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# MECHANICAL SEAMLESS TUBINGS

Pipes  
& Tubes



**NIPPON STEEL CORPORATION**

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MECHANICAL SEAMLESS TUBINGS  
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**NIPPON STEEL CORPORATION**

## Introduction

NIPPON STEEL, as a leading manufacturer in the field of high-grade seamless steel pipes and tubes, provides seamless steel pipes with the highest quality to various industries, including the industrial machine market, such as energy, automobiles, and construction machinery, etc.

At present, we are producing seamless pipes at Kansai Works Wakayama area (Wakayama City and Kainan City, Wakayama Prefecture), Kansai Works Amagasaki area (Amagasaki City, Hyogo Prefecture), using the latest technology. In the seamless pipes market for automobiles and construction machinery, functionality is becoming higher year-by-year due to diversified requirements.

Our seamless steel pipes and tubes for machine structural use, produced through consistent control regarding pig iron production and steelmaking processes, are highly acclaimed by customers for having quality that is unsurpassed by competitors, such as that regarding uniform composition, smooth inner/outer surface characteristics, and highly accurate dimensions, etc.

To meet the increasingly diversifying requirements of customers, we continue to strive to become "No. 1 in customer evaluation."

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## Table of Contents

Introduction	2
Features	2 ~ 5
Major specifications and application examples	2 ~ 5
Automobile parts	3
Construction machine parts	4
Industrial machine parts and construction materials	5
Production process drawings	6 · 7
Types and standard specifications	8 · 9
Range of production	
Hot-finish seamless steel pipes (Mannesmann mandrel mill process)	10 · 11
Quenched and tempered steel pipes (Mannesmann mandrel mill process)	12 · 13
Cold-finish seamless steel pipes (Mannesmann mandrel mill process)	14
Dimensional tolerance	15
References	
Hardness conversion table	16
Dimensions, mass, and cross-section performance	17
Comparison table of carbon steel/alloy steel for machine structural use	18



## Features

### 1. Production of high-performance steel through consistent control, from the material design stage onward

- To deliver materials that satisfy customer requirements, we consistently control our products from the material design stage onward.
- We provide strict quality control, from the stages of material processing, pig iron production, and steelmaking to the delivery of uniform products.

### 2. Production of seamless steel pipes with the latest tubemaking technology

- We have achieved excellent inner/outer surface characteristics and high dimensional accuracy with our unique seamless tubemaking technology, including the high-cross-angle piercing method, which we developed owing to years of experience and unceasing technical development.

### 3. Wide production range

- We utilize both hot-finish and cold-finish equipment. This allows us a wide range of production capabilities with respect to product diameters from small to large.
- Using refining equipment such as sufficient numbers of heat treatment systems, we are able to produce seamless steel pipes suitable for every specification and application.

### 4. Strict quality control

- Each process is computer controlled, and quality control is provided for each product.
- In addition, we provide strict quality control together with non-destructive inspections, thus we can stably supply highly accurate products.

## Major specifications and application examples

Class		Major specifications	Major application examples	Processing examples of products
Carbon steel	Low carbon	STKM 11A ~ 13A S10CTK ~ S25CTK	Cylinders, print rolls, dies, dolly parts, bushings, joints, agriculture devices, forklift truck tires	Cutting, welding, plastic forming
	Medium carbon	STKM 14A ~ 15A S35CTK ~ S38CTK	Driveshafts	Plastic forming, heat treatment
	High carbon	STKM 16A, 17A S40CTK ~ S55CTK	Print rolls, rack bars, input shafts, joints, engine parts, transmission parts, cylinders, bushings	Heat treatment (mainly quenching and tempering), cutting, plastic forming
High-manganese steel		STKM 18A ~ 20A	Cylinders, boring rods	Cutting, welding
(NIPPON STEEL material)		SUMISTRONG® 55-H ~ 80-QC	Cylinders, earth drills, crane booms	Cutting, welding
Alloy steel		SCr 415TK, 420TK SCM 415TK ~ 440TK SNCM 439TK	Gears, cylinders, bushings, airbags, accumulators, bit materials, drive parts (driveshafts, ball cages)	Heat treatment, cutting, plastic forming
Bearing steel		SUJ2	Bearings, inner races, slide shafts	Cutting, heat treatment

## Steel pipes used for automobile parts (cold-finish)



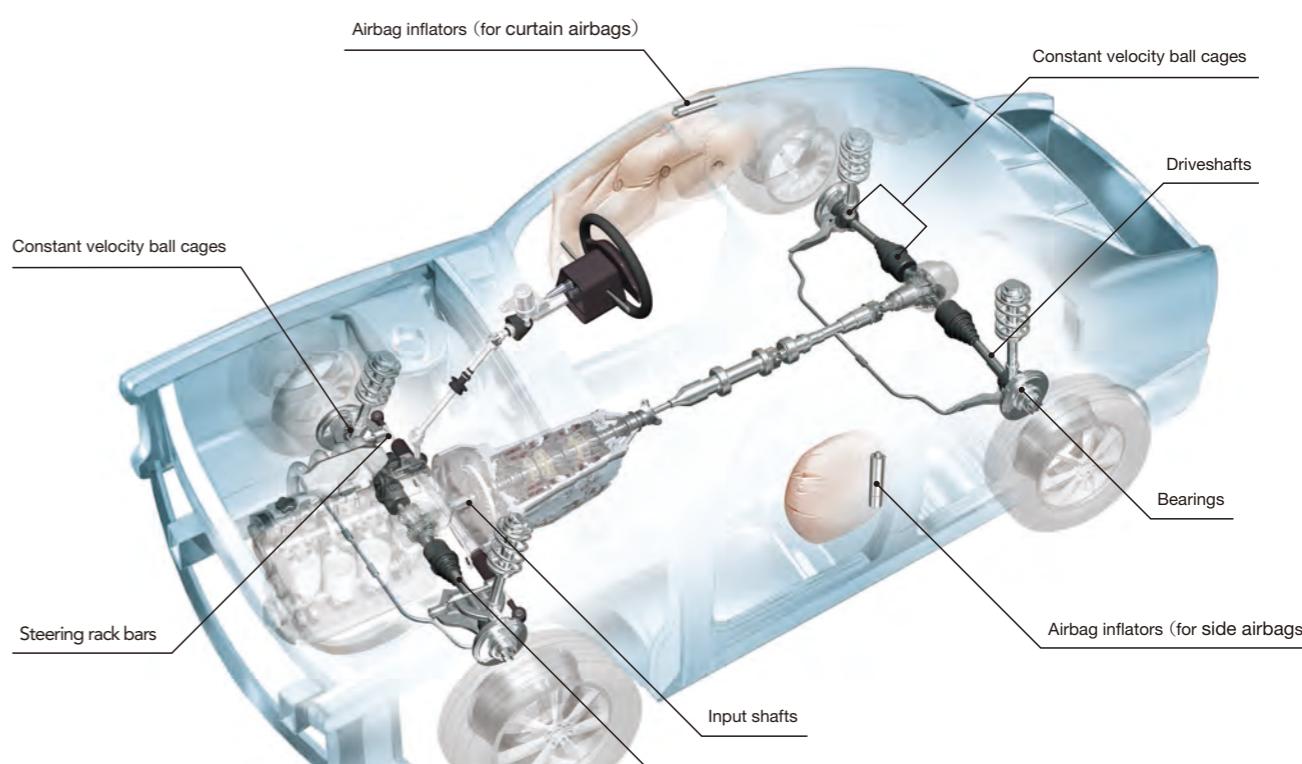
Thin section bearings



Bearings for valve rockers



Bearings for water pumps



Input shafts



Constant velocity joint ball cages



Driveshafts



Steering rack bars



For side airbags



For curtain airbags

## Steel pipes used for construction machine parts (hot-finish)



## Steel pipes used for industrial machine parts and construction materials (hot-finish)



## Production process drawings Seamless steel pipes (Mannesmann process)

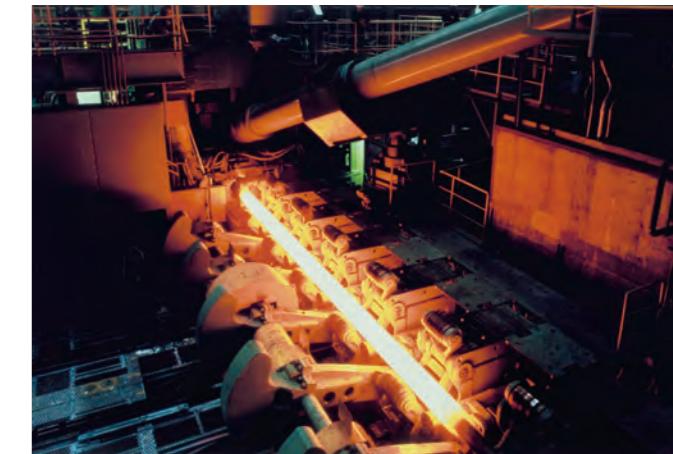
### Hot-finish process

#### ◎ Mandrel mill process

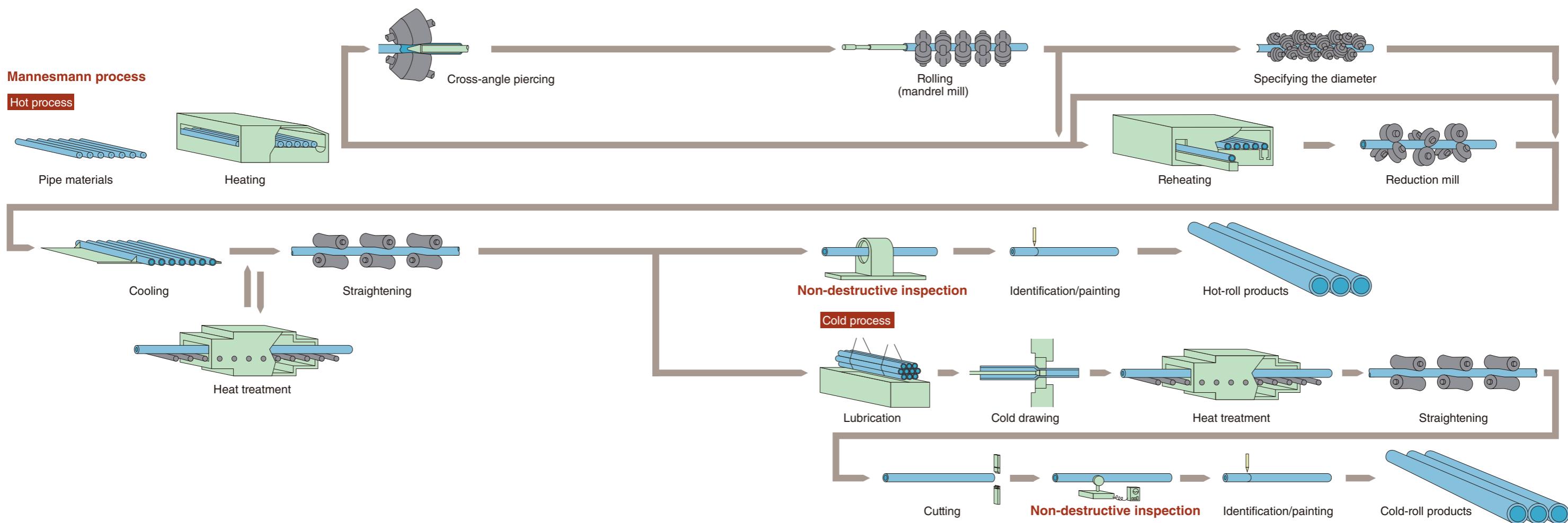
After heating the round steel billet, hollow pipes are developed using a cross-angle piercer. Then, they are elongated and rolled to develop the base pipe using a mandrel mill, which is a multi-stage continuous roll. This base pipe is reheated and finished to control the specified outside diameter and thickness, by reduction mill, and then the products are considered completed.

#### ◎ Cold process

Products that require higher dimensional accuracy and furthered mechanical properties compared to products manufactured by the hot process are cold-drawn after the hot process, and are then considered complete.



Cross-angle piercer



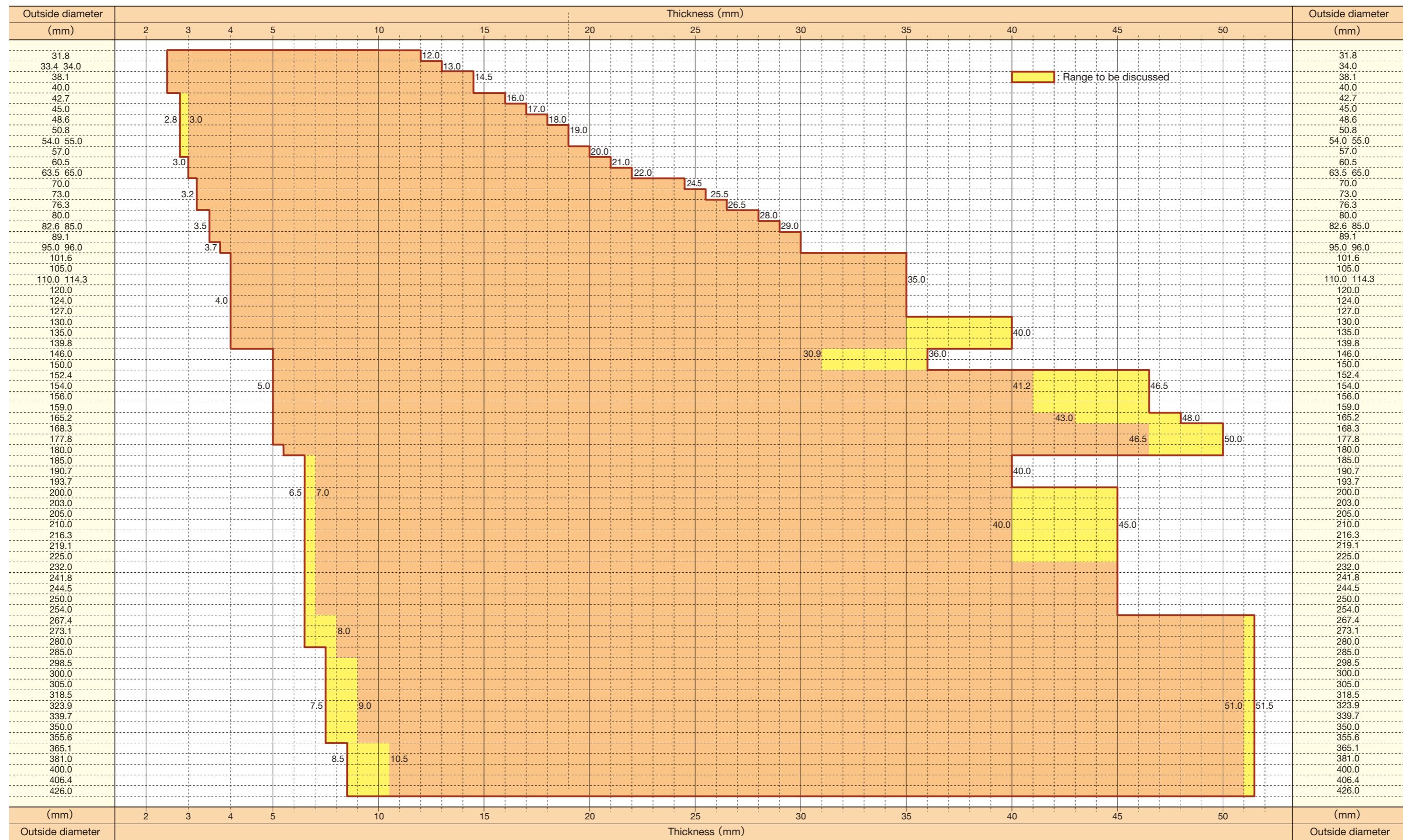
## Types and standard specifications

Table 1: Chemical composition and mechanical properties

Type code	Production method	Chemical composition (%)														Mechanical properties			Remarks
		C	Si	Mn	P	S	Cu	Ni	Cr	Ni+Cr	Mo	Nb	V	Nb+V	B	Tensile strength N/mm <sup>2</sup>	Yield Stress N/mm <sup>2</sup>	Elongation %	
Carbon steel	STKM 11A No heat treatment (As rolled)	≤ 0.12	≤ 0.35	≤ 0.60	≤ 0.040	≤ 0.040	—	—	—	—	—	—	—	—	—	≥ 290	—	≥ 35	JIS G3445 Carbon steel tubes for machine structural purposes
	STKM 13A No heat treatment (As rolled)	≤ 0.25	≤ 0.35	0.30 ~ 0.90	≤ 0.040	≤ 0.040	—	—	—	—	—	—	—	—	—	≥ 370	≥ 215	≥ 30	
	STKM 16A No heat treatment (As rolled)	0.35 ~ 0.45	≤ 0.40	0.40 ~ 1.00	≤ 0.040	≤ 0.040	—	—	—	—	—	—	—	—	—	≥ 510	≥ 325	≥ 20	
	STKM 17A No heat treatment (As rolled)	0.45 ~ 0.55	≤ 0.40	0.40 ~ 1.00	≤ 0.040	≤ 0.040	—	—	—	—	—	—	—	—	—	≥ 550	≥ 345	≥ 20	
	STKM 18A No heat treatment (As rolled)	≤ 0.18	≤ 0.55	≤ 1.50	≤ 0.040	≤ 0.040	—	—	—	—	—	—	—	—	—	≥ 440	≥ 275	≥ 25	
	STKM 18B No heat treatment (As rolled)	≤ 0.18	≤ 0.55	≤ 1.50	≤ 0.040	≤ 0.040	—	—	—	—	—	—	—	—	—	≥ 490	≥ 315	≥ 23	
	STKM 20A No heat treatment (As rolled)	≤ 0.25	≤ 0.55	≤ 1.60	≤ 0.040	≤ 0.040	—	—	—	—	—	≤ 0.15	≤ 0.15	≤ 0.15	—	≥ 540	≥ 390	≥ 23	
	S35CTK No heat treatment (As rolled)	0.32 ~ 0.38	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.035	≤ 0.30	≤ 0.20	≤ 0.20	≤ 0.35	—	—	—	—	—	* 2	* 2	* 2	JIS G 3478 Carbon steel tubes
	S40CTK No heat treatment (As rolled)	0.37 ~ 0.43	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.035	≤ 0.30	≤ 0.20	≤ 0.20	≤ 0.35	—	—	—	—	—	* 2	* 2	* 2	
	S45CTK No heat treatment (As rolled)	0.42 ~ 0.48	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.035	≤ 0.30	≤ 0.20	≤ 0.20	≤ 0.35	—	—	—	—	—	* 2	* 2	* 2	
	S55CTK No heat treatment (As rolled)	0.52 ~ 0.58	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.035	≤ 0.30	≤ 0.20	≤ 0.20	≤ 0.35	—	—	—	—	—	* 2	* 2	* 2	
Alloy steel	A106 GR.B No heat treatment (As rolled)	≤ 0.30	≥ 0.10	0.29 ~ 1.06	≤ 0.035	≤ 0.035	≤ 0.40	≤ 0.40	≤ 0.40	—	≤ 0.15	—	≤ 0.08	—	—	≥ 415	≥ 240	AS PER ASTM	ASTM A106 Cr+Cu+Mo+Ni+V ≤ 1%
	A106 GR.C No heat treatment (As rolled)	≤ 0.35	≥ 0.10	0.29 ~ 1.06	≤ 0.035	≤ 0.035	≤ 0.40	≤ 0.40	≤ 0.40	—	≤ 0.15	—	≤ 0.08	—	—	≥ 485	≥ 275	AS PER ASTM	
	A519 GR.1026 No heat treatment (As rolled)	0.22 ~ 0.28	—	0.60 ~ 0.90	≤ 0.040	≤ 0.050	—	—	—	—	—	—	—	—	—	—	—	—	ASTM A519
	A519 GR.1524 No heat treatment (As rolled)	0.19 ~ 0.25	—	1.35 ~ 1.65	≤ 0.040	≤ 0.050	—	—	—	—	—	—	—	—	—	—	—	—	
	A519 GR.1541 No heat treatment (As rolled)	0.36 ~ 0.44	—	1.35 ~ 1.65	≤ 0.040	≤ 0.050	—	—	—	—	—	—	—	—	—	—	—	—	
	SAE 1026 No heat treatment (As rolled)	0.22 ~ 0.28	—	0.60 ~ 0.90	≤ 0.030	≤ 0.050	—	—	—	—	—	—	—	—	—	—	—	—	SAE
	SAE 1524 No heat treatment (As rolled)	0.19 ~ 0.25	—	1.35 ~ 1.65	≤ 0.030	≤ 0.050	—	—	—	—	—	—	—	—	—	—	—	—	
	SAE 1541 No heat treatment (As rolled)	0.36 ~ 0.44	—	1.35 ~ 1.65	≤ 0.030	≤ 0.050	—	—	—	—	—	—	—	—	—	—	—	—	
	DIN1629 ST52.0-1984 No heat treatment (As rolled)	≤ 0.22	≤ 0.55	≤ 1.60	≤ 0.040	≤ 0.035	—	—	—	—	—	—	—	—	—	500 ~ 650	≥ 355	AS PER DIN	DIN1629
Alloy steel	SCr 415TK No heat treatment (As rolled)	0.13 ~ 0.18	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.030	≤ 0.30	≤ 0.25	0.90 ~ 1.20	—	—	—	—	—	—	* 2	* 2	* 2	JIS G3441 Alloy steel tubes for machine purposes
	SCr 420TK No heat treatment (As rolled)	0.18 ~ 0.23	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.030	≤ 0.30	≤ 0.25	0.90 ~ 1.20	—	—	—	—	—	—	* 2	* 2	* 2	
	SCM 415TK No heat treatment (As rolled)	0.13 ~ 0.18	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.030	≤ 0.30	≤ 0.25	0.90 ~ 1.20	—	0.15 ~ 0.25	—	—	—	—	* 2	* 2	* 2	
	SCM 420TK No heat treatment (As rolled)	0.18 ~ 0.23	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.030	≤ 0.30	≤ 0.25	0.90 ~ 1.20	—	0.15 ~ 0.25	—	—	—	—	* 2	* 2	* 2	
	SCM 430TK No heat treatment (As rolled)	0.28 ~ 0.33	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.030	≤ 0.30	≤ 0.25	0.90 ~ 1.20	—	0.15 ~ 0.30	—	—	—	—	* 2	* 2	* 2	
	SCM 435TK No heat treatment (As rolled)	0.33 ~ 0.38	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.030	≤ 0.30	≤ 0.25	0.90 ~ 1.20	—	0.15 ~ 0.30	—	—	—	—	* 2	* 2	* 2	
	SCM 440TK No heat treatment (As rolled)	0.38 ~ 0.43	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.030	≤ 0.30	≤ 0.25	0.90 ~ 1.20	—	0.15 ~ 0.30	—	—	—	—	* 2	* 2	* 2	
	SNCM 439TK Annealing	0.36 ~ 0.43	0.15 ~ 0.35	0.60 ~ 0.90	≤ 0.030	≤ 0.030	≤ 0.30	1.60 ~ 2.00	0.60 ~ 1.00	—	0.15 ~ 0.30	—	—	—	—	* 2	* 2	* 2	
	A519 GR.4130 No heat treatment (As rolled)	0.28 ~ 0.33	0.15 ~ 0.35	0.40 ~ 0.60	≤ 0.040	≤ 0.040	—	—	0.80 ~ 1.10	—	0.15 ~ 0.25	—	—	—	—	≥ 621	≥ 483	AS PER ASTM	ASTM A519
	SAE 4130 No heat treatment (As rolled)	0.28 ~ 0.33	0.15 ~ 0.35	0.40 ~ 0.60	≤ 0.030	≤ 0.040	—	—	0.80 ~ 1.10	—	0.15/0.25	—	—	—	—	—	—	—	SAE
	SUJ2 Stress relieving	0.95 ~ 1.10	0.15 ~ 0.35	≤ 0.50	≤ 0.025	≤ 0.025	≤ 0.25	≤ 0.25	1.30 ~ 1.60	—	≤ 0.08	—	—	—	—	Hardness HRBS ≤ 100			JIS G4805 High carbon chromium bearing steels
	A295 GR.52100 Annealing	0.93 ~ 1.05	0.15 ~ 0.35	0.25 ~ 0.45	≤ 0.025	≤ 0.015	≤ 0.30	≤ 0.25	1.35 ~ 1.60	—	≤ 0.10	—	—	—	—				
	SAE 52100 Annealing	0.98 ~ 1.10	0.15 ~ 0.35	0.25 ~ 0.45	≤ 0.025	≤ 0.025	≤ 0.35	≤ 0.25	1.30 ~ 1.60	—	≤ 0.06	—	—	—	—				
High-tensile strength steel	SUMISTRONG® 55-H No heat treatment (As rolled)	≤ 0.22	≤ 0.50	≤ 1.50	≤ 0.035	≤ 0.035	—	—	—	—	—	≤ 0.08	≤ 0.12	—	—	≥ 540	≥ 390	≥ 23	NIPPON STEEL standard
	SUMISTRONG® 60-Q Quenching, tempering	≤ 0.22	≤ 0.50																

## Range of production

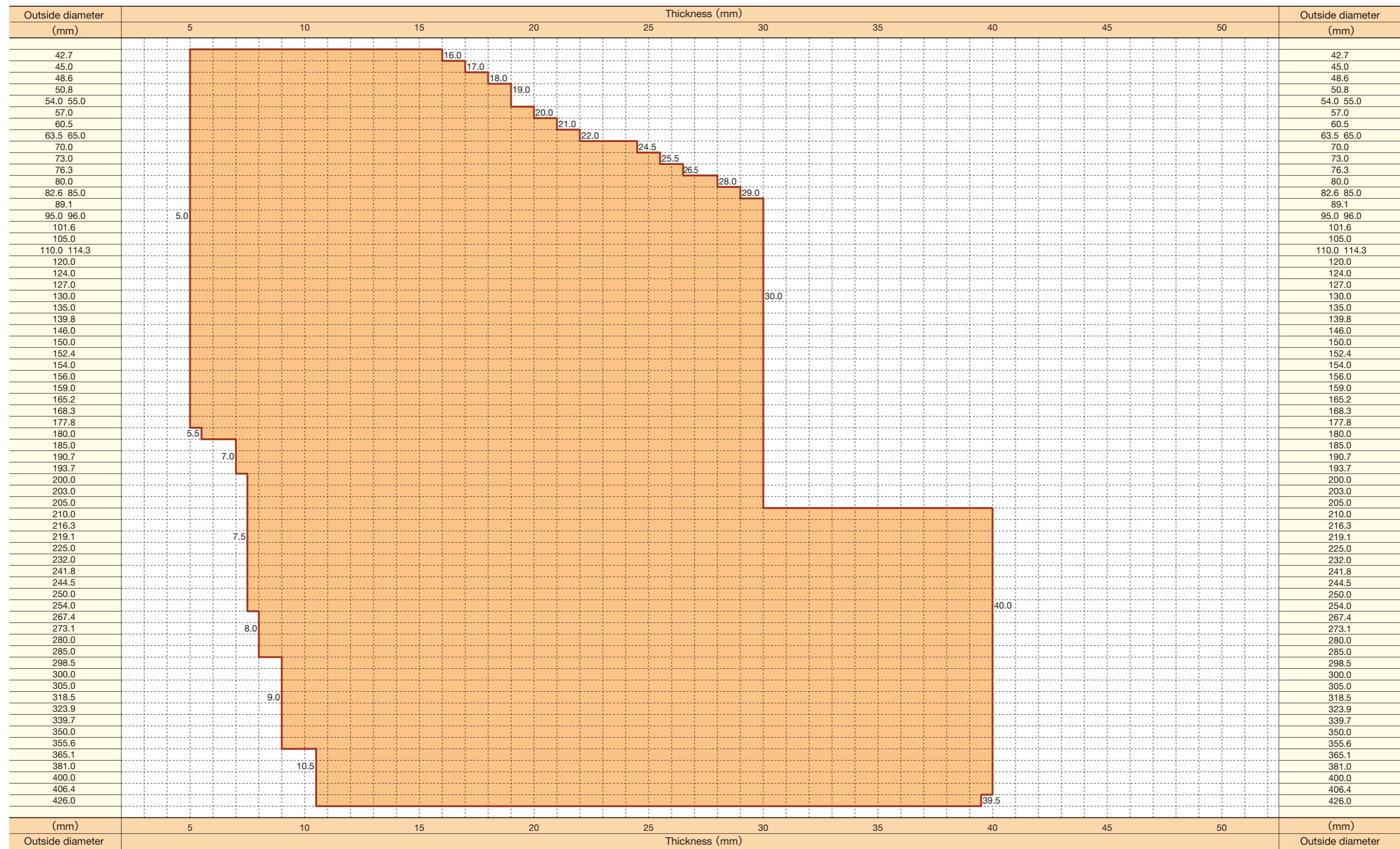
Table 2: Production range of hot-finish seamless steel pipes (Mannesmann mandrel mill process)



Note 1: We can discuss sizes not shown in the table above.  
 Note 2: For the production range of STKM13B, please contact us.

## Range of production

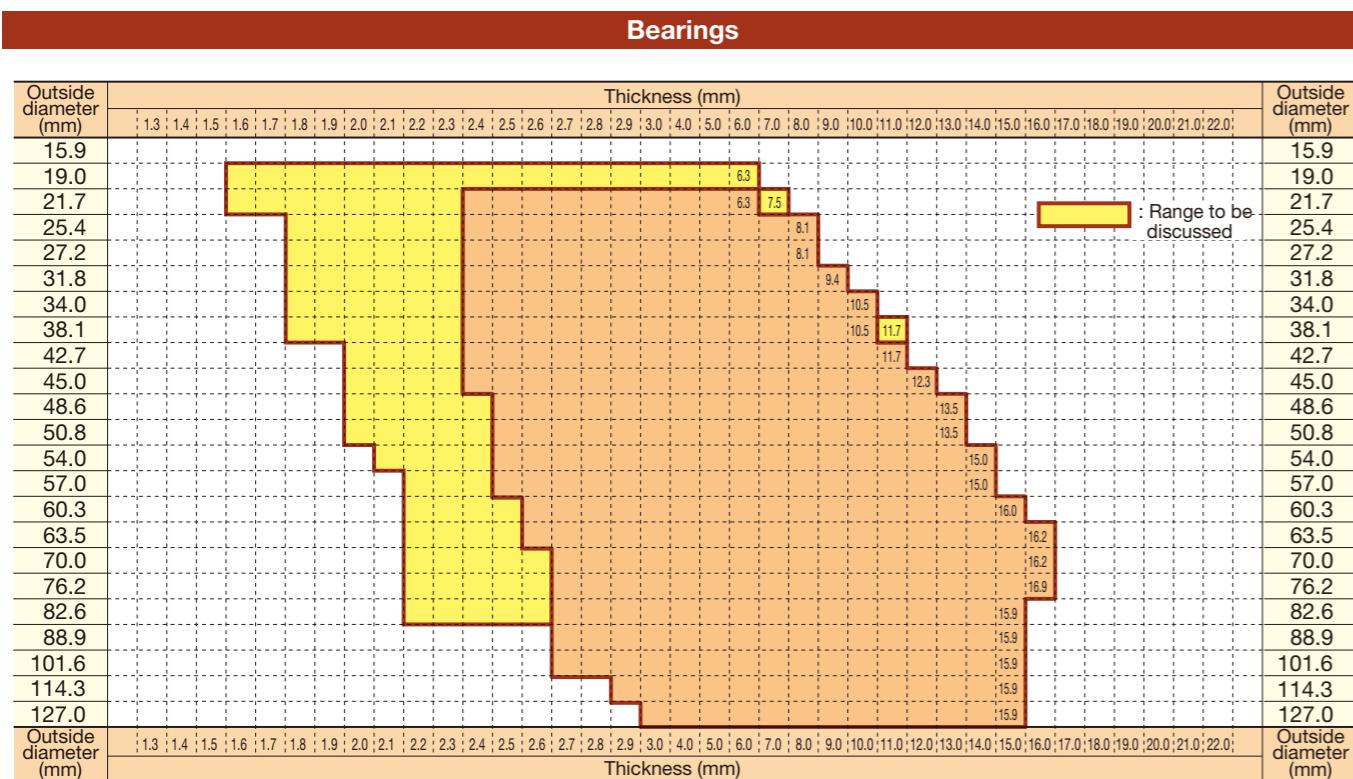
Table 3: Production range of quenched and tempered steel pipes (Mannesmann mandrel mill process)



Note: We can discuss sizes not shown in the table above.

## Range of production

Table 4: Production range of cold-finish seamless steel pipes (Mannesmann mandrel mill process)



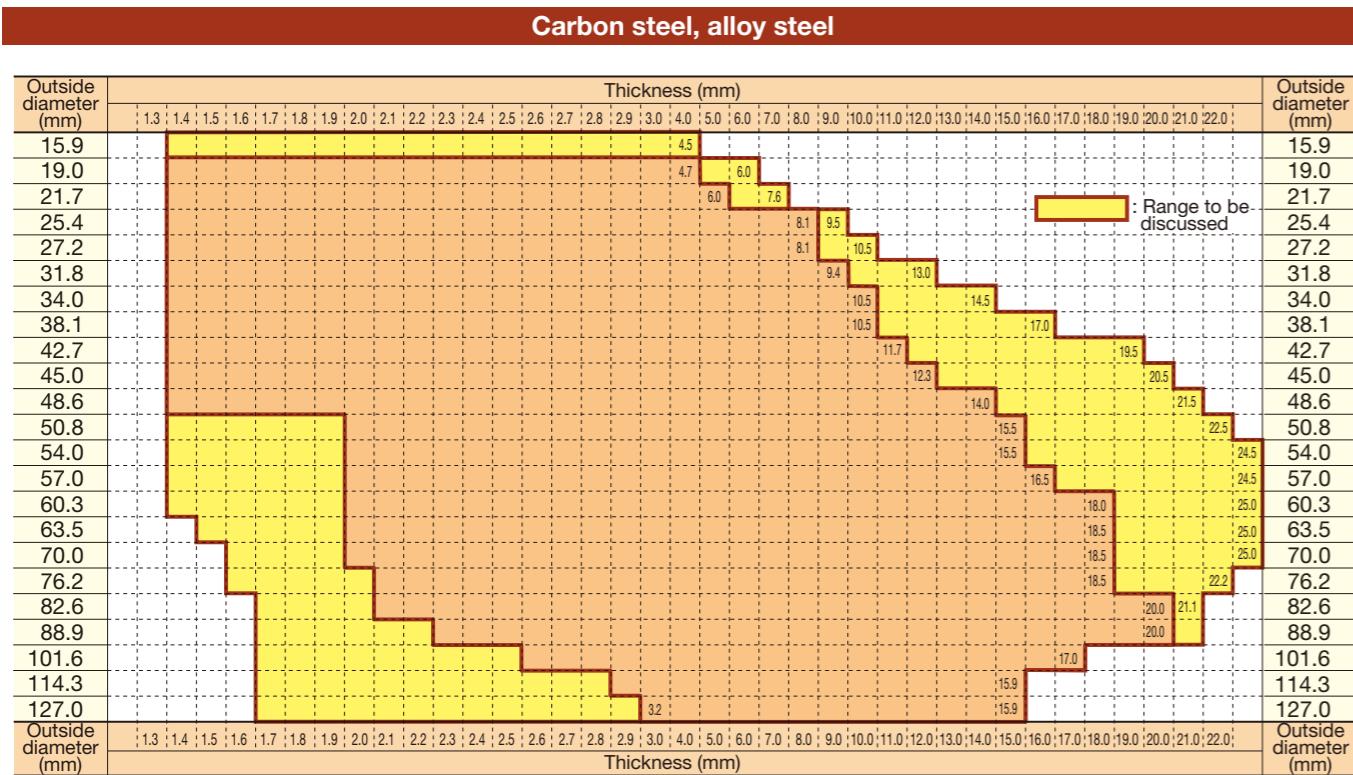
## Dimensional tolerance

Table 5: Dimensional tolerance

Outside diameter			Thickness			
Class	Tolerance ("D" for outside diameter)		Class	Tolerance ("t" for outside diameter)		
No.1	D < 50mm	± 0.5mm	No.1	t < 4mm	+ 0.6mm - 0.5mm	
	D ≥ 50mm	± 1 %		t ≥ 4mm	+ 15 % - 12.5%	
No.2	D < 50mm	± 0.25mm	No.3	t < 3mm	± 0.3mm	
	D ≥ 50mm	± 0.5 %		t ≥ 3mm	± 10 %	
No.3	D < 25mm	± 0.12mm		No.2	t < 2mm	± 0.15mm
	25mm ≤ D < 40mm	± 0.15mm				
	40mm ≤ D < 50mm	± 0.18mm		No.3	t ≥ 2mm	± 0.15mm
	50mm ≤ D < 60mm	± 0.20mm				
	60mm ≤ D < 70mm	± 0.23mm				
	70mm ≤ D < 80mm	± 0.25mm				
	80mm ≤ D < 90mm	± 0.30mm				
	90mm ≤ D < 100mm	± 0.40mm				
	D ≥ 100mm	± 0.5 %				
No.4	D < 13mm	± 0.25mm		No.3	t ≥ 2mm	± 8 %
	13mm ≤ D < 25mm	± 0.40mm				
	25mm ≤ D < 40mm	± 0.60mm				
	40mm ≤ D < 65mm	± 0.80mm				
	65mm ≤ D < 90mm	± 1.00mm				
	90mm ≤ D < 140mm	± 1.20mm				
	D ≥ 140mm	(Upon agreement between the parties involved)				

Notes:

- (1) No. 1 shall apply to the outside tolerance of hot-finish seamless steel pipes.
- (2) In principle, No. 4 shall apply to the outside tolerance of pipes involving quenching and tempering.
- (3) No. 1 shall apply to the thickness tolerance of hot-finish seamless steel pipes.
- (4) The length tolerance shall be +50 mm and -0.
- (5) We can discuss dimensional tolerances not shown above.



## Reference data: Hardness conversion table

Table 6: Hardness conversion table

Brinell indent diameter mm	Brinell hardness 10-mm ball/ load 3,000 kgf		Vickers hardness	Rockwell hardness <sup>2</sup>				Rockwell superficial hardness diamond conical indenter			Tensile strength (approximate value) MPa <sup>1</sup>	
	Standard balls	Tungsten carbide balls		A scale-load 60- kgf diamond conical indenter	B scale-load 100- kgf dia. 1.6-mm (1/16 in) ball	C scale-load 150- kgf diamond conical indenter	D scale-load 100- kgf diamond conical indenter	15-N scale load 15 kgf	30-N scale load 30 kgf	45-N scale load 45 kgf		
2.70 {	—	—	553	77.1	—	52.5	65.0	86.7	70.7	58.0	—	1915
2.70 (495)	—	514	547	76.9	—	52.1	64.7	86.5	70.3	57.6	70	1890
	—	—	539	76.7	—	51.6	64.3	86.3	69.9	56.9	—	1855
2.75 {	—	—	530	76.4	—	51.1	63.9	86.0	69.5	56.2	—	1825
2.75 (477)	—	495	528	76.3	—	51.0	63.8	85.9	69.4	56.1	68	1820
	—	—	516	75.9	—	50.3	63.2	85.6	68.7	55.2	—	1780
2.80 {	—	—	508	75.6	—	49.6	62.7	85.3	68.2	54.5	—	1740
2.80 (461)	—	477	508	75.6	—	49.6	62.7	85.3	68.2	54.5	66	1740
	—	—	495	75.1	—	48.8	61.9	84.9	67.4	53.5	—	1680
2.85 {	—	—	491	74.9	—	48.5	61.7	84.7	67.2	53.2	—	1670
2.85 444	—	461	491	74.9	—	48.5	61.7	84.7	67.2	53.2	65	1670
	—	—	474	74.3	—	47.2	61.0	84.1	66.0	51.7	—	1595
2.90 {	—	—	472	74.2	—	47.1	60.8	84.0	66.8	51.5	—	1585
2.90 444	—	444	472	74.2	—	47.1	60.8	84.0	65.8	51.5	63	1585
	—	—	455	73.4	—	45.7	59.7	83.4	64.6	49.9	61	1510
2.95 429	429	429	455	73.4	—	44.5	58.8	82.8	63.5	48.4	59	1460
3.00 415	415	440	72.8	—	43.1	57.8	82.0	62.3	46.9	58	1390	
3.05 401	401	425	72.0	—	41.8	56.8	81.4	61.1	45.3	56	1330	
3.10 388	388	410	71.4	—	40.4	55.7	80.6	59.9	43.6	54	1270	
3.15 375	375	396	70.6	—	39.1	54.6	80.0	58.7	42.0	52	1220	
3.20 363	363	383	70.0	—	37.9	53.8	79.3	57.6	40.5	51	1180	
3.25 352	352	372	69.3	(110.0)	37.9	52.8	78.6	56.4	39.1	50	1130	
3.30 341	341	360	68.7	(109.0)	36.6	51.9	78.0	55.4	37.8	48	1095	
3.35 331	331	350	68.1	(108.5)	35.5	51.0	77.3	54.3	36.4	47	1060	
3.40 321	321	339	67.5	(108.0)	34.3	51.0	77.3	54.3	36.4	47	1060	
3.45 311	311	328	66.9	(107.5)	33.1	50.0	76.7	53.3	34.4	46	1025	
3.50 302	302	319	66.3	(107.0)	32.1	49.3	76.1	52.2	33.8	45	1005	
3.55 293	293	309	65.7	(106.0)	30.9	48.3	75.5	51.2	32.4	43	970	
3.60 285	285	301	65.3	(105.5)	29.9	47.6	75.0	50.3	31.2	—	950	
3.65 277	277	292	64.6	(104.5)	28.8	46.7	74.4	49.3	29.9	41	925	
3.70 269	269	284	64.1	(104.0)	27.6	45.9	73.7	48.3	28.5	40	895	
3.75 262	262	276	63.6	(103.0)	26.6	45.0	73.1	47.3	27.3	39	875	
3.80 255	255	269	63.0	(102.0)	25.4	44.2	72.5	46.2	26.0	38	850	
3.85 248	248	261	62.5	(101.0)	24.2	43.2	71.7	45.1	24.5	37	825	
3.90 241	241	253	61.8	100.0	22.8	42.0	70.9	43.9	22.8	36	800	
3.95 235	235	247	61.4	99.0	21.7	41.4	70.3	42.9	21.5	35	785	
4.00 229	229	241	60.8	98.2	20.5	40.5	69.7	41.9	20.1	34	765	
4.05 223	223	234	—	97.3	(18.8)	—	—	—	—	—	—	
4.10 217	217	228	—	96.4	(17.5)	—	—	—	33	725	—	
4.15 212	212	222	—	95.5	(16.0)	—	—	—	—	705	—	
4.20 207	207	218	—	94.6	(15.2)	—	—	—	32	690	—	
4.25 201	201	212	—	93.8	(13.8)	—	—	—	31	675	—	
4.30 197	197	207	—	92.8	(12.7)	—	—	—	30	655	—	
4.35 192	192	202	—	91.9	(11.5)	—	—	—	29	640	—	
4.40 187	187	196	—	90.7	(10.0)	—	—	—	—	620	—	
4.45 183	183	192	—	90.0	(9.0)	—	—	—	28	615	—	
4.50 179	179	188	—	89.0	(8.0)	—	—	—	27	600	—	
4.55 174	174	182	—	87.8	(6.4)	—	—	—	—	585	—	
4.60 170	170	178	—	86.8	(5.4)	—	—	—	26	570	—	
4.65 167	167	175	—	86.0	(4.4)	—	—	—	—	560	—	
4.70 163	163	171	—	85.0	(3.3)	—	—	—	25	545	—	
4.80 156	156	163	—	82.9	(0.9)	—	—	—	—	525	—	
4.90 149	149	156	—	80.8	—	—	—	—	23	505	—	
5.00 143	143	150	—	78.7	—	—	—	—	22	490	—	
5.10 137	137	143	—	76.4	—	—	—	—	21	460	—	
5.20 131	131	137	—	74.0	—	—	—	—	—	450	—	
5.30 126	126	132	—	72.0	—	—	—	—	20	435	—	
5.40 121	121	127	—	69.8	—	—	—	—	19	415	—	
5.50 116	116	122	—	67.6	—	—	—	—	18	400	—	
5.60 111	111	117	—	65.7	—	—	—	—	15	385	—	

Note 1: 1 MPa = 1 N/mm<sup>2</sup>

2: The values shown in parentheses in the table are not often used. They are shown for reference only.

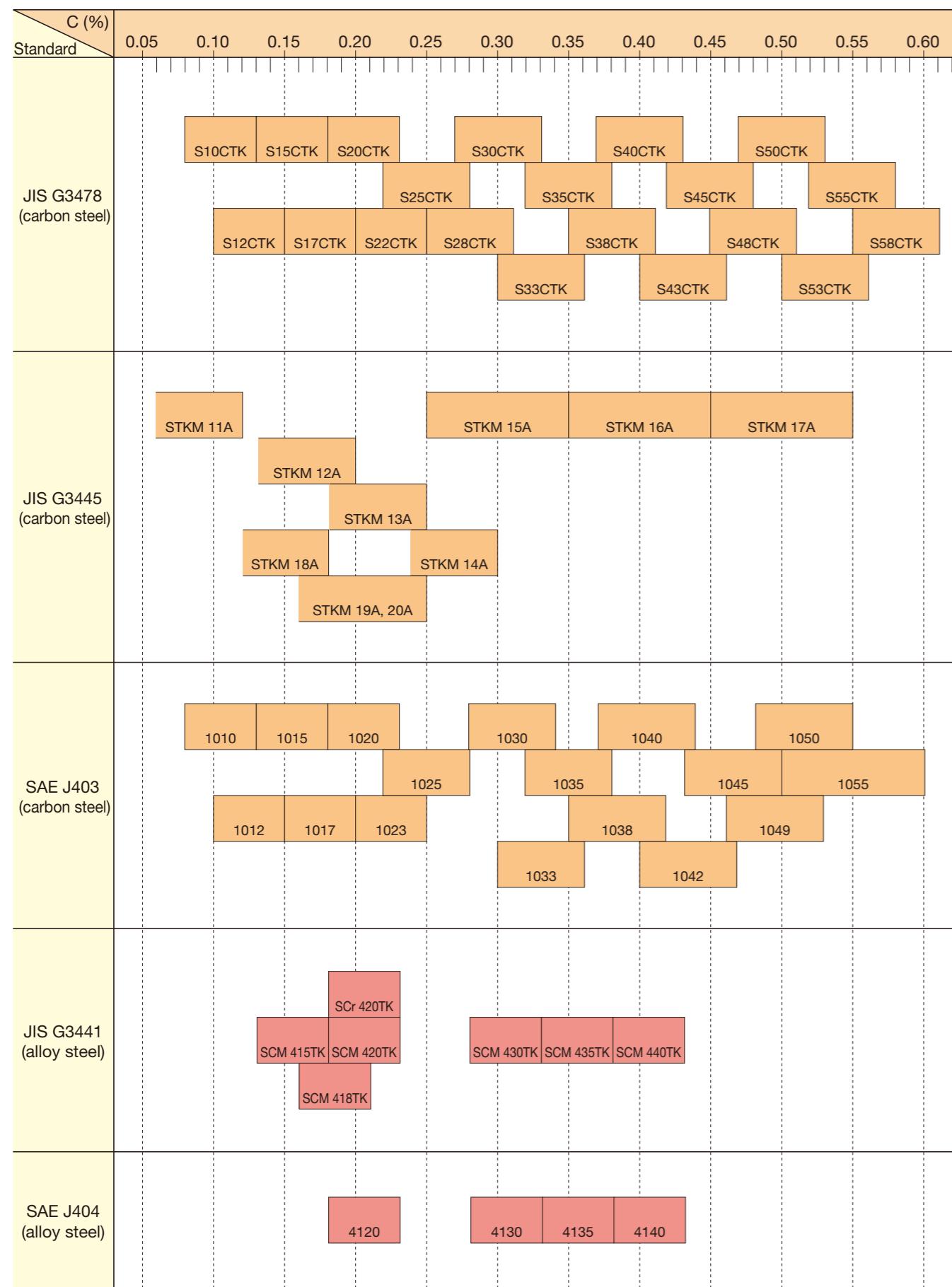
## Dimensions, mass, and cross-section performance

Table 7: Dimensions, mass, and cross-section performance

Outside diameter (mm) D	Thickness (mm) t	Mass (kg/m) W	Cross- section area (cm<sup>2</sup>) A	Moment of inertia of area (cm<sup>4</sup>) I	Modulus of section (cm<sup>3</sup>) Z	Radius of gyration of area (cm) i

## Comparison table of carbon steel/alloy steel for machine structural use

Table 8: Comparison table of carbon steel/alloy steel for machine structural use



## Pipe & tube plant of NIPPON STEEL



Overseas Branch	
<b>[Asia]</b>	
NIPPON STEEL CONSULTING (BEIJING) CO.,LTD.	
① Beijing	
② Shanghai	
③ Guangzhou	
NIPPON STEEL SOUTHEAST ASIA PTE. LTD.	
④ Singapore	
⑤ Jakarta	
NIPPON STEEL AUSTRALIA PTY. LIMITED	
⑥ Sydney	
⑦ Perth	
NIPPON STEEL (THAILAND) CO., LTD.	
⑧ Bangkok	
NIPPON STEEL INDIA PRIVATE LIMITED	
⑨ New Delhi	
<b>[Europe]</b>	
NIPPON STEEL CORPORATION European Office	
⑩ Duesseldorf	
<b>[Middle East]</b>	
NIPPON STEEL CORPORATION Dubai Office	
⑪ Dubai	
<b>[North, Central and South America]</b>	
NIPPON STEEL NORTH AMERICA, INC.	
⑫ New York	
⑬ Chicago	
⑭ Houston	
⑮ Mexico	
NIPPON STEEL AMÉRICA DO SUL LTDA.	
⑯ São Paulo	
⑰ Belo Horizonte	
NIPPON STEEL TUBOS DO BRASIL LTDA.	
⑱ Rio de Janeiro	

## Pipe & tube plant of NIPPON STEEL

