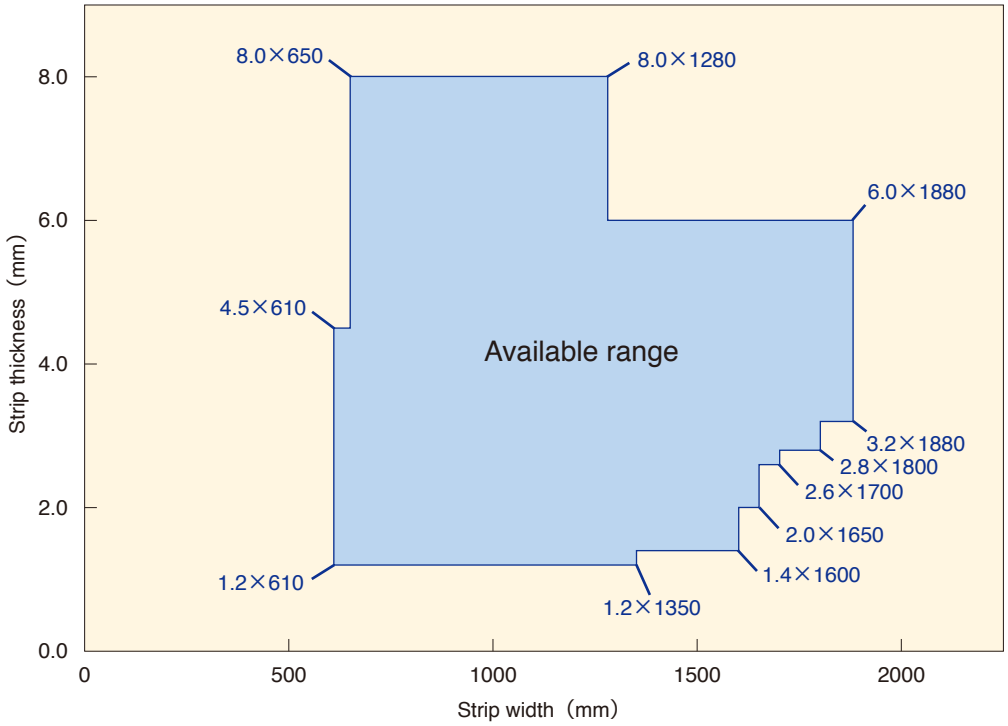
As there may be minor changes of the available product size range according to standard, application and method of working, contact and negotiation will be welcomed.

Size outside the available range is subject to negotiation. Available size for cut-length sheets or slit coil is also subject to negotiation.

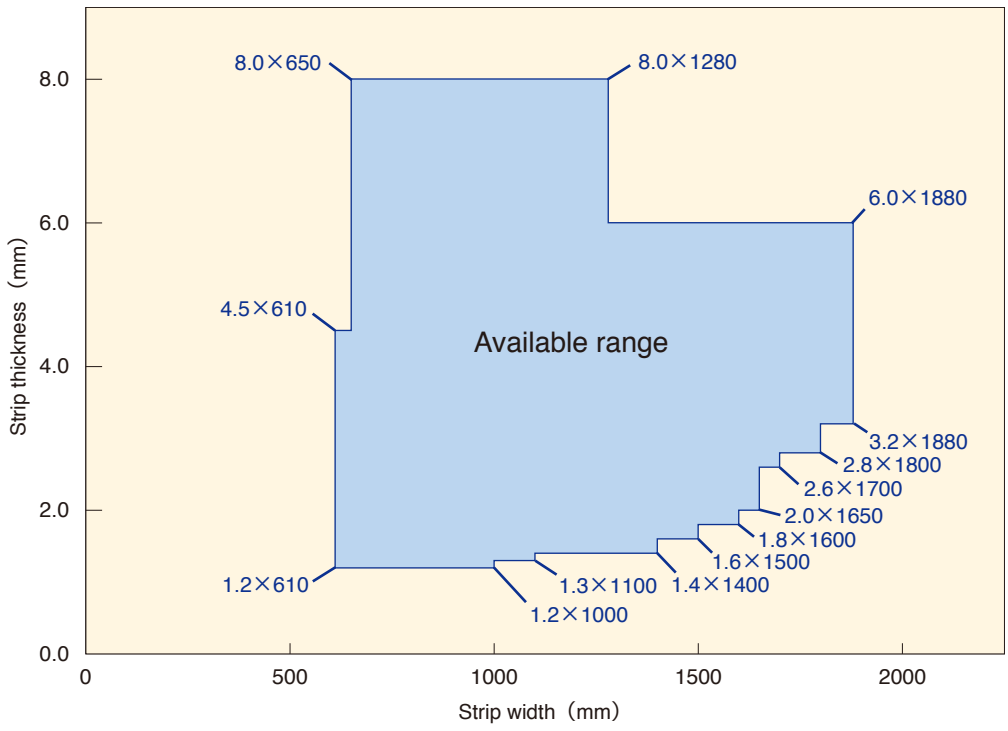
Available product size range (2)

Pickled coil

Applicable standard: 270N/mm^2 Class (Pickled)



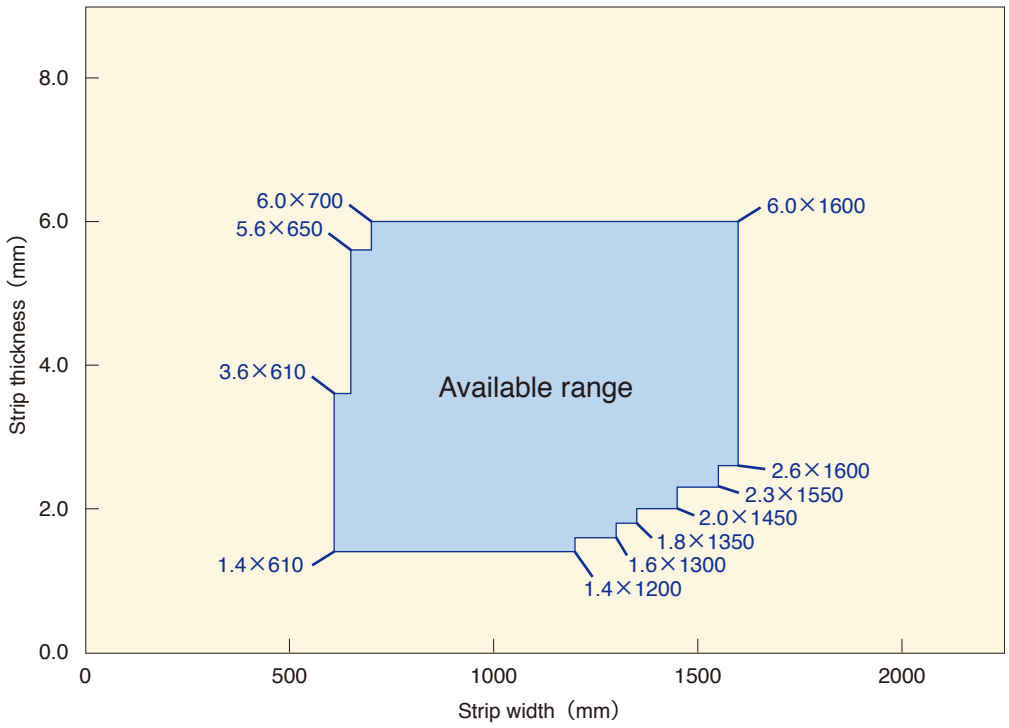
Applicable standard: 440N/mm^2 Class (Pickled)



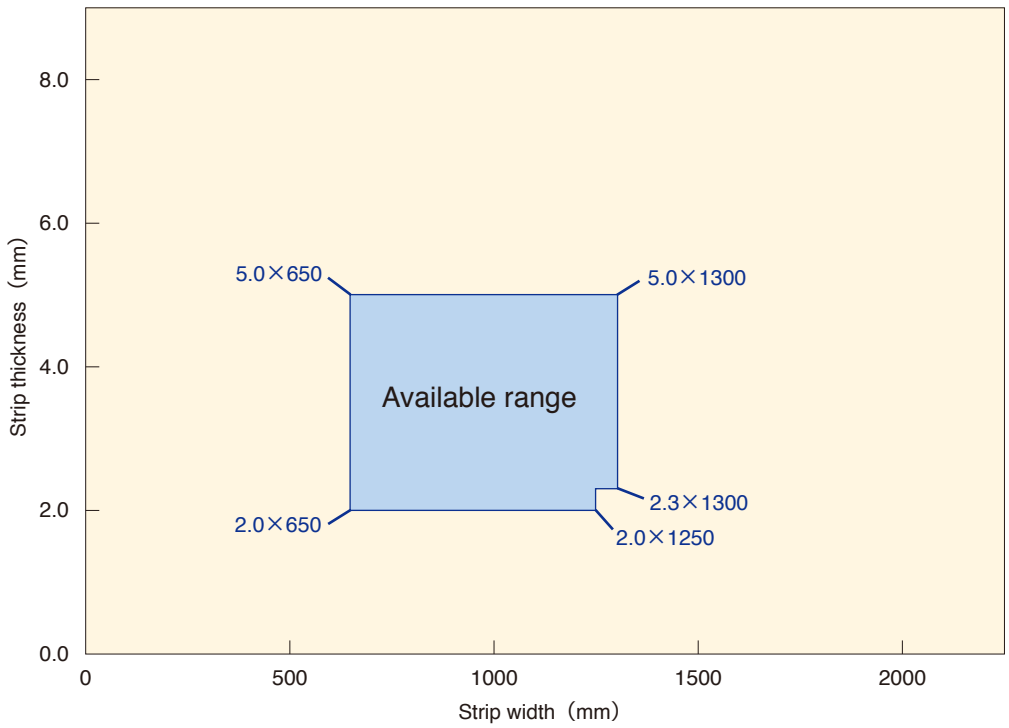
As there may be minor changes of the available product size range according to standard, application and method of working, contact and negotiation will be welcomed.

Size outside the available range is subject to negotiation. Available size for cut-length sheets or slit coil is also subject to negotiation.

Applicable standard: 590N/mm^2 Class (Pickled)



Applicable standard: 780N/mm^2 Class (Pickled)



As there may be minor changes of the available product size range according to standard, application and method of working, contact and negotiation will be welcomed.
Size outside the available range is subject to negotiation. Available size for cut-length sheets or slit coil is also subject to negotiation.

Dimensional tolerance (1)

● Strip thickness tolerance

Table : Thickness tolerance specified in JIS G 3131-2018, JIS G 3132-2018 (Tensile strength less than 490N/mm²)

Strip width mm / Strip thickness mm	Tolerance mm			
	< 1,200	1,200 ≦ < 1,500	1,500 ≦ < 1,800	1,800 ≦ ≦ 2,300
< 1.60	±0.14	±0.15	±0.16 (1)	—
1.60 ≦ , < 2.00	±0.16	±0.17	±0.18	±0.21 (2)
2.00 ≦ , < 2.50	±0.17	±0.19	±0.21	±0.25 (2)
2.50 ≦ , < 3.15	±0.19	±0.21	±0.24	±0.26
3.15 ≦ , < 4.00	±0.21	±0.23	±0.26	±0.27
4.00 ≦ , < 5.00	±0.24	±0.26	±0.28	±0.29
5.00 ≦ , < 6.00	±0.26	±0.28	±0.29	±0.31
6.00 ≦ , < 8.00	±0.29	±0.30	±0.31	±0.35
8.00 ≦ , < 10.0	±0.32	±0.33	±0.34	±0.40
10.0 ≦ , < 12.5	±0.35	±0.36	±0.37	±0.45
12.5 ≦ , ≦ 14.0	±0.38	±0.39	±0.40	±0.50

Notes: (1) The value shall be applied to the steel sheet and coil up to and excluding 1,600mm in width.
(2) The value shall be applied to the steel sheet and coil up to and excluding 2,000mm in width.

Remarks: 1. Thickness tolerances apply to the area 20mm of more from the widthwise edges of steel sheets and coils.
2. In the case of coils, thickness tolerances do not apply to the irregular portions at the head and tail ends of the strip in the rolling process.

Table : Thickness tolerance specified in JIS G 3132-2018 (Tensile strength 490N/mm² and more)

Strip width mm / Strip thickness mm	Tolerance mm			
	< 1,200	1,200 ≦ < 1,500	1,500 ≦ < 1,800	1,800 ≦ ≦ 2,300
< 1.60	±0.14	±0.15	±0.16 (3)	—
1.60 ≦ , < 2.00	±0.16	±0.19	±0.20	—
2.00 ≦ , < 2.50	±0.18	±0.22	±0.23	±0.25 (3)
2.50 ≦ , < 3.15	±0.20	±0.24	±0.26	±0.29
3.15 ≦ , < 4.00	±0.23	±0.26	±0.28	±0.30
4.00 ≦ , < 5.00	±0.26	±0.29	±0.31	±0.32
5.00 ≦ , < 6.00	±0.29	±0.31	±0.32	±0.34
6.00 ≦ , < 8.00	±0.32	±0.33	±0.34	±0.38
8.00 ≦ , < 10.0	±0.35	±0.36	±0.37	±0.44
10.0 ≦ , < 12.5	±0.38	±0.40	±0.41	±0.49
12.5 ≦ , ≦ 13.0	±0.41	±0.44	±0.45	±0.54

Notes: (3) The value shall be applied to the steel sheet and coil up to and excluding 2,000mm in width.

Remarks: 1. Thickness tolerances apply to the area 20mm of more from the widthwise edges of steel sheets and coils.
2. In the case of coils, thickness tolerances do not apply to the irregular portions at the head and tail ends of the strip in the rolling process.

Please refer to the latest standard document for details.

Table :Thickness tolerance specified in JIS G 3193-2019

Strip width mm / Strip thickness mm	Tolerance mm		
	< 1,600	1,600 ≦ < 2,000	2,000 ≦ ≦ 2,300
< 1.25	±0.16	—	—
1.25 ≦ , < 1.60	±0.18	—	—
1.60 ≦ , < 2.00	±0.19	±0.23	—
2.00 ≦ , < 2.50	±0.20	±0.25	—
2.50 ≦ , < 3.15	±0.22	±0.29	±0.29
3.15 ≦ , < 4.00	±0.24	±0.34	±0.34
4.00 ≦ , < 5.00	±0.45	±0.55	±0.55
5.00 ≦ , < 6.30	±0.50	±0.60	±0.60
6.30 ≦ , < 10.0	±0.55	±0.65	±0.65
10.0 ≦ , < 16.0	±0.55	±0.65	±0.65
16.0 ≦ , < 25.0	±0.65	±0.75	±0.75
25.0 ≦ , ≦ 40.0	±0.70	±0.80	±0.80

Reference : 1. Either plus or minus side of the thickness tolerances given in Table may be limited on request. The total tolerances in this case shall be equal to those given in Table.
2. The thickness of mill edge steel strips and sheets cut from such materials is measured at an arbitrary point 25 mm or more from the edges. In the case of cut edge strips and cut sheets, the thickness is measured at an arbitrary point 15 mm or more from the edges.

Please refer to the latest standard document for details.

Dimensional tolerance (2)

Strip width tolerance

Table : Width tolerance specified in JIS G 3193-2019

Width mm	Thickness mm	Tolerance mm						
		Mill edge		Cut edge				
		Steel sheets as rolled (steel sheets with untrimmed edge)	Steel coils and steel sheets in cut length therefrom	A Normal cut edge +	A Normal cut edge −	B Resheared or fine cut edge +	B Resheared or fine cut edge −	C Slitted edge
< 160	< 3.15	—	±2	5	0	2.0	0	±0.3
	3.15 ≦ , < 6.00			5		3.0		±0.5
	6.00 ≦ , < 20.00			10		4.0		—
	20.00 ≦		—	10		—		—
160 ≦ < 250	< 3.15	—	±2	5	0	2.0	0	±0.4
	3.15 ≦ , < 6.00			5		3.0		±0.5
	6.00 ≦ , < 20.00			10		4.0		—
	20.00 ≦		—	15		—		—
250 ≦ < 400	< 3.15	+Not specified 0	±5	5	0	2.0	0	±0.5
	3.15 ≦ , < 6.00			5		3.0		±0.5
	6.00 ≦ , < 20.00			10		4.0		—
	20.00 ≦		—	15		—		—
400 ≦ < 630	< 3.15	+Not specified 0	+20 0	10	0	3.0	0	±0.5
	3.15 ≦ , < 6.00			10		3.0		±0.5
	6.00 ≦ , < 20.00			10		5.0		—
	20.00 ≦		—	15		—		—
630 ≦ < 1,000	< 3.15	+Not specified 0	+25 0	10	0	4.0	0	—
	3.15 ≦ , < 6.00			10		4.0		
	6.00 ≦ , < 20.00			10		6.0		
	20.00 ≦			15		—		
1,000 ≦ < 1,250	< 3.15	+Not specified 0	+30 0	10	0	4.0	0	—
	3.15 ≦ , < 6.00			10		4.0		
	6.00 ≦ , < 20.00			15		6.0		
	20.00 ≦			15		—		
1,250 ≦ < 1,600	< 3.15	+Not specified 0	+35 0	10	0	4.0	0	—
	3.15 ≦ , < 6.00			10		4.0		
	6.00 ≦ , < 20.00			15		6.0		
	20.00 ≦			15		—		
1,600 ≦	< 3.15	+Not specified 0	+40 0	10	0	4.0	0	—
	3.15 ≦ , < 6.00			10		4.0		
	6.00 ≦ , < 20.00			20		6.0		
	20.00 ≦			20		—		

Remarks: For the mill edge steel strip less than 400mm in width than cut lengths therefrom, the width tolerance on minus side may be limited to zero. In this case, the tolerance on plus side shall be twice the values given in Table.

Length tolerance

Table : Length tolerance specified in JIS G 3193-2019

A Normal cut edge

Length mm	Tolerance mm	
600 ≦ L < 4000	+20	0
4000 ≦ L < 6000	+30	0
6000 ≦ L < 8000	+40	0
8000 ≦ L < 10000	+50	0
10000 ≦ L < 15000	+75	0
15000 ≦ L < 20000	+100	0
20000 ≦ L	+0.5%	0

Remarks: Upon request, may be moved to the minus side within the same width as the total tolerance range of the specified length. However, the upper limit value of the agreed tolerance cannot be less than zero.

B Resheared or fine cut edge

Length mm	Thickness mm	Tolerance mm	
< 6300	< 6.00	+5	0
	6.00 ≦	+10	0
6300 ≦	< 6.00	+10	0
	6.00 ≦	+15	0

Remarks: Not applicable to thicknesses of 20 mm and more.

Please refer to the latest standard document for details.

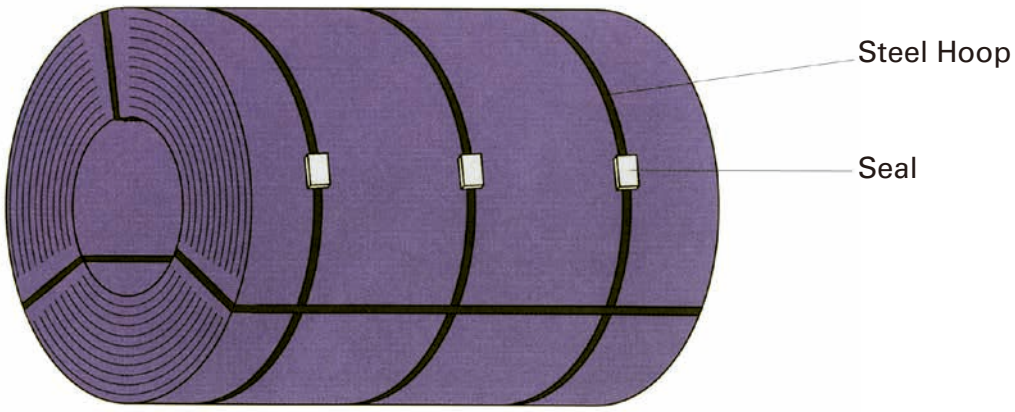
Packaging and labeling / Instructions for ordering

Packaging and labeling

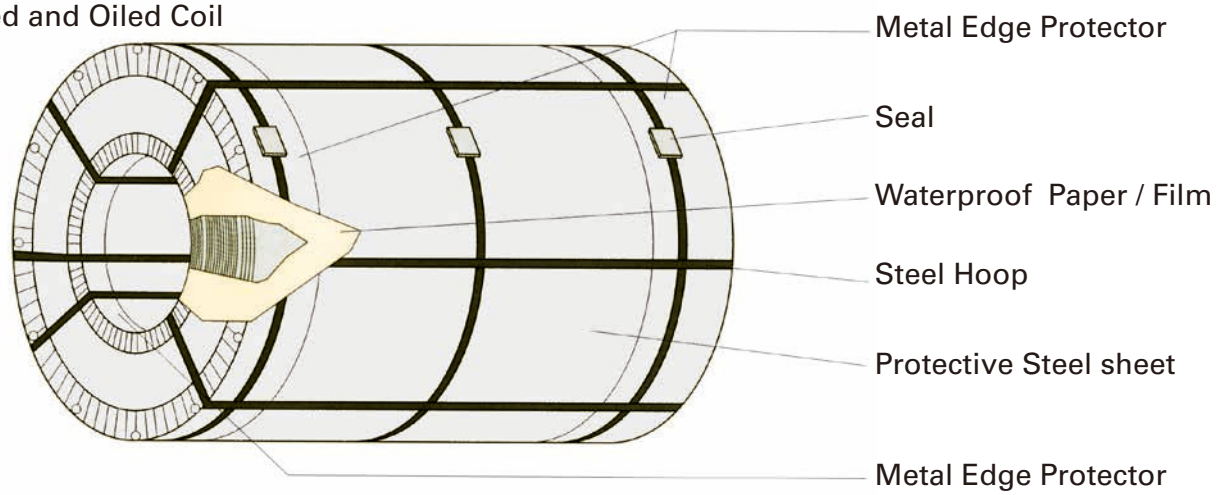
Packaging

Products are packaged according to applicable standards and preserved in a properly controlled environment until shipment.

● Hot-Rolled Coil



● Picked and Oiled Coil



Labels showing the product standard, dimensions, weight, and product serial no. are attached to the product

Instructions for ordering

When ordering, please give detailed information, including the following.

Detailed information on product requirements;
Standard, dimensions, quantity, surface finish, packaging specifications (inner and outer diameter, mass conditions), delivery date requirements

Application and processing method

Intended application, processing method, any heat treatments, welding, and/or surface treatment to be applied, and any other requirements.

Excerpts from public standards

Japanese Industrial Standard (JIS) (1)

JIS G 3131 – 2018 Hot-Rolled Mild Steel Plates, Sheets and Strip

● Chemical Composition

Unit : %

Symbol	Chemical Composition			
	C	Mn	P	S
SPHC	0.12 max.	0.60 max.	0.045 max.	0.035 max.
SPHD	0.10 max.	0.45 max.	0.035 max.	0.035 max.
SPHE	0.08 max.	0.40 max.	0.030 max.	0.030 max.
SPHF	0.08 max.	0.35 max.	0.025 max.	0.025 max.

Remarks : Alloy elements other than those listed in this table may be added as required.

● Mechanical Properties

Symbol	Tensile Strength N/mm²	Elongation %						Tensile Test Piece	Bendability			
		Thickness 1.2mm or over to and excl. 1.6mm	Thickness 1.6mm or over to and excl. 2.0mm	Thickness 2.0mm or over to and excl. 2.5mm	Thickness 2.5mm or over to and excl. 3.2mm	Thickness 3.2mm or over to and excl. 4.0mm	Thickness 4.0mm or over		Bending Angle	Inside Radius		Test Piece
										Thickness up to and excl. 3.2mm	Thickness 3.2mm or over	
SPHC	270 min.	27 min.	29 min.	29 min.	29 min.	31 min.	31 min.	No.5 in rolling direction	180°	Flat on itself	Thickness × 0.5	No.3 in rolling direction
SPHD	270 min.	30 min.	32 min.	33 min.	35 min.	37 min.	39 min.		—	—	—	
SPHE	270 min.	32 min.	34 min.	35 min.	37 min.	39 min.	41 min.		—	—	—	
SPHF	270 min.	37 min.	38 min.	39 min.	39 min.	40 min.	42 min.		—	—	—	

Remarks : The following upper tensile strength limits may be applied by agreement between the purchaser and the supplier.
SPHC : 440N/mm², SPHD : 420N/mm², SPHE : 400N/mm², SPHF : 380N/mm²

Please refer to the latest standard document for details.

JIS G 3101 – 2020 Rolled Steels for General Structure

Chemical Composition

Unit : %

Symbol	Chemical Composition			
	C	Mn	P	S
SS 330 SS 400 SS 490	—	—	0.050 max.	0.050 max.
SS 540	0.30 max.	1.60 max.	0.040 max.	0.040 max.

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

Mechanical Properties

Symbol	Yield point or Yield Strength N/mm²		Tensile Strength N/mm²	Thickness of rolled steel mm	Test Piece	Elon-gation %	Bendability		
	Thickness of rolled steel mm						Angle of Bending	Inside Radius	Test Piece
	16 or under	Over 16 up to 40							
SS 330	205 min.	195 min.	330 to 430	5 or under in thickness	No.5	26 min.	180°	Half of thickness	No1
				Over 5 up to 16 in thickness	No.1A	21 min.			
				Over 16 up to 50 in thickness	No.1A	26 min.			
SS 400	245 min.	235 min.	400 to 510	5 or under in thickness	No.5	21 min.	180°	1.5 times the thickness	No1
				Over 5 up to 16 in thickness	No.1A	17 min.			
				Over 16 up to 50 in thickness	No.1A	21 min.			
SS 490	285 min.	275 min.	490 to 610	5 or under in thickness	No.5	19 min.	180°	2.0 times the thickness	No1
				Over 5 up to 16 in thickness	No.1A	15 min.			
				Over 16 up to 50 in thickness	No.1A	19 min.			
SS 540	400 min.	390 min.	540min.	5 or under in thickness	No.5	16 min.	180°	2.0 times the thickness	No1
				Over 5 up to 16 in thickness	No.1A	13 min.			
				Over 16 up to 50 in thickness	No.1A	17 min.			

Remarks : No.3 test piece may be used for the bend test for the steel product 5mm or under in thickness.

Please refer to the latest standard document for details.

Japanese Industrial Standard (JIS) (2)

JIS G 3106 – 2020 Rolled Steels for Welded Structure

Chemical Composition

Unit : %

Symbol	Thickness of steel	Chemical Composition				
		C	Si	Mn	P	S
SM 400 A	Up to and inc. 50mm	0.23 max.	—	2.5 x C min.(1)	0.035 max.	0.035 max.
SM 400 B	Up to and inc. 50mm	0.20 max.	0.35 max.	0.60 to 1.50	0.035 max.	0.035 max.
SM 400 C	Up to and inc. 100mm	0.18 max.	0.35 max.	0.60 to 1.50	0.035 max.	0.035 max.
SM 490 A	Up to and inc. 50mm	0.20 max.	0.55 max.	1.65 max.	0.035 max.	0.035 max.
SM 490 B	Up to and inc. 50mm	0.18 max.	0.55 max.	1.65 max.	0.035 max.	0.035 max.
SM 490 C	Up to and inc. 100mm	0.18 max.	0.55 max.	1.65 max.	0.035 max.	0.035 max.
SM 490YA	Up to and inc. 100mm	0.20 max.	0.55 max.	1.65 max.	0.035 max.	0.035 max.
SM 490YB						
SM 520 B	Up to and inc. 100mm	0.20 max.	0.55 max.	1.65 max.	0.035 max.	0.035 max.
SM 520 C						
SM 570	Up to and inc. 100mm	0.18 max.	0.55 max.	1.70 max.	0.035 max.	0.035 max.

Note : (1) The value of carbon shall be applied the values of actual ladle analysis.
Remarks : Alloy elements other than those given in Table may be added as necessary.

Mechanical Properties

Symbol	Yield Point or Proof Stress N/mm²		Tensile Strength N/mm²	Elongation		
	Thickness of steel mm		Thickness of steel mm	Thickness of steel mm	Test Piece	%
	16 or under	Over 16 up to 40	100 or under			
SM 400 A SM 400 B SM 400 C	245 min.	235 min.	400 to 510	Up to and incl. 5	No.5	23 min.
				Over 5, up to and incl. 16	No.1A	18 min.
				Over 16, up to and incl. 50	No.1A	22 min.
SM 490 A SM 490 B SM 490 C	325 min.	315 min.	490 to 610	Up to and incl. 5	No.5	22 min.
				Over 5, up to and incl. 16	No.1A	17 min.
				Over 16, up to and incl. 50	No.1A	21 min.
SM 490YA SM 490YB	365 min.	355 min.	490 to 610	Up to and incl. 5	No.5	19 min.
				Over 5, up to and incl. 16	No.1A	15 min.
				Over 16, up to and incl. 50	No.1A	19 min.
SM 520 B SM 520 C	365 min.	355 min.	520 to 640	Up to and incl. 5	No.5	19 min.
				Over 5, up to and incl. 16	No.1A	15 min.
				Over 16, up to and incl. 50	No.1A	19 min.
SM 570	460 min.	450 min.	570 to 720	Up to and incl. 16	No.5	19 min.
				Over 16	No.5	26 min.
				Over 20	No.4	20 min.

Charpy Absorption Energy

Symbol	Test Temperature ˚C	Charpy Absorption Energy J	Test Piece
SM 400 B	0	27 min.	V notch in rolling direction
SM 400 C	0	47 min.	
SM 490 B	0	27 min.	
SM 490 C	0	47 min.	
SM 490YB	0	27 min.	
SM 520 B	0	27 min.	
SM 520 C	0	47 min.	
SM 570	-5	47 min.	

Remarks : 1. If the test temperature is lower than these test temperatures by agreement between the purchaser and the supplier, the test temperature may be substituted.
2. The rolling direction test may be omitted with the approval of the orderer when the rolling direction test and the transverse direction test are conducted by agreement between the purchaser and the supplier.

Please refer to the latest standard document for details.

Excerpts from public standards

JIS G 3113 – 2018 Hot-Rolled Steel Plates, Sheets and Strip for Automobile Structural Uses

Chemical Composition

Unit : %

Symbol	Chemical Composition	
	P	S
SAPH 310, SAPH370, SAPH400, SAPH440	0.040 max.	0.040 max.

Remarks : Alloy elements other than those listed in this table may be added as required.

Mechanical Properties

Symbol	Tensile Strength N/mm²	Yield Point N/mm²			Elongation %						Tensile Test Piece	Bendability			
		Thickness			Thickness							Bending Angle	Inside Radius		Test Piece
		Thickness up to and excl. 6mm	Thickness 6mm or over to and excl. 8mm	Thickness 8mm or over to and incl. 14mm	Thickness 1.6mm or over to and excl. 2.0mm	Thickness 2.0mm or over to and excl. 2.5mm	Thickness 2.5mm or over to and excl. 3.15mm	Thickness 3.15mm or over to and excl. 4.0mm	Thickness 4.0mm or over to and excl. 6.3mm	Thickness 6.3mm or over to and incl. 14mm			Thickness up to and excl. 2.0mm	Thickness 2.0mm or over	
SAPH 310	310 min.	(185) min.	(185) min.	(175) min.	33 min.	34 min.	36 min.	38 min.	40 min.	41 min.	No.5 Test Piece In rolling direction	180°	Flat on itself	Thickness × 1.0	No.3 trans-versely to rolling direction
SAPH 370	370 min.	225 min.	225 min.	215 min.	32 min.	33 min.	35 min.	36 min.	37 min.	38 min.		180°	Thickness ×0.5	Thickness × 1.0	
SAPH 400	400 min.	255 min.	235 min.	235 min.	31 min.	32 min.	34 min.	35 min.	36 min.	37 min.		180°	Thickness × 1.0	Thickness × 1.0	
SAPH 440	440 min.	305 min.[2]	295 min.[3]	275 min.[4]	29 min.	30 min.	32 min.	33 min.	34 min.	35 min.		180°	Thickness × 1.0	Thickness × 1.5	

Remarks : 1. The figures in ( ) are given for informative reference.
2. This value may be 275 minimum N/mm² by agreement between the purchaser and the supplier.
3. This value may be 265 minimum N/mm² by agreement between the purchaser and the supplier.
4. This value may be 255 minimum N/mm² by agreement between the purchaser and the supplier.

Please refer to the latest standard document for details.

JIS G 3116 – 2020 Steel sheets, plates and strip for gas cylinders

Chemical Composition

Unit : %

Symbol	Chemical Composition				
	C	Si	Mn	P	S
SG 255	0.20 max.	—	0.30 max.	0.020 max.	0.020 max.
SG 295	0.20 max.	0.35 max.	1.00 max.	0.020 max.	0.020 max.
SG 325	0.20 max.	0.55 max.	1.50 max.	0.020 max.	0.020 max.
SG 365	0.20 max.	0.55 max.	1.50 max.	0.020 max.	0.020 max.

Remarks : Alloying elements other than those shown in the table may be added if necessary.

Mechanical Properties

Symbol	Yield Point or Proof Stress N/mm²	Tensile Strength N/mm²	Elongation %	Tensile Test Piece	Bendability		
					Bending Angle	Inside Radius	Test Piece
SG 255	255 min.	400 min.	28 min.	No.5 in rolling direction	180°	Thickness×1.0	No.3 in rolling direction
SG 295	295 min.	440 min.	26 min.		180°	Thickness×1.5	
SG 325	325 min.	490 min.	22 min.		180°		
SG 365	365 min.	540 min.	20 min.		180°		

Remarks : The values specified shall not be applied for irregular portions on each end of steel strip.

Please refer to the latest standard document for details.

Japanese Industrial Standard (JIS) (3)

JIS G 3125 – 2021 Superior Atmospheric Corrosion Resisting Rolled Steels

Chemical Composition

Unit : %

Symbol	Chemical Composition							
	C	Si	Mn [2]	P	S	Cu	Cr	Ni
SPA-H	0.12 max.	0.25 to 0.75	0.60 max.	0.070 to 0.150	0.035 max.	0.25 to 0.55	0.30 to 1.25	0.65 max.

Remarks : (1) Alloy elements other than those listed in this table may be added as required.
(2) The upper limit of Mn may be 1.0% maximum by agreement between the purchaser and the supplier.

Mechanical Properties

Symbol	Thickness	Yield Point or Proof Stress N/mm²	Tensile Strength N/mm²	Tensile Test Piece	Elongation %	Bendability		
						Bending Angle	Inside Radius	Test Piece
SPA-H	6.0 mm or under	355 min.[2]	490 min.	No.5	22	180°	0.5 × thickness [1]	No.1 in the direction of rolling
	over 6.0 mm	355 min.	490 min.	No.1A	15	180°	1.5 × thickness	

Note : (1) For SPA-H steel sheet and strip of 6.0mm and under in thickness, inside radius for bend ability may be 1.0 times as large as the thickness subject to agreement between the parties concerned.
(2) For SPA-H steel sheet and strip of less than 3.0mm in thickness, tensile strength may be 510 N/mm² min. by agreement between the purchaser and the supplier.

Please refer to the latest standard document for details.

JIS G 3132 – 2018 Hot-Rolled Carbon Steel Strip for Pipes and Tubes

Chemical Composition

Unit : %

Symbol	Chemical Composition				
	C	Si [2]	Mn	P	S
SPHT 1	0.10 max.	0.35 max.	0.50 max.	0.040 max.	0.040 max.
SPHT 2	0.18 max.	0.35 max.	0.60 max.	0.040 max.	0.040 max.
SPHT 3	0.25 max.	0.35 max.	0.30 to 0.90	0.040 max.	0.040 max.
SPHT 4	0.30 max.	0.35 max.	0.30 to 1.00	0.040 max.	0.040 max.

Remarks : (1) Alloy elements other than those listed in this table may be added as required.
(2) In the case of hot dip galvanizing of steel tubes, this may be less than 0.04%, depending on the agreement between the purchaser and the supplier.

Mechanical Properties

Symbol	Tensile Strength N/mm²	Elongation %				Tensile Test Piece	Bendability			
		1.2mm or over to and excl. 1.6mm in thickness	1.6mm or over to and excl. 3.0mm in thickness	3.0mm or over to and excl. 6.0mm in thickness	6.0mm or over up to and incl. 13mm in thickness		Bending Angle	Inside Radius		Test Piece
								3.0mm or under in thickness	Over 3.0mm up to and incl. 13mm in thickness	
SPHT 1	270 min.	30 min.	32 min.	35 min.	37 min.	No.5 Test Piece taken in rolling direction	180°	Flat on itself	Thickness × 0.5	No.3 taken in rolling direction
SPHT 2	340 min.	25 min.	27 min.	30 min.	32 min.		180°	Thickness × 1.0	Thickness × 1.5	
SPHT 3	410 min.	— [1]	22 min.	25 min.	27 min.		180°	Thickness × 1.5	Thickness × 0.5	
SPHT 4	490 min.	— [1]	18 min.	20 min.	22 min.		180°	Thickness × 1.5	Thickness × 2.0	

Remarks : (1) The following minimum elongation limits may be applied by agreement between the purchaser and the supplier.
SPHT3 : 20% SPHT4 : 15%

Please refer to the latest standard document for details.

JIS G 3134 – 2018 Hot Rolled High Strength Steel Sheets with Improved Formability for Automobile Structural Uses

Chemical Composition

The chemical composition is not specified.

Mechanical Properties

Symbol	Tensile Strength N/mm²	Yield Point or Proof Stress N/mm²	Elongation % Thickness mm 1.6 or over to and excl. 2.0	2.0 or over to and excl. 2.5	2.5 or over to and excl. 3.25	3.25 or over up to and incl. 6.0	Test Piece	Bendability Bending Angle	Inside Radius Thickness mm 1.6 or over to and excl. 3.25	3.25 or over up to and incl. 6.0	Test Piece
SPFH 490	490 min.	325 min.	22 min.	23 min.	24 min.	25 min.	No.5 test piece taken in transverse direction	180°	Thickness × 0.5	Thickness × 1.0	No.3 test piece taken in transverse direction
SPFH 540	540 min.	355 min.	21 min.	22 min.	23 min.	24 min.			Thickness × 1.0	Thickness × 1.5	
SPFH 590	590 min.	420 min.	19 min.	20 min.	21 min.	22 min.			Thickness × 1.5	Thickness × 1.5	
SPFH 540Y	540 min.	295 min.	—	24 min.	25 min.	26 min.			Thickness × 1.0	Thickness × 1.5	
SPFH 590Y	590 min.	325 min.	—	22 min.	23 min.	24 min.			Thickness × 1.5	Thickness × 1.5	

Please refer to the latest standard document for details.

ASTM Standard (1)

ASTM A36/A36M – 19 Carbon Structural Steel

Chemical Requirements

Unit : %

Thickness, in. [mm]	Chemical Composition C	Si	Mn	P	S	Cu
To 3/4 [20], incl.	0.25 max.	0.40 max.	—	0.030 max.	0.030 max.	0.20 min, when specified.
Over 3/4 to 1½ [20 to 40], incl.	0.25 max.	0.40 max.	0.80-1.20	0.030 max.	0.030 max.	0.20 min, when specified.

Tensile Requirements

Yield Point, min. ksi [MPa]	Tensile Strength, ksi [MPa]	Elongation % in 2 in. [50mm]	Bend Test
36 [250]	58-80 [400-550]	23 min.	—

Remarks : For plates wider than 24in.[600mm], the elongation requirement is reduced two percentage points.

Please refer to the latest standard document for details.
For ASTM Standards inquiries, JFE Steel may propose modified standard.
(Please contact JFE Steel for details)

ASTM Standard (2)

ASTM A1011/A1011M – 23 Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

Chemical Composition

Unit : %

Designation	Grade	Type Class	Chemical composition Element maximum unless otherwise shown														
			C	Mn	P	S	Al	Si	Cu	Ni	Cr [B]	Mo	V	Cb/Nb [G]	Ti [C]	N	B
CS	Commercial grade	Type A	0.10	0.60	0.030	0.035	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	A
		Type B	0.02-0.15	0.60	0.030	0.035	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	A
		Type C	0.08	0.60	0.10	0.035	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	A
		Type D	0.10	0.70	0.030	0.035	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.008	A	A
DS	Drawing grade	Type A	0.08	0.50	0.020	0.030	0.01 min.	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	A
		Type B	0.02-0.08	0.50	0.020	0.030	0.01 min.	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	A
SS	Grade 30 [205]		0.25	0.90	0.035	0.04	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	—
	Grade 33 [230]		0.25	0.90	0.035	0.04	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	—
	Grade 36 [250]	Type 1	0.25	0.90	0.035	0.04	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	—
	Grade 36 [250]	Type 2 [D]	0.25	1.35	0.035	0.04	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	—
	Grade 40 [275]		0.25	0.90	0.035	0.04	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	—
	Grade 45 [310]	Type 1 [D]	0.25	1.35	0.035	0.04	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	—
	Grade 45 [310]	Type 2	0.02-0.08	0.30-1.30	0.030-0.070	0.025	0.02-0.08	0.60	0.20	0.20	0.15	0.06	0.008	0.008	0.008	0.010-0.030	—
	Grade 50 [340] [D]		0.25	1.35	0.035	0.04	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	—
	Grade 55 [380] [D]		0.25	1.35	0.035	0.04	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	—
	Grade 60 [410]		0.25	1.35	0.035	0.04	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	—
	Grade 70 [480]		0.25	1.35	0.035	0.04	A	A	0.20	0.20	0.15	0.06	0.008	0.008	0.025	A	—
HSLAS [E]	Grade 45 [310]	Class 1 [D]	0.22	1.35	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	A	—
	Grade 45 [310]	Class 2	0.15	1.35	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min	0.005 min	0.005 min	A	—
	Grade 50 [340]	Class 1 [D]	0.23	1.35	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	A	—
	Grade 50 [340]	Class 2	0.15	1.35	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	A	—
	Grade 55 [380]	Class 1 [D]	0.25	1.35	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	A	—
	Grade 55 [380]	Class 2	0.15	1.35	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	A	—
	Grade 60 [410]	Class 1	0.26	1.50	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	A	—
	Grade 60 [410]	Class 2	0.15	1.50	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	A	—
	Grade 65 [450]	Class 1	0.26	1.50	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	F	—
	Grade 65 [450]	Class 2	0.15	1.50	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	F	—
	Grade 70 [480]	Class 1	0.26	1.65	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	F	—
	Grade 70 [480]	Class 2	0.15	1.65	0.04	0.04	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	F	—
HSLAS-F [E]	Grade 50 [340]		0.15	1.65	0.020	0.025	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	F	—
	Grade 60 [410]		0.15	1.65	0.020	0.025	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	F	—
	Grade 70 [480]		0.15	1.65	0.020	0.025	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	F	—
	Grade 80 [550] [D]		0.15	1.65	0.020	0.025	A	A	0.20	0.20	0.15	0.06	0.005 min.	0.005 min.	0.005 min.	F	—
UHSS [E]	Grade 90 [620]	Type 1	0.15	2.00	0.020	0.025	A	A	0.20	0.20	0.15	0.40	0.005 min.	0.005 min.	0.005 min.	F	—
	Grade 100 [690]	Type 1	0.15	2.00	0.020	0.025	A	A	0.20	0.20	0.15	0.40	0.005 min.	0.005 min.	0.005 min.	F	—
	Grade 90 [620]	Type 2	0.15	2.00	0.020	0.025	A	A	0.60	0.50	0.30	0.40	0.005 min.	0.005 min.	0.005 min.	F	—
	Grade 100 [690]	Type 2	0.15	2.00	0.020	0.025	A	A	0.60	0.50	0.30	0.40	0.005 min.	0.005 min.	0.005 min.	F	—

Remarks : (A) There is no specified limit, but the analysis shall be reported.
(B) When copper is specified, a minimum of 0.20% is required. When copper steel is not specified, the copper limit is a maximum requirement.
(C) Titanium is permitted for SS designations, at the producer's option, to the lesser of 3.4N+1.5S or 0.025%. This does not apply to Grade 45[310] Type2.
(D) For each reduction of 0.01% below the specified carbon maximum, an increase of 0.06% manganese above the specified maximum will be permitted up to a maximum of 1.50% for SS Grade 36 Type2, 45 Type1, 50 and 55, as well as for HSLAS Grade 45 Class1, 50 Class1, and 55 Class1, and to a maximum of 1.90% for HSLA-F Grade 80.
(E) HSLAS, HSLAS-F, and UHSS steels contain the strengthening elements columbium (niobium), vanadium, and titanium added singly or in combination. The minimum requirements only apply to the microalloy elements selected for strengthening of the steel.
(F) The purchaser has the option of restricting the nitrogen content. It should be noted that, depending on the microalloying scheme (for example, use of vanadium) of the producer, nitrogen may be a deliberate addition. Consideration should be made for use of nitrogen binding elements (for example, vanadium, titanium).
(G) Columbium (Cb) and niobium (Nb) are considered interchangeable names for element 41 in the periodic table and both name are acceptable for use.

Excerpts from public standards

Mechanical Property Requirements

Designation	Grade	Type Class	Yield Strength ksi [MPa]	Elongation in 2 in. [50mm] %
CS	Commercial grade	Type A	30-50 [205-340]	≧25
		Type B		
		Type C		
		Type D		
DS	Drawing grade	Type A	30-45 [205-310]	≧28
		Type B		

Designation	Grade	Type Class	Yield Strength ksi [MPa] min. or range	Tensile Strength ksi [MPa] min. or range	Elongation in 2 in. [50mm] min., % for Thickness		
					Under 0.230-0.097 in. [6.0-2.5mm]	Under 0.097-0.064 in. [2.5-1.6mm]	Under 0.064-0.025 in. [1.6-0.65mm]
SS	Grade 30 [205]		30 [205]	49 [340]	25	24	21
	Grade 33 [230]		33 [230]	52 [360]	23	22	18
	Grade 36 [250]	Type 1	36 [250]	53 [365]	22	21	17
	Grade 36 [250]	Type 2	36 [250]	58-80 [400-550]	21	20	16
	Grade 40 [275]		40 [275]	55 [380]	21	20	15
	Grade 45 [310]	Type 1	45 [310]	60 [410]	19	18	13
	Grade 45 [310]	Type 2	40-60 [310-410]	60 [410]	20	19	14
	Grade 50 [340]		50 [340]	65 [450]	17	16	11
	Grade 55 [380]		55 [380]	70 [480]	15	14	9
	Grade 60 [410]		60 [410]	75 [520]	14	13	8
	Grade 70 [480]		70 [480]	85 [585]	13	12	7

Designation	Grade	Type Class	Yield Strength ksi [MPa] min.	Tensile Strength ksi [MPa] min.	Elongation in 2 in. [50mm] min., % for Thickness	
					Over 0.097 in. [2.5mm]	Up to 0.097 in. [2.5mm]
HSLAS	Grade 45 [310]	Class 1	45 [310]	60 [410]	25	23
	Grade 45 [310]	Class 2	45 [310]	55 [380]	25	23
	Grade 50 [340]	Class 1	50 [340]	65 [450]	22	20
	Grade 50 [340]	Class 2	50 [340]	60 [410]	22	20
	Grade 55 [380]	Class 1	55 [380]	70 [480]	20	18
	Grade 55 [380]	Class 2	55 [380]	65 [450]	20	18
	Grade 60 [410]	Class 1	60 [410]	75 [520]	18	16
	Grade 60 [410]	Class 2	60 [410]	70 [480]	18	16
	Grade 65 [450]	Class 1	65 [450]	80 [550]	16	14
	Grade 65 [450]	Class 2	65 [450]	75 [520]	16	14
	Grade 70 [480]	Class 1	70 [480]	85 [585]	14	12
	Grade 70 [480]	Class 2	70 [480]	80 [550]	14	12
HSLAS-F	Grade 50 [340]		50 [340]	60 [410]	24	22
	Grade 60 [410]		60 [410]	70 [480]	22	20
	Grade 70 [480]		70 [480]	80 [550]	20	18
	Grade 80 [550]		80 [550]	90 [620]	18	16
UHSS	Grade 90 [620]	Type1 and 2	90 [620]	100 [690]	16	14
	Grade 100 [690]	Type1 and 2	100 [690]	110 [760]	14	12

Remarks : For coil products, testing by the producer is limited to the end of the coil. Mechanical properties throughout the coil shall comply with the minimum values specified.

Please refer to the latest standard document for details.
For ASTM Standards inquiries, JFE Steel may propose modified standard.
(Please contact JFE Steel for details)

SAE Standard

J403- 2014

Chemical Composition

UNS No.	SAE No.	Chemical Composition limits, %			
		C	Mn	P, max.	S, max.
G10020 (1)	1002 (1)	0.02 - 0.04	0.35 max.	0.030	0.035
G10030 (1)	1003 (1)	0.02 - 0.06	0.35 max.	0.030	0.035
G10040 (1)	1004 (1)	0.02 - 0.08	0.35 max.	0.030	0.035
G10050 (2)	1005 (2)	0.06 max.	0.35 max.	0.030	0.035
G10060 (2)	1006 (2)	0.08 max.	0.45 max.	0.030	0.035
G10070 (1)	1007 (1)	0.02 - 0.10	0.50 max.	0.030	0.035
G10080 (2)	1008 (2)	0.10 max.	0.50 max.	0.030	0.035
G10090 (2)	1009 (2)	0.15 max.	0.60 max.	0.030	0.035
G10100	1010	0.08 - 0.13	0.30 - 0.60	0.030	0.035
G10120	1012	0.10 - 0.15	0.30 - 0.60	0.030	0.035
G10130	1013	0.11 - 0.16	0.30 - 0.60	0.030	0.035
G10150	1015	0.13 - 0.18	0.30 - 0.60	0.030	0.035
G10160	1016	0.13 - 0.18	0.60 - 0.90	0.030	0.035
G10170	1017	0.15 - 0.20	0.30 - 0.60	0.030	0.035
G10180	1018	0.15 - 0.20	0.60 - 0.90	0.030	0.035
G10190	1019	0.15 - 0.20	0.70 - 1.00	0.030	0.035
G10200	1020	0.18 - 0.23	0.30 - 0.60	0.030	0.035
G10210	1021	0.18 - 0.23	0.60 - 0.90	0.030	0.035
G10220	1022	0.18 - 0.23	0.70 - 1.00	0.030	0.035
G10230	1023	0.20 - 0.25	0.30 - 0.60	0.030	0.035
G10250	1025	0.22 - 0.28	0.30 - 0.60	0.030	0.035
G10260	1026	0.22 - 0.28	0.60 - 0.90	0.030	0.035
G10290	1029	0.25 - 0.31	0.60 - 0.90	0.030	0.035
G10300	1030	0.28 - 0.34	0.60 - 0.90	0.030	0.035

Remarks : (1) Ultra low carbon, interstitial free stabilized, and nonstabilized steel shall not be supplied for these grades.
(2) Ultra low carbon, interstitial free stabilized, and nonstabilized steel may be supplied for these grades.

Please refer to the latest standard document for details.
For SAE Standards inquiries, JFE Steel may propose modified standard.
(Please contact JFE Steel for details)

Correspondence with JFE standards to public standards

Classification	Designation			
	JFE's standard	JIS	ASTM	Others
Steel Sheets for General Uses and Welded Structural Uses		G 3131 SPHC SPHD SPHE G 3101 SS G 3106 SM	A1011 A36 A283	EN10111 EN10025
Steel Sheets for Automobile Parts	JFE-HA	G 3113 SAPH G 3134 SPFH	A1011	
Steel Sheets for Pipes and Tubes	JFE-HP	G 3132 SPHT		
Atmospheric Corrosion Resistance Steel Sheets	JFE-HCUP	G 3125 SPA-H	A242 A606	EN10025-5
Corrosion Resistance Steel Sheets	JFE-ASA			
Steel Sheets for Porcelain Enameling	JFE-HPE			
Checkered Plate	JFE-HCP		A786	
Anti-aging Steel Sheets	JFE-H*N			
High Strength Steel Sheets	JFE-HITEN			
Flat Steel Sheets for Exposed Uses	JFE-HDH			

Cat.No.B1E-001-08

JFE Steel Corporation

https://www.jfe-steel.co.jp/en/

HEAD OFFICE
Hibiya Kokusai Building, 2-3 Uchisaiwaicho 2-chome, Chiyodaku, Tokyo 100-0011, Japan Phone: (81)3-3597-3111 Fax: (81)3-3597-4860

■ ASIA PACIFIC

SEOUL
JFE Steel Korea Corporation
16th Floor, 41, Cheonggyecheon-ro, Jongno-gu, Seoul, 03188, Korea
(Youngpung Building, Seorin-dong)
Phone: (82)2-399-6337 Fax: (82)2-399-6347

SHANGHAI
JFE Consulting (Shanghai) Co., Ltd.
Room 801, Building A, Far East International Plaza, 319 Xianxia Road, Shanghai 200051, P.R.China
Phone: (86)21-6235-1345 Fax: (86)21-6235-1346

BEIJING
JFE Consulting (Shanghai) Co., Ltd. Beijing Branch
821 Beijing Fortune Building No.5 Dongsanhuan North Road, Chaoyang District, Beijing, 100004, P.R.China
Phone: (86)10-6590-9051

GUANGZHOU
JFE Consulting (Guangzhou) Co., Ltd.
Room 3901 Citic Plaza, 233 Tian He North Road, Guangzhou, 510613, P.R.China
Phone: (86)20-3891-2467 Fax: (86)20-3891-2469

MANILA
JFE Steel Corporation, Manila Office
23rd Floor 6788 Ayala Avenue, Oledan Square, Makati City, Metro Manila, Philippines
Phone: (63)2-8886-7432 Fax: (63)2-8886-7315

HO CHI MINH CITY
JFE Steel Vietnam Co., Ltd.
Unit 1704, 17th Floor, MPlaza, 39 Le Duan Street, Dist 1, HCMC, Vietnam
Phone: (84)28-3825-8576 Fax: (84)28-3825-8562

HANOI
JFE Steel Vietnam Co., Ltd., Hanoi Branch
Unit 1501, 15th Floor, Cornerstone Building, 16 Phan Chu Trinh Street, Hoan Kiem Dist., Hanoi, Vietnam
Phone: (84)24-3855-2266 Fax: (84)24-3533-1166

BANGKOK
JFE Steel (Thailand) Ltd.
22nd Floor, Abdulrahim Place 990, Rama IV Road, Silom, Bangrak, Bangkok 10500, Thailand
Phone: (66)2-636-1886 Fax: (66)2-636-1891

YANGON
JFE Steel (Thailand) Ltd., Yangon Office
Unit 05-01, Union Business Center, Nat Mauk Road, Bocho Quarter, Bahan Tsp, Yangon, 11201, Myanmar
Phone: (95)1-860-3352

SINGAPORE
JFE Steel Asia Pte. Ltd.
16 Raffles Quay, No.15-03, Hong Leong Building, 048581, Singapore
Phone: (65)6220-1174 Fax: (65)6224-8357

JAKARTA
PT. JFE STEEL INDONESIA
6th Floor Summitmas II, JL Jendral Sudirman Kav. 61-62, Jakarta 12190, Indonesia
Phone: (62)21-522-6405 Fax: (62)21-522-6408

NEW DELHI
JFE Steel India Private Limited
806, 8th Floor, Tower-B, Unitech Signature Towers, South City-I, NH-8, Gurgaon-122001, Haryana, India
Phone: (91)124-426-4981 Fax: (91)124-426-4982

MUMBAI
JFE Steel India Private Limited, Mumbai Office
603-604, A Wing, 215 Atrium Building, Andheri-Kurla Road, Andheri (East), Mumbai-400093, Maharashtra, India
Phone: (91)22-3076-2760 Fax: (91)22-3076-2764

BRISBANE
JFE Steel Australia Resources Pty Ltd.
Level28, 12 Creek Street, Brisbane QLD 4000 Australia
Phone: (61)7-3229-3855 Fax: (61)7-3229-4377

■ MIDDLE EAST

DUBAI
JFE Steel Corporation, Dubai Office
P.O.Box 261791 LOB19-1208, Jebel Ali Free Zone Dubai, U.A.E.
Phone: (971)4-884-1833 Fax: (971)4-884-1472

■ NORTH, CENTRAL and SOUTH AMERICA

HOUSTON
JFE Steel America, Inc.
750 Town & Country Blvd., Suite 705, Houston, TX 77024, U.S.A.
Phone: (1)713-532-0052 Fax: (1)713-532-0062

MEXICO CITY
JFE Steel de Mexico S.A. de C.V.
Ruben Dario #281-1002, Col. Bosque de Chapultepec, C.P. 11580, CDMX. D.F. Mexico
Phone: (52)55-5985-0097

RIO DE JANEIRO
JFE Steel do Brasil LTDA
Praia de Botafogo, 228 Setor B, Salas 508 & 509, Botafogo, CEP 22250-040, Rio de Janeiro-RJ, Brazil
Phone: (55)21-2553-1132 Fax: (55)21-2553-3430

2403R(2109) JTR
Printed in Japan