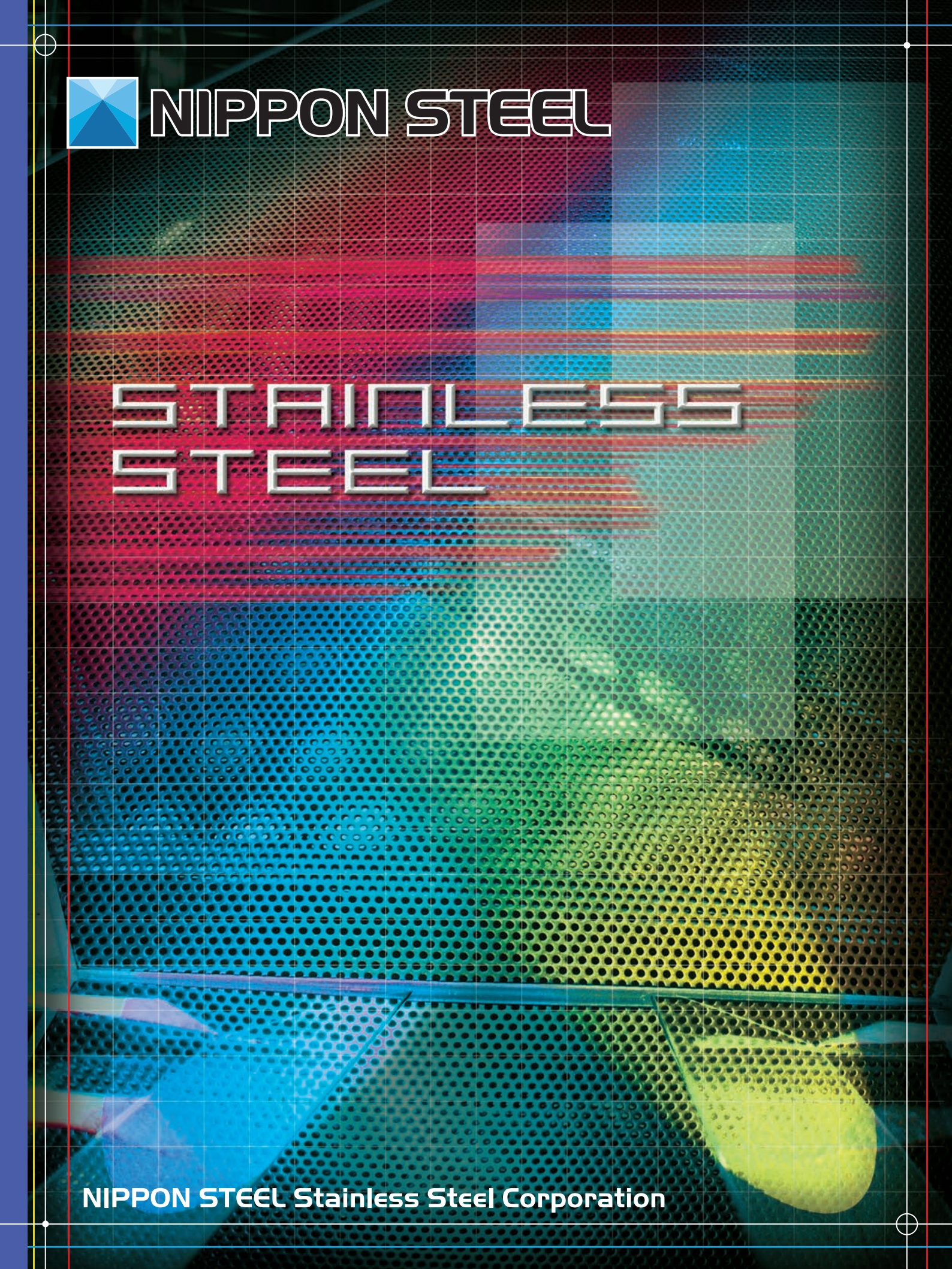

NIPPON STEEL
STAINLESS
STEEL
NIPPON STEEL Stainless Steel Corporation

Contents

Foreword ····· 2

Features ····· 3

Production Process ····· 4

Types of Stainless Steel Available ····· 5

Characteristics and Applications ····· 7

Surface Finishes ····· 13

Available Sizes ····· 14

Dimensional Tolerances ····· 15

Packaging Examples ····· 18

Relationship ····· 18

Applications ····· 19

Other Types of Stainless Steel ····· 25

Guide for Ordering ····· 26

Foreword

Shunan Works

Kinuura Works

Features

1 Uniform Quality

Our products are manufactured by an integrated quality control process from melting to finishing.

2 High Dimensional Precision and Flatness

The state-of-the-art production facilities offer high sheet thickness precision and flatness.

3 Wide Variety of Types of Steel and Finish

Our produces a variety of unique NSS steel types in addition to the JIS standard steels to meet diversified customer needs.
Our products are supplied in various types of surface finishes.

4 Wide Range of Sizes

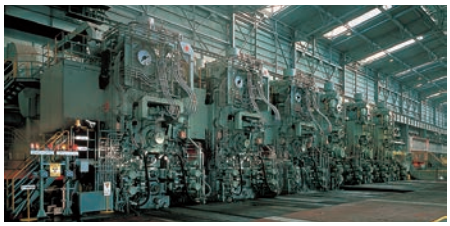
Our products are available in a wide range of thicknesses, lengths, and widths.

5 Prompt After-Sales Service System

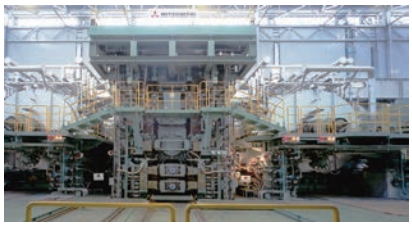
Our stands ready to give technical services suitable for users' needs, maximizing our rich experience in the field of steel production.

LD Converter (Shunan Works)

Continuous casting equipment (Shunan Works)



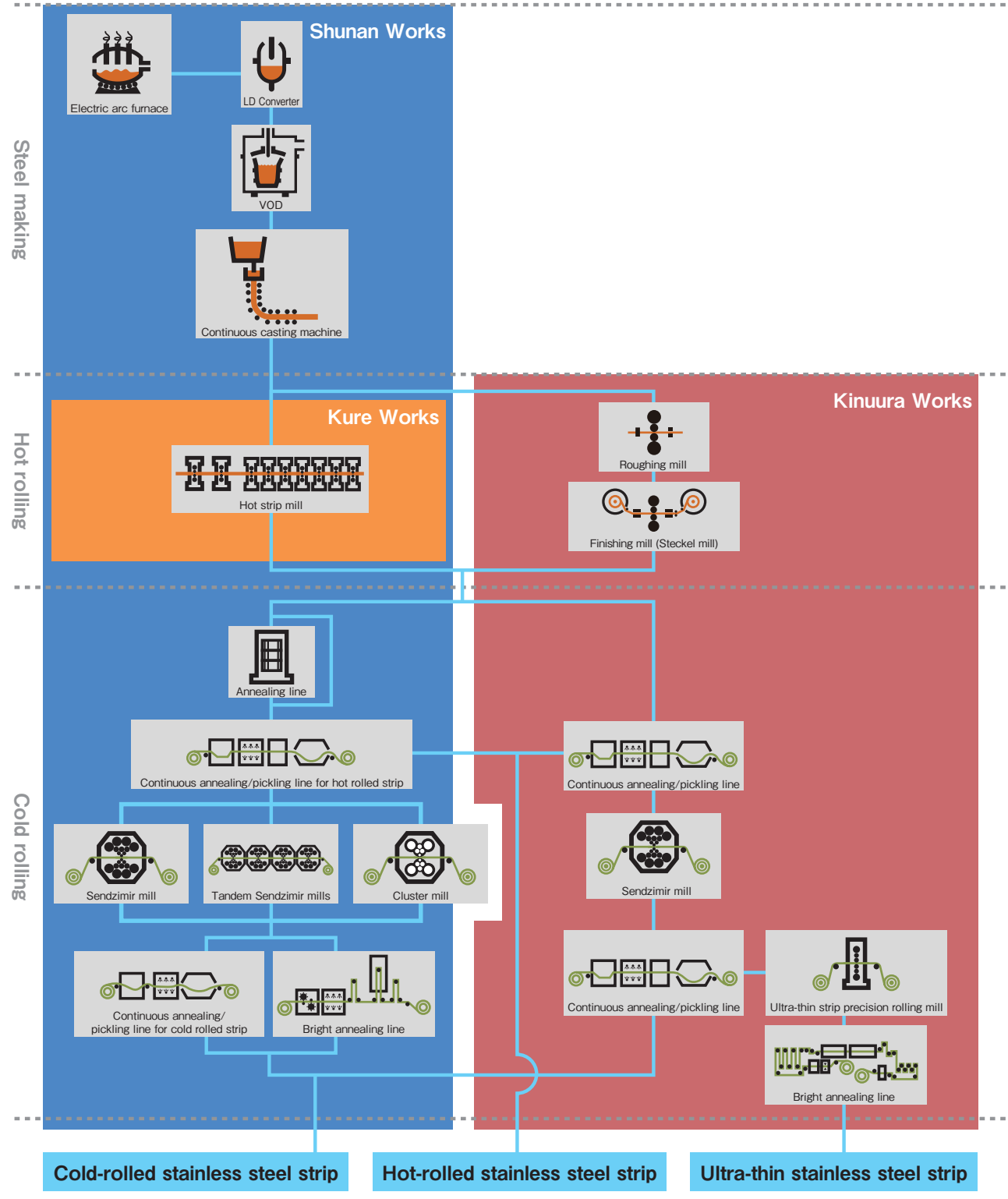
Hot strip mill (Kure Works)



Steckel mill (Kinuura Works)

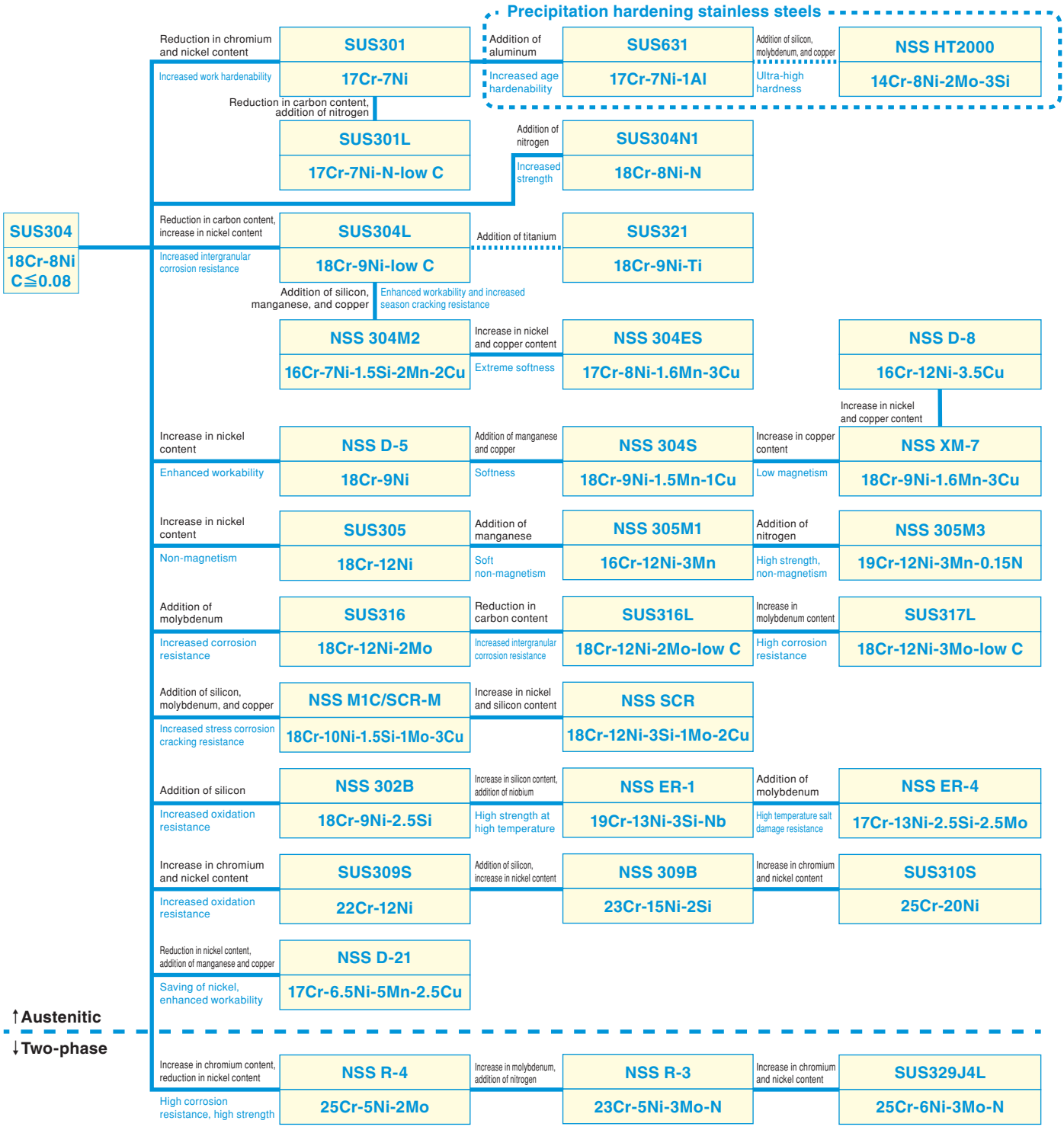
Tandem Sendzimir cold rolling mills (Shunan Works)

Production Process

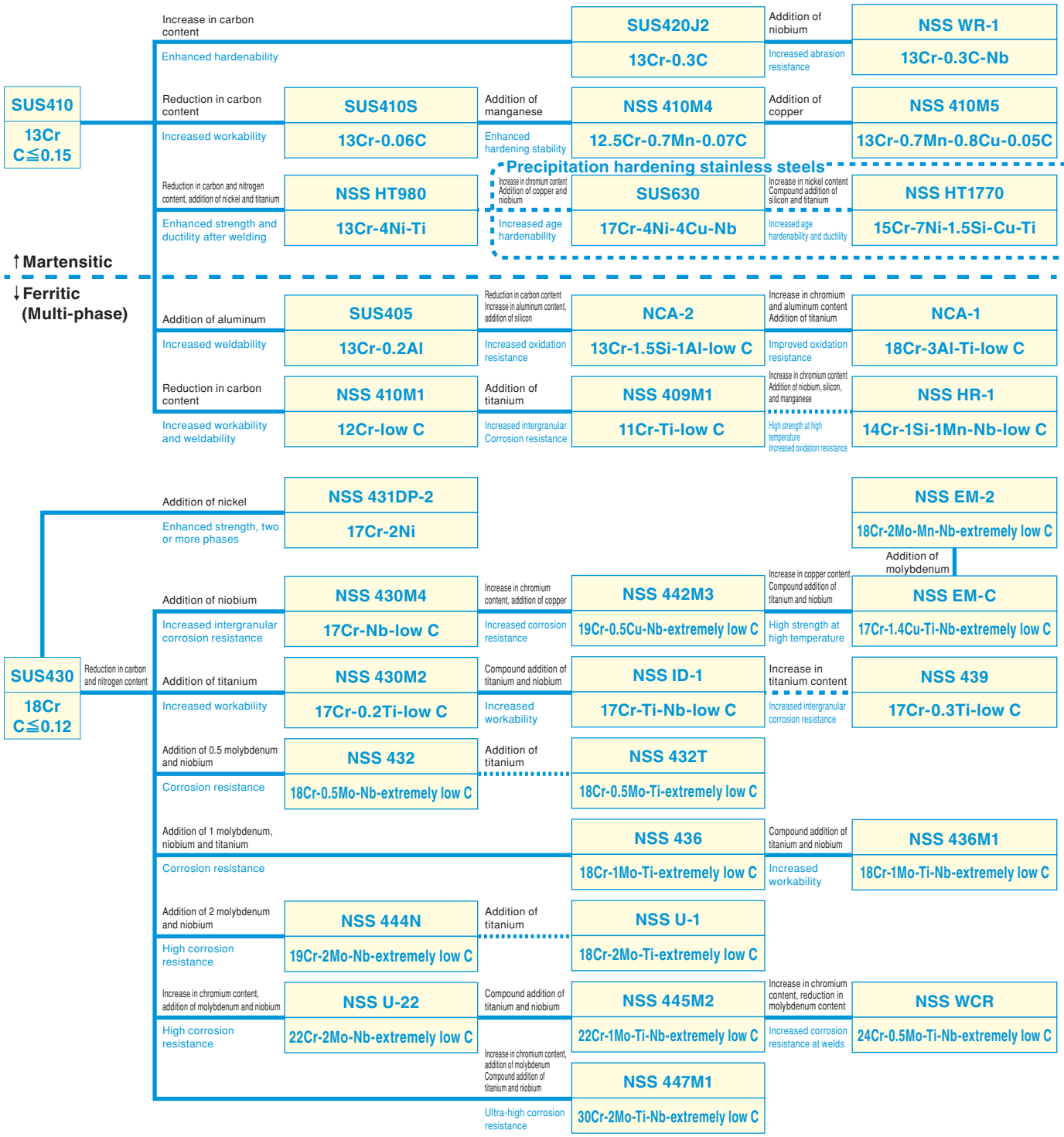


Types of Stainless Steel Available

1. Austenitic and two-phase stainless steels



2. Ferritic, martensitic, and multi-phase stainless steels



Characteristics and Applications

1.Characteristics and Applications

Classification	Steel type		Major Chemical Composition (%)					
	Nisshin (NSS)	JIS (SUS)	C	Ni	Cr	Mo	Others	
Austenitic type		SUS301	≦0.15	6.00～ 8.00	16.00～18.00			
		SUS301L	≦0.030	6.00～ 8.00	16.00～18.00		N≦0.20	
		SUS304	≦0.08	8.00～10.50	18.00～20.00			
		SUS304N1	≦0.08	7.00～10.50	18.00～20.00		N：0.10～0.25	
		SUS304L	≦0.030	9.00～13.00	18.00～20.00			
	NSS 304M2		≦0.03	6.50～ 8.50	15.50～17.50		Cu：1.50～2.50	
	NSS 304M3		≦0.06	6.40～ 8.00	15.00～17.00		Cu：1.50～2.50	
	NSS 304ES		≦0.03	7.00～ 9.00	16.00～18.00		Cu：2.80～3.80	
	NSS D-5	(SUS304)	≦0.08	9.00～10.50	18.00～20.00		S≦0.030	
	NSS 304S		≦0.08	8.00～10.50	18.00～20.00			
	NSS XM7		≦0.05	8.50～10.00	18.00～20.00		Cu：2.50～4.00	
	NSS D-8		≦0.06	11.50～13.50	15.50～19.00		Cu：3.00～4.00	
		SUS305	≦0.12	10.50～13.00	17.00～19.00			
	NSS 305M1		≦0.08	11.00～13.00	15.00～17.00		Mn：2.00～4.00	
	NSS 305M3		≦0.08	11.00～13.50	18.00～20.00		Mn：2.00～4.00 N：0.10～0.20	
		SUS316	≦0.08	10.00～14.00	16.00～18.00	2.00～3.00		
		SUS316L	≦0.030	12.00～15.00	16.00～18.00	2.00～3.00		
		SUS317L	≦0.030	11.00～15.00	18.00～20.00	3.00～4.00		
	NSS M1C NSS SCR-M		C≦0.05	9.50～10.50	17.00～18.00	0.70～1.50	Si：0.50～2.50 Cu：2.50～3.50	
	NSS SCR		≦0.07	11.50～13.50	18.00～19.50	0.50～1.50	Si：2.50～4.00 Cu：1.50～2.50	
		SUS321	≦0.08	9.00～13.00	17.00～19.00		Ti≧5×C	
	NSS 302B		≦0.15	8.00～10.00	17.00～19.00		Si：2.00～3.00	
	NSS ER-1		≦0.07	12.00～13.50	18.50～20.00		Nb：0.05～0.20 Si：3.00～4.00	
	NSS ER-4		≦0.07	12.00～13.50	16.00～18.00	2.00～3.00	Si：2.00～3.00	
		SUS309S	≦0.08	12.00～15.00	22.00～24.00			
	NSS 309B		≦0.15	14.00～16.00	22.00～24.00		Si：1.50～2.50	
		SUS310S	≦0.08	19.00～22.00	24.00～26.00			
	NSS D-21	(SUS304J2)	≦0.08	6.00～ 9.00	15.00～18.00		Mn：3.00～5.00 Cu：1.00～3.00	
Two-phase type	NSS R-4	(SUS329J1)	≦0.08	3.00～ 6.00	23.00～28.00	1.00～3.00		
	NSS R-3	(SUS329J3L)	C≦0.030	4.50～ 6.50	22.00～23.00	3.00～3.50	N:0.14～0.20	
		SUS329J4L	C≦0.030	5.50～ 7.50	24.00～26.00	2.50～3.50	N:0.08～0.30	

When both NSS and SUS apply, the NSS standards (composition, characteristics) are shown preferentially.

	Physical properties				Mechanical properties			
					Tension test			Hardness test
	Specific gravity kg/(mm·m²)	Elastic coefficient ×10³N/mm²	Average thermal expansion coefficient ×10⁻⁶cm/cm/℃ 20～100℃	Thermal conductivity W/m·℃ 100℃	Durability N/mm²	Tensile strength N/mm²	Elongation %	HV
	7.93	194	16.9	16.3	≧205	≧520	≧40	≦218
	7.93	194	16.9	16.3	≧215	≧550	≧45	≦218
	7.93	194	17.3	16.3	≧205	≧520	≧40	≦200
	7.93	194	16.9	16.3	≧275	≧550	≧35	≦220
	7.93	194	17.3	16.3	≧175	≧480	≧40	≦200
	7.93	187	17.3	16.3	≦335	≦660	≧50	≦175
	7.93	187	17.3	16.3	≧180	≧500	≧40	≦200
	7.93	199	17.2	15.1	≧155	≧450	≧40	≦170
	7.93	193	17.0	17.0	≧205	≧520	≧40	≦200
	7.93	194	17.3	16.3	≧205	≧520	≧40	≦200
	7.93	194	17.3	16.7	≧205	≧510	≧40	≦200
	7.93	193	17.0	16.7	≧175	≧450	≧40	≦150
	7.93	197	17.3	16.3	≧175	≧480	≧40	≦200
	7.93	194	17.3	16.3	≧175	≧480	≧40	≦200
	7.93	193	16.5	16.3	≧275	≧550	≧35	≦220
	7.98	194	16.0	16.0	≧205	≧520	≧40	≦200
	7.98	193	16.0	16.0	≧175	≧480	≧40	≦200
	7.98	193	16.0	17.0	≧175	≧480	≧40	≦200
	7.98	193	16.0	17.0	≧205	≧520	≧40	≦200
	7.75	194	16.7	16.0	≧255	≧520	≧45	≦220
	7.93	193	16.7	22.0	≧205	≧520	≧40	≦200
	7.93	193	16.2	15.8	≧205	≧520	≧40	≦220
	7.75	204	15.5	14.6	≧255	≧520	≧45	≦220
	7.95	182	14.5	14.3	≧205	≧520	≧40	≦220
	7.98	200	15.0	14.0	≧205	≧520	≧40	≦200
	7.98	193	15.0	15.0	≧205	≧560	≧40	≦218
	7.98	205	14.4	14.1	≧205	≧520	≧40	≦200
	7.93	190	17.0	16.0	≧155	≧450	≧40	≦200
	7.80	193	12.8	21.0	≧390	≧590	≧18	≦292
	7.80	190	11.5	19.0	≧450	≧620	≧18	≦320
	7.80	190	11.5	19.0	≧450	≧620	≧18	≦320

2.Characteristics and Applications

Classification	Steel type		Major Chemical Composition (%)					
	Nisshin (NSS)	JIS (SUS)	C	Ni	Cr	Mo	Others	
Ferritic type		SUS405	≦0.08	≦0.60	11.50～14.50		Al:0.10～0.30	
		SUH409	≦0.08	≦0.60	10.50～11.75		Ti:6×C～0.75	
	NSS 409M1		≦0.030	≦0.50	10.50～12.00		Ti:5×(C+N)～0.75	
	NSS 409M1S		≦0.030	≦0.50	10.50～12.50		Si≦0.30 Ti:5×(C+N)～0.75	
	NSS 410M1	(SUS410L)	≦0.030	≦0.60	11.50～13.50			
	NSS HR-1		≦0.030	≦0.60	13.55～15.50		Si:0.70～1.50 Nb:0.20～0.80 N≦0.025	
	NCA-2		≦0.050	≦0.60	11.50～13.50		Al:0.50～2.00 Si:1.00～2.00 Ti≦0.30	
	NCA-1		≦0.030	≦0.60	17.00～19.00		Al:2.00～4.00 Ti≦0.50	
	NSS EM-C		≦0.030	≦0.60	16.00～19.00		Cu:1.30～1.70 Ti:0.10～0.30 Nb:0.40～0.65 N≦0.020	
	NSS EM-2		≦0.020	≦0.60	17.50～20.00	1.75～2.50	Mn:0.70～1.50 Nb:0.30～0.55 N≦0.020	
		SUS430	≦0.12	≦0.60	16.00～18.00			
	NSS 430M2		≦0.050	≦0.60	16.00～18.00		Ti:5(C+N)～1.00	
	NSS ID-1		≦0.030	≦0.60	16.00～19.00		Ti:0.10～0.50 Nb:0.10～0.50 N≦0.025	
	NSS 439		≦0.030	≦0.60	17.00～18.00		Ti:10×(C+N)～0.80	
	NSS 430M4	(SUS430LX)	≦0.030	≦0.60	16.00～18.00		Nb:0.20～0.65	
	NSS 442M3		≦0.030	≦0.60	18.00～20.00		Cu:0.30～0.80 Nb:7×(C+N)+0.15～0.80	
	NSS 432	(SUS436J1L)	≦0.025	≦0.60	17.00～19.00	0.45～0.65	Nb:8×(C+N)～0.80 N≦0.020	
	NSS 432T		≦0.025	≦0.60	17.00～19.00	0.45～0.65	Ti:8×(C+N)～0.80 N≦0.020	
	NSS 436		≦0.025	≦0.60	17.00～19.00	0.50～1.50	Ti:8×(C+N)～0.80 N≦0.025	
	NSS 436M1		≦0.025	≦0.60	17.00～19.00	0.50～1.50	Ti:0.05～0.50 Nb:0.10～0.50 N≦0.025	
	NSS 444N	(SUS444)	≦0.020	≦0.60	17.50～20.00	1.75～2.50	Nb:10×(C+N)～0.80 N≦0.020	
	NSS U-1		≦0.025	≦0.60	17.00～20.00	1.75～2.50	Ti:8×(C+N)～0.80 N≦0.025	
	NSS 445M2	(SUS445J1)	≦0.020	≦0.60	21.00～23.00	1.00～1.50	Ti:0.05～0.50 Nb:0.10～0.60 N≦0.025	
	NSS U-22	(SUS445J2)	≦0.025	≦0.60	21.00～24.00	1.50～2.50	Nb:8×(C+N)～0.80 N≦0.025	
	NSS WCR		≦0.020	≦0.80	23.00～25.00	0.30～0.80	Ti:0.05～0.50 Nb:0.05～0.50 N≦0.025	
	NSS 447M1		≦0.020	≦0.50	28.50～32.00	1.50～2.50	N≦0.020	
Martensitic type		SUS403	≦0.15	≦0.60	11.50～13.00		Si≦0.50	
		SUS410	≦0.15	≦0.60	11.50～13.50			
		SUS410S	≦0.08	≦0.60	11.50～13.50			
	NSS 410M4		0.04～0.10	≦0.60	11.50～13.50		Si:0.10～0.40 Mn:0.50～1.00 Cu≦0.50 N:0.005～0.050	
	NSS 410M5		0.03～0.06	≦0.60	11.50～12.10	Mo≦0.50	Cu:0.70～0.90	
		SUS420J2	0.26～0.40	≦0.60	12.00～14.00			
	NSS WR-1		0.20～0.40	≦0.50	12.00～14.00	Mo≦0.50	Cu≦0.50 Nb:0.30～0.50	
	NSS HT980		0.03～0.06	3.00～5.00	12.00～14.00		Ti:0.15～0.50 N≦0.020	
Precipitation hardening type		SUS630	≦0.07	3.00～5.00	15.00～17.50		Cu:3.00～5.00 Nb:0.15～0.45	
		SUS631	≦0.09	6.50～7.75	16.00～18.00		Al:0.75～1.50	
	NSS HT1770		≦0.09	6.50～7.75	13.50～15.50		Si:1.00～2.00 Cu:0.40～1.00 Ti:0.20～0.65	
	NSS HT2000		0.050～0.100	7.80～8.80	13.00～14.00	1.80～2.70	Si:2.20～3.20 Cu≦0.50	
Multi-phase type	NSS 431DP-2		≦0.08	1.00～3.00	16.00～18.00			

When both NSS and SUS apply, the NSS standards (composition, characteristics) are shown preferentially.

Physical properties				Mechanical properties			
				Tension test			Hardness test
Specific gravity kg/(mm·m²)	Elastic coefficient ×10³N/mm²	Average thermal expansion coefficient ×10⁻⁶cm/cm/℃ 20～100℃	Thermal conductivity W/m·℃ 100℃	Durability N/mm²	Tensile strength N/mm²	Elongation %	HV
7.75	202	10.8	23.8	≧175	≧410	≧20	≦200
7.75	202	9.9	23.8	≧175	≧360	≧22	≦175
7.75	202	9.9	23.8	≧195	≧360	≧25	≦170
7.75	202	9.9	23.8	≧175	≧360	≧25	≦150
7.75	202	9.9	23.8	≧195	≧360	≧25	≦170
7.75	211	11.0	21.9	≧195	≧360	≧22	≦230
7.65	201	10.0	23.8	—	≧490	≧20	≦220
7.35	201	10.0	18.8	—	≧490	≧20	≦220
7.75	210	10.9	20.6	≧245	≧410	≧25	≦215
7.70	206	9.9	21.9	≧245	≧410	≧20	≦230
7.70	201	10.4	26.2	≧205	≧420	≧22	≦200
7.70	197	10.4	26.2	≦360	≧410	≧28	≦170
7.70	197	10.4	26.2	≧175	≧360	≧22	≦200
7.70	197	10.4	26.2	≧205	≧390	≧25	≦200
7.70	201	10.4	26.0	≧205	≧450	≧22	≦200
7.70	201	10.4	26.2	≧205	≧450	≧22	≦200
7.70	202	10.4	26.2	≧205	≧390	≧25	≦170
7.70	202	10.4	26.2	≧205	≧390	≧25	≦170
7.70	202	10.4	26.2	—	≧410	≧22	≦200
7.70	202	10.4	26.2	≧210	≧410	≧22	≦200
7.75	199	10.0	22.5	≧205	≧450	≧22	≦200
7.75	200	10.4	25.0	≧245	≧410	≧20	≦230
7.75	199	10.0	22.5	≧205	≧450	≧22	≦220
7.73	206	10.6	21.0	≧245	≧410	≧20	≦230
7.65	213	10.1	19.4	≧205	≧450	≧22	≦220
7.64	210	9.7	17.8	≧295	≧450	≧22	≦220
7.75	202	9.9	23.8	≧205	≧440	≧20	≦210
7.75	202	9.9	23.8	≧205	≧440	≧20	≦210
7.75	202	9.9	23.8	≧205	≧410	≧20	≦200
7.75	202	9.9	23.8	≧205	≧410	≧20	≦200
7.75	203	10.1	24.3	≧205	≧410	≧20	≦200
7.75	202	10.3	23.8	≧225	≧540	≧18	≦247
7.75	201	10.3	24.9	≧225	≧540	≧18	≦247
7.75	203	10.8	20.5	≧735	≧880	≧3	≧290
7.80	196	11.6	18.0	—	—	—	—
7.93	200	16.5	16.0	≦380	≦1030	≧20	≦200
7.75	207	10.9	24.9	—	—	—	—
7.80	200	14.0	20.8	—	—	—	—
7.73	201	10.5	19.9	—	—	—	340～400

3.Characteristics and Applications

Classification	Steel type		Characteristics	Applications
	Nisshin (NSS)	JIS (SUS)		
Austenitic type		SUS301	High strength can be obtained by cold rolling.	Steel belts, metal gaskets, springs
		SUS301L	Lower carbon content than type 301, high resistance to intergranular corrosion, high weldability	Railway vehicles
		SUS304	Typical austenitic stainless steel widely used as heat resistant steel	Receptacles, kitchen equipment, food equipment, building materials, general chemical equipment
		SUS304N1	Strength increased by adding nitrogen to type 304 while keeping its ductility	Structural strengthening members, Hume pipe collars
		SUS304L	Lower carbon content than type 304, high resistance to intergranular corrosion	Parts that cannot be subjected to heat treatment after welding
	NSS 304M2		Deep drawability, stretchability, and season cracking resistance increased by adding silicon and copper to type 304L	Receptacles, doorknobs, sink bowls
	NSS 304M3		Superior to type 304M2 in terms of high-speed bulging formability	Gas burner parts, intricately-shaped workpieces
	NSS 304ES		Extremely soft and superior in deep drawability, cold forgeability, and shape fixability	Deep drawing sensor cases, fine blanking materials
	NSS D-5	(SUS304)	Suitable for harsh processing with hole expandability made better than type 304	Receptacles
	NSS 304S		High softness and good workability obtained by adding copper to type 304	Coins, western tableware
	NSS XM7		Low magnetic material with high cold workability obtained by adding copper to type 304	Cold forging
	NSS D-8		Less cold work hardenability than type XM7, non-magnetic, suitable for cold closed die forging, etc.	Deep drawing sensor cases
		SUS305	Less work hardenability than type 304, suitable for spinning, etc.	Cold forging
	NSS 305M1		Extremely deep drawing is possible. In addition, non-magnetism is maintained even after processing.	Electronic parts
	NSS 305M3		High-strength non-magnetic steel with high spring characteristics which remains non-magnetic even after processing	Non-magnetic springs, electronic parts
		SUS316	More corrosion resistant than type 304 to seawater and other solutions	Chemical and papermaking industries
		SUS316L	Lower in carbon content and more intergranular corrosion resistant than type 316	Chemical, papermaking, dye, and fertilizer industries
		SUS317L	Lower in carbon content than type 317, more corrosion resistant than type 316, superior in intergranular corrosion resistance	Chemical plants
	NSS M1C NSS SCR-M		Molybdenum saving stainless steel superior in stress corrosion cracking resistance, and equal in corrosion resistance with type 316	Hot water boilers, electric water heaters
	NSS SCR		Superior in stress corrosion cracking resistance, equal in crevice corrosion resistance with type 316	Hot water boilers, interior piping
		SUS321	Intergranular corrosion resistance and heat resistance increased by adding titanium to type 304. Not suitable for decorative parts.	Welding structural elements
	NSS 302B		Equal in oxidation resistance and strength with type 310S at temperatures not higher than 900℃	Automobile exhaust manifolds, flexible tubes
	NSS ER-1		Equal in oxidation resistance with type 310S	Automobile exhaust manifolds, burning parts
	NSS ER-4		High temperature salt corrosion resistance and chloride molten salt corrosion resistance	Automobile flexible tubes, incinerators
		SUS309S	Superior to type 304 in terms of high temperature oxidation resistance and corrosion resistance	Heating furnace parts, heat treatment vessels
	NSS 309B		Higher silicon content than type 309S. Higher than or equal to type 310S in terms of high temperature oxidation resistance	Plate tile firing jigs, heat treatment vessels
		SUS310S	Superior in oxidation resistance to type 309S. Used as heat-resistant steel in many cases.	Combustion chamber parts, nitric acid tanks
	NSS D-21	(SUS304J2)	As low in cold work hardenability and magnetism as type XM7	Western tableware, receptacles, spinning artifacts
Two-phase type	NSS R-4	(SUS329J1)	Superior in pitting corrosion resistance in chloride environment and in corrosion resistance in urea, phosphoric acid, and sour gas environments.	Chemical fertilizers, seawater heat exchangers
	NSS R-3	(SUS329J3L)	Superior in pitting corrosion resistance in chloride environment. Higher in molybdenum and nitrogen content, in strength, and in corrosion resistance than type R-4	Seawater desalination units
		SUS329J4L	Superior in pitting corrosion resistance in chloride environment. Higher in chromium and nickel content and in corrosion resistance than type R-3.	Water storage tanks, chemical fertilizers, seawater heat exchangers

Classification	Steel type		Characteristics	Applications
	Nisshin (NSS)	JIS (SUS)		
Ferritic type		SUS405	Weldability and workability increased by adding aluminum to type 410	Oil refining distillation column trays
		SUH409	Oxidation resistant steel developed by adding titanium to 11Cr	Automobile exhaust pipes
	NSS 409M1		Lower carbon content than type 409 with improved intergranular corrosion resistance, oxidation resistance, and radio-frequency weldability	Automobile exhaust pipes
	NSS 409M1S		Formability increased by reducing silicon content in type 409M1	Automobile exhaust pipes
	NSS 410M1	(SUS410L)	Developed by reducing carbon content in type 410 for increased weld bendability and workability	Construction materials, receptacles
	NSS HR-1		High heat resistant 14Cr-Si-Mn-Nb steel with superior high temperature strength and oxidation resistance	Automobile exhaust manifolds
	NCA-2		13Cr-1.5Si-1Al steel with superior high temperature oxidation resistance	Heat chambers, resistive elements
	NCA-1		18Cr-3Al steel with superior high temperature oxidation resistance than type NCA-2	Heat chambers, resistive elements, flexible heating sheets
	NSS EM-C		Molybdenum-free 18Cr-1.5Cu-Nb-Ti steel with superior thermal fatigue characteristics	Automobile exhaust manifolds
	NSS EM-2		18Cr-2Mo-Mn-Nb steel with superior high temperature strength and scale peeling resistance	Automobile exhaust manifolds
		SUS430	Typical all-purpose ferritic stainless steel with high corrosion resistance	Architectural interiors, household appliances, home electrical applianceparts
	NSS 430M2		Developed by adding titanium to type 430 for increased workability and corrosion resistance	Burners, home electrical appliance parts
	NSS ID-1		Superior in workability to types 430M2 and 430M4 due to compound addition of niobium and titanium	Sensor cases, sockets and other deep drawing products
	NSS 439		VA stainless steel developed by removing molybdenum from type 432. Highly corrosion resistant in an exhaust gas condensation environment	Automobile mufflers, elevators
	NSS 430M4	(SUS430LX)	Developed by adding niobium to type 430 for increased workability, weldability, and corrosion resistance	Washing machine drums, bicycle rims
	NSS 442M3		Developed by adding copper and niobium to type 430 to provide corrosion resistance enough to replace type 304	Washing machine drums, oil tanks, automobile exhaust pipes
	NSS 432	(SUS436J1L)	18Cr-0.5Mo-Nb steel with high corrosion resistance and salt corrosion resistance in an exhaust gas condensation environment	Automobile mufflers, hot water heater claddings, oil tanks
	NSS 432T		18Cr-0.5Mo-Ti steel with high corrosion resistance and salt corrosion resistance in an exhaust gas condensation environment	Automobile mufflers
	NSS 436		Superior in corrosion resistance to type 432 in an exhaust gas condensation environment	Automobile mufflers, hot water heater claddings, oil tanks
	NSS 436M1		Equal in corrosion resistance to type 436. Superior in workability due to compound addition of titanium and niobium	Diesel car exhaust pipes, automobile oil filling members
	NSS 444N	(SUS444)	Free from stress corrosion cracking. Equal in corrosion resistance to type 316.	Water heater bodies, storage tanks, solar water heater collectors
	NSS U-1		18Cr-2Mo steel with extremely low carbon content. Superior in corrosion resistance to type 304.	Hot water heaters
	NSS 445M2	(SUS445J1)	Excellent in corrosion resistance and weather resistance. In particular, this type of steel is superior to type 444N in terms of corrosion resistance in hot water.	Water heater bodies, roof/exterior building materials
	NSS U-22	(SUS445J2)	High-purity ferritic stainless steel superior in weather resistance to type 444	Roof/exterior building materials
	NSS WCR		Excellent in corrosion resistance at welds. Welding can be carried out with a back gas seal omitted.	Water heater bodies
	NSS 447M1		Super ferritic stainless steel far superior in corrosion resistance to type 445 22Cr steel	Water front exterior building materials, automobile fuel gas treatment equipment
Martensitic type		SUS403	Developed by reducing silicon content in type 410 so as to be suited for high temperature strength parts	Valve seats
		SUS410	Typical 13Cr stainless steel with low hardenability	Spoons, forks
		SUS410S	Developed by reducing carbon content in type 410 to 0.08% or less for increased corrosion resistance and workability	Receptacles, distillation column trays
	NSS 410M4		The maximum hardness of HRC35 can be obtained by hardening over a wide range of temperatures.	Disc brakes
	NSS 410M5		Developed by adding copper to type 410M4 for increased shape stability after hardening	Disc brakes
		SUS420J2	Higher in carbon content and greater in both hardenability and work hardening properties than 410.	Table knives, vernier calipers, rulers, scissors
	NSS WR-1		Developed by adding niobium to type 420J2 for increased workability and corrosion resistance after hardening	Flat steel heald and other loom parts, edged tools
	NSS HT980		High strength is achieved by hardening starting from 750℃ or higher. Little reduction in strength at welds.	Steel belts, high-strength materials for welding
Precipitation hardening type		SUS630	Precipitation hardening steel (17-4PH) developed by the addition of copper. Equal in corrosion resistance and superior in abrasion resistance to type 304	Press plates, steel belts
		SUS631	Precipitation hardening steel (17-7PH) developed by the addition of aluminum. Superior in spring characteristics due to ageing treatment after cold rolling	Springs, washers, meter gauge parts
	NSS HT1770		Capable of being subjected to stamping and given high strength through ageing treatment	Sheet sensor parts, punching springs
	NSS HT2000		Ultra-high strength and superior in ductility and fatigue characteristics due to combination of work hardening and precipitation hardening.	ID saw blades
Multi-phase type	NSS 431DP-2		Multi-phase steel with high strength that can replace type 301 and 304 spring materials	Finishing hardware, press plates, brakes

Surface Finishes

1.Hot- and cold-rolled products

(1) JIS Standards (JIS G 4304, JIS G 4305)

Classification	Finish Symbol	Finish Description
Hot-rolled products	No.1	Subjected to heat treatment and pickling, or other similar treatments after hot rolling
Cold-rolled products	No.2D	Subjected to heat treatment and pickling, or other similar treatments after cold rolling
	No.2B	Subjected to heat treatment and pickling, or other similar treatment after cold rolling and then lightly cold-rolled so as to obtain appropriate luster surface finish
	No.3	Polished with an endless belt of P100 to P120 specified in JIS R 6010
	No.4	Polished with an endless belt of P150 to P180 specified in JIS R 6010
	#240	Polished with an endless belt of P240 specified in JIS R 6010
	#320	Polished with an endless belt of P320 specified in JIS R 6010
	#400	Polished with an endless belt of P400 specified in JIS R 6010
	BA	Subjected to bright heat treatment after cold rolling
	HL	Polished with appropriate abrasives so as to obtain continuous polishing marks

Note: Please refer to the sample books for the standard surface finish and skin sample. Surface finishes other than shown in the above table may be made if agreed between the purchaser and the supplier.

(2) Nisshin Standards

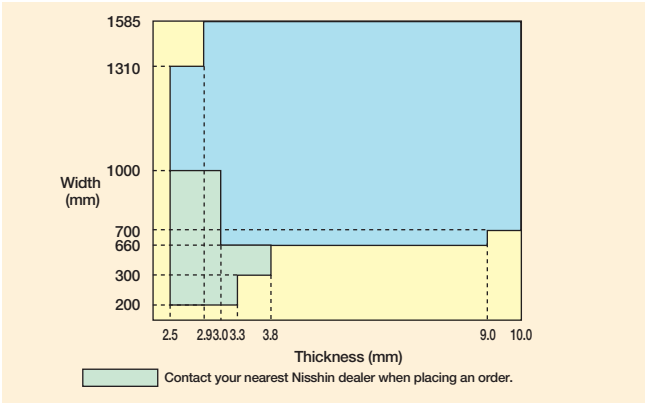
Classification	Finish Symbol	Finish Description
Hot-rolled products	CG	Finished by grinding with a grindstone of appropriate grid size stipulated in JIS R 6010 after No.1 finish, but not degreased
Cold-rolled products	No.2DR	Heat-treated and pickled after cold rolling and then cold-rolled by dull rolls
	No.2DR-2	Cold-rolled by rolls coarser than No.2DR
	No.2BB	Subjected to bright heat treatment or heat treatment and pickling after cold rolling and then cold-rolled so as to obtain appropriate luster surface finish
	#400-N	Buffed so as to obtain reflectivity equivalent to that of #400 finish
	No.7	Buffed so as to obtain reflectivity higher than that of #400 finish
	No.9	Polished with an endless belt finer than P320
	Emboss	Provided with an appropriate uneven design on one side (or on both side) by cold rolling

Note: Please refer to the sample books for the standard surface finish and skin sample. The above table shows the surface finishes “to be agreed between the purchaser and the supplier” as defined in JIS.

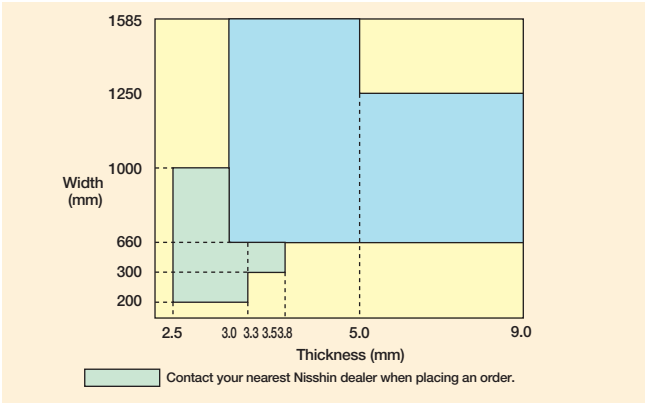
Available Sizes

SUS304, SUS430 (Hot-rolled) Products of sizes other than shown below may be made to order.

(1) Hot-rolled product – Steel strip SUS304/No.1 (thickness, width)

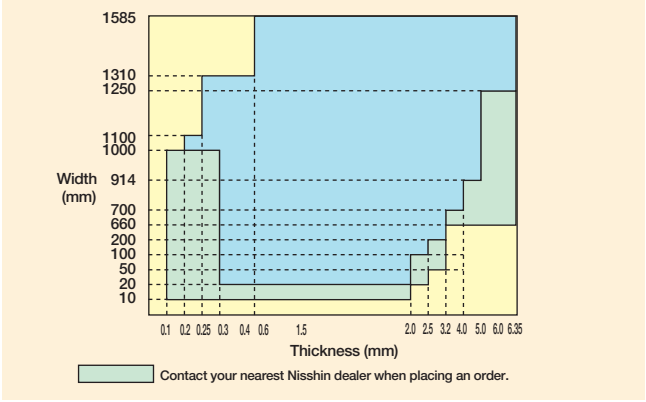


(2) Hot-rolled product – Steel strip SUS430/No.1 (thickness, width)

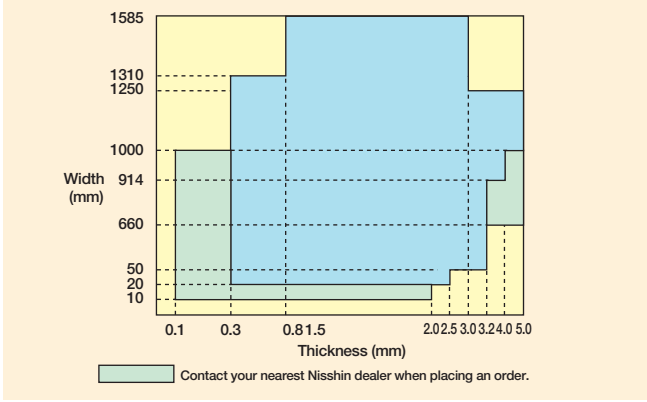


SUS304, SUS430 (Cold-rolled) Products of sizes other than shown below may be made to order.

(1) Cold-rolled product – Steel strip SUS304/2B,2D (thickness, width)



(2) Cold-rolled product – Steel strip SUS430/2B,2D (thickness, width)



Dimensional Tolerances

1.Hot-rolled products (JIS G 4304)

(1) Thickness

(Unit: mm)

Thickness \ Width	Less than 1,000	1,000 or more, less than 1,250	1,250 or more, 1,600 or less
2.50 or more, less than 3.15	±0.30	±0.35	±0.40
3.15 or more, less than 4.00	±0.35	±0.40	±0.45
4.00 or more, less than 5.00	±0.40	±0.45	±0.50
5.00 or more, less than 6.00	±0.50	±0.55	±0.60
6.00 or more, less than 8.00	±0.60	±0.65	±0.65
8.00 or more, 10.00 or less [a)]	±0.65	±0.65	±0.65

Note: a) Some of the above tolerances may not be achieved, depending on the type of steel and thickness.

(2) Width (cut edge, machine cutting)

Steel strip

(Unit: mm)

Thickness \ Width	Less than 100	100 or more, less than 160	160 or more, less than 250	250 or more, less than 400	400 or more, less than 630	630 or more, less than 1,000	1,000 or more
Less than 6.0	+5, 0	+5, 0	+5, 0	+5, 0	+10, 0	+10, 0	+10, 0
6.0 or more, 9.0 or less	+10, 0	+10, 0	+10, 0	+10, 0	+10, 0	+10, 0	+10, 0

Note: If agreed between the purchaser and the supplier, the value may shift to the negative side within the range identical with the total range of tolerance for width shown in the table.

(3) Width (mill edge)

(Unit: mm)

Classification \ Width	630[c)] or more, less than 1,000	1,000 or more
JIS G 4304[a)]	+25, 0	+30, 0
Nisshin Standards[b)]	+50, 0	+50, 0

Notes a) Values not shown in the table may be specified if agreed between the purchaser and the supplier.
b) The Nisshin Standards specify the tolerances “to be agreed between the purchaser and the supplier” as stipulated in Section 9.8 (tolerances for width) of JIS G 4304.
c) Some of the above tolerances may not be achieved, depending on the type of steel.

2.Cold-rolled products (JIS G 4305)

(1) Thickness – ①General

(Unit: mm)

Thickness \ Width	Thickness tolerance	
	Less than 1,250	1,250 or more, 1,600 or less
0.16 or more, less than 0.25	±0.03	—
0.25 or more, less than 0.30	±0.04	—
0.30 or more, less than 0.60	±0.05	±0.08
0.60 or more, less than 0.80	±0.07	±0.09
0.80 or more, less than 1.00	±0.09	±0.10
1.00 or more, less than 1.25	±0.10	±0.12
1.25 or more, less than 1.60	±0.12	±0.15
1.60 or more, less than 2.00	±0.15	±0.17
2.00 or more, less than 2.50	±0.17	±0.20
2.50 or more, less than 3.15	±0.22	±0.25
3.15 or more, less than4.00	±0.25	±0.30
4.00 or more, less than 5.00	±0.35	±0.40
5.00 or more, less than 6.00	±0.40	±0.45
6.00	±0.50	±0.50

Thickness – ②ET

(Unit: mm)

Thickness \ Width	Thickness tolerance						
	Less than 160	160 or more, less than 250	250 or more, less than 400	400 or more, less than 630	630 or more, less than 1,000	1,000 or more, less than 1,250	1,250 or more, 1,550 or less
0.16 or more, less than 0.25	±0.020	±0.025	±0.030	±0.030	–	–	–
0.25 or more, less than 0.40	±0.025	±0.030	±0.035	±0.035	±0.038	±0.038	–
0.40 or more, less than 0.60	±0.035	±0.040	±0.040	±0.040	±0.040	±0.040	±0.05
0.60 or more, less than 0.80	±0.040	±0.045	±0.045	±0.045	±0.05	±0.05	±0.06
0.80 or more, less than 1.00	±0.040	±0.05	±0.05	±0.05	±0.05	±0.06	±0.07
1.00 or more, less than 1.25	±0.05	±0.05	±0.05	±0.06	±0.06	±0.07	±0.08
1.25 or more, less than 1.60	±0.05	±0.06	±0.06	±0.06	±0.07	±0.08	±0.10
1.60 or more, less than 2.00	±0.06	±0.07	±0.08	±0.08	±0.09	±0.10	±0.12
2.00 or more, less than 2.50	±0.07	±0.08	±0.08	±0.09	±0.10	±0.11	±0.13
2.50 or more, less than 3.15	±0.08	±0.09	±0.09	±0.10	±0.11	±0.12	±0.14
3.15 or more, less than 4.00	±0.09	±0.10	±0.10	±0.11	±0.12	±0.13	±0.16

Thickness – ③ST

(Unit: mm)

Thickness \ Width	Thickness tolerance	
	630 or more, less than 1,000	1,000 or more, less than 1,250
Less than 0.25	±0.030	—
0.25 or more, less than 0.40	±0.030	±0.035
0.40 or more, less than 0.60	±0.035	±0.035
0.60 or more, less than 0.80	±0.040	±0.040
0.80 or more, less than 1.00	±0.040	±0.050
1.00 or more, less than 1.25	±0.050	±0.055
1.25 or more, less than 1.60	±0.055	±0.060
1.60 or more, less than 2.00	±0.065	±0.070

Dimensional Tolerances

(2) Width (cut edge)

Steel strip in general

(Unit: mm)

Thickness \ Width	Less than 1,524	1,524 or more
6.0 or less	+5, 0	+10, 0

Note: If agreed between the purchaser and the supplier, the value may shift to the negative side within the range identical with the total range of tolerance for width shown in the table.

Steel strip EW

(Unit: mm)

Thickness \ Width	Width tolerance				
	Less than 160	160 or more, less than 250	250 or more, less than 400	400 or more, less than 630	630 or more, 1,000 or less
less than 0.60	±0.15	±0.15	±0.30	±0.30	±0.50
0.60 or more, less than 1.00	±0.15	±0.15	±0.30	±0.30	±0.50
1.00 or more, less than 1.60	±0.20	±0.25	±0.35	±0.35	±0.60
1.60 or more, less than 2.50	±0.30	±0.35	±0.45	±0.45	±0.70
2.50 or more, 4.00 or less	±0.40	±0.45	±0.50	±0.50	±0.80

(3) Width (mill edge)

Steel strip in general

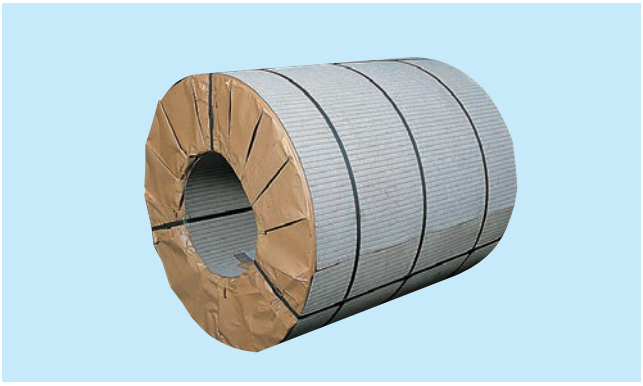
(Unit: mm)

Classification \ Width	Less than 400	400 or more, less than 630	630 or more, less than 1,000	1,000 or more, less than 1,524	1,524 or more
JIS G 4305[a)]	±10, 0	±20, 0	±25, 0	±30, 0	±30, 0
Nisshin Standards[b)]				±50, 0	±50, 0

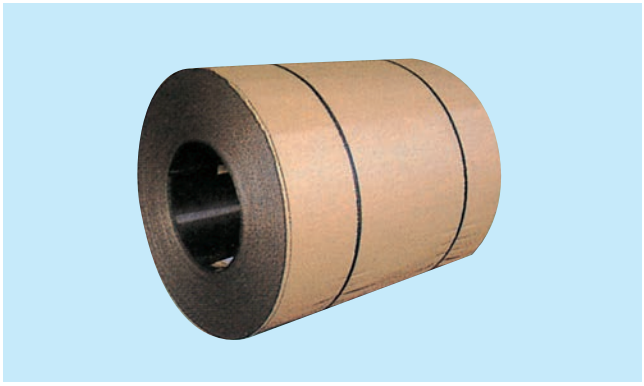
Notes a) Values other than shown in the table may be specified if agreed between the purchaser and the supplier.
b) The Nisshin Standards specify tolerances for width to be agreed between the purchaser and the supplier as stipulated in Section 9.4 (tolerances for width) of JIS G 4305.

Packaging Examples

The standard packaging is shown below.

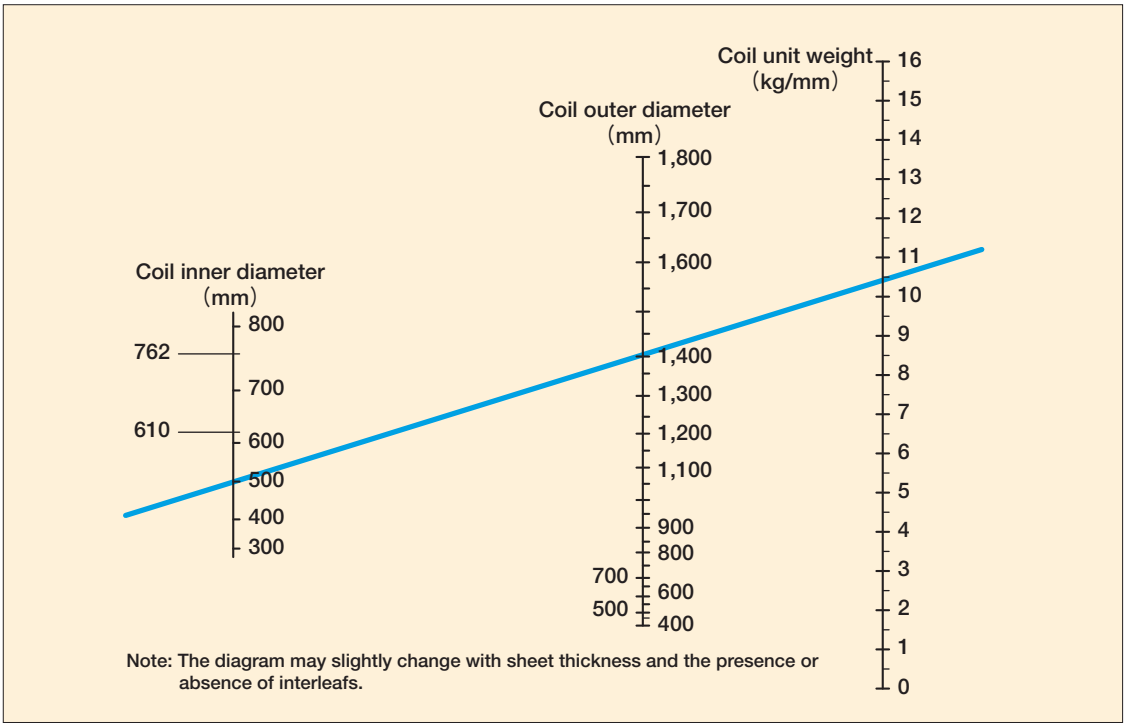


Cold-rolled steel strip



Mill edge with a thickness of 0.5 mm or more

Relationship among the Inner Diameter, Unit Weight, and Outer Diameter of Steel Strip

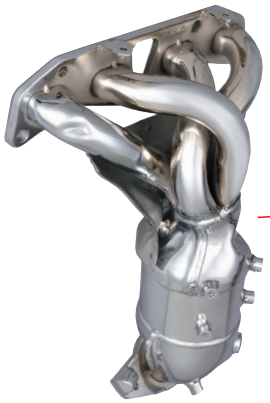


Note: The diagram may slightly change with sheet thickness and the presence or absence of interleafs.

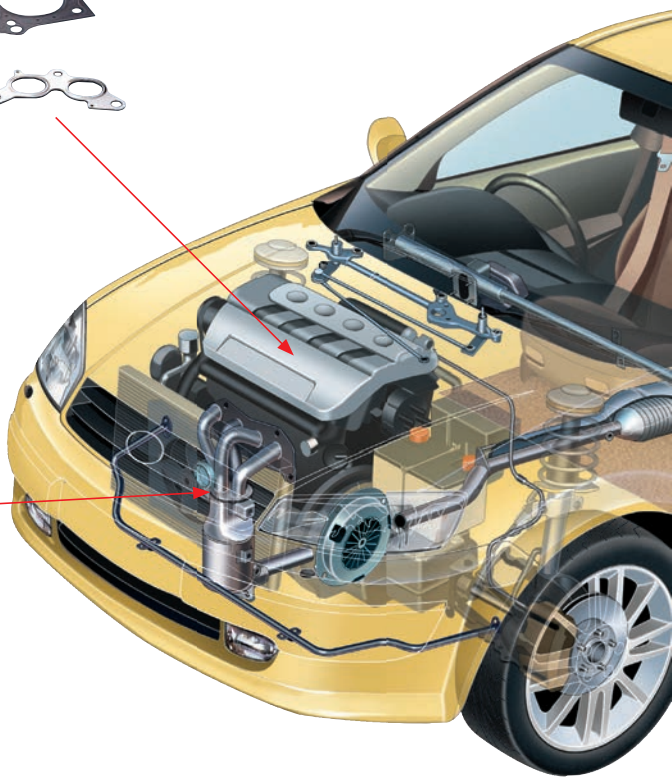
Applications

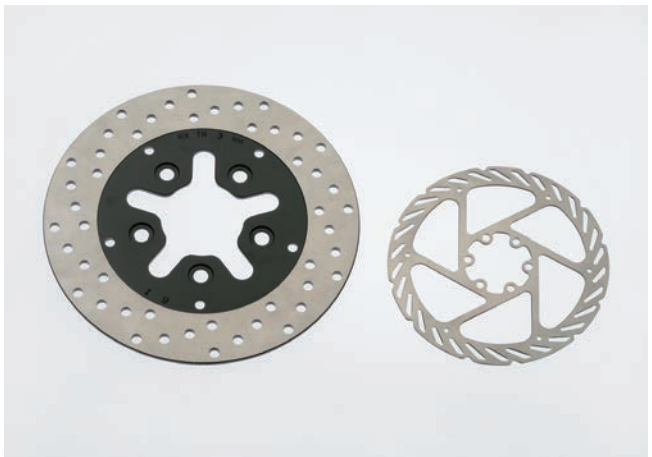
Automobiles, two-wheelers

Automobile gaskets (SUS301)

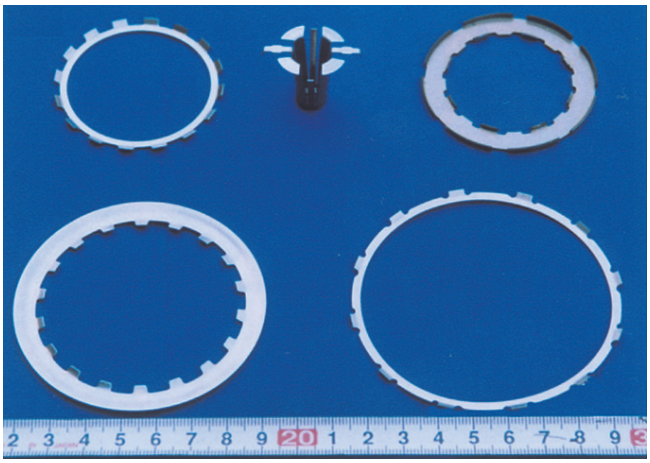


Exhaust manifold
(NSS HR-1, NSS EM-C, NSS EM-2)

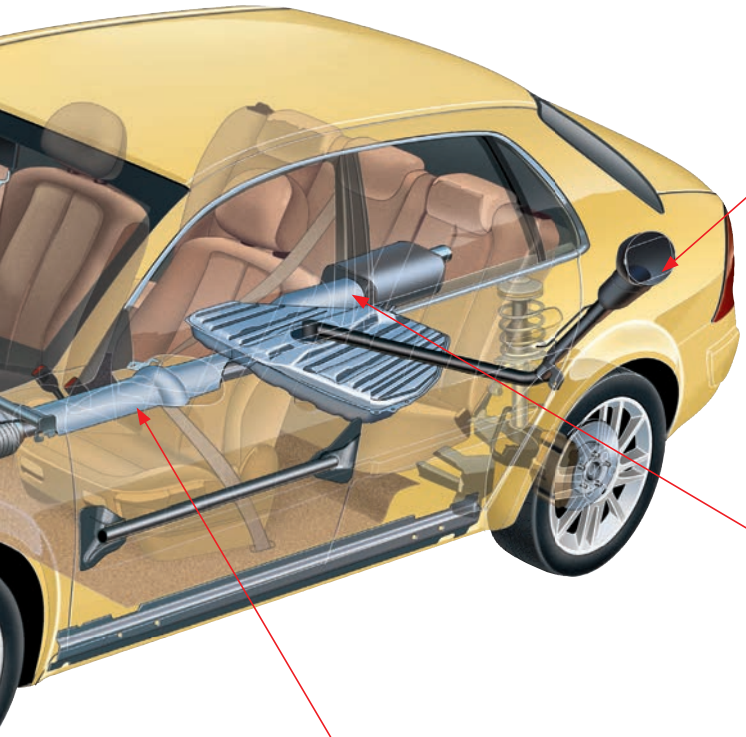




Motorcycle disc brakes (NSS 410M4)

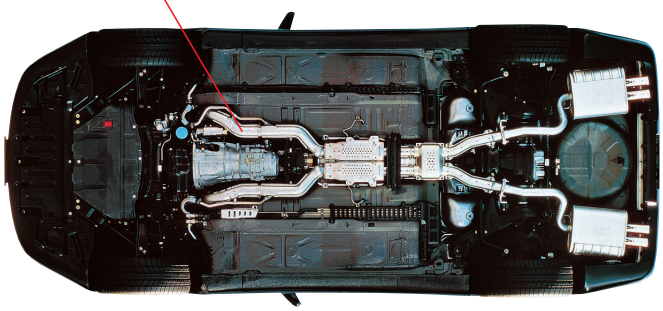


Automobile special washers (NSS 431DP-2)



Feed oil pipe (NSS 436)

Muffler (NSS 436, NSS 439)



Front, center, and tail pipes
(NSS 409M1, NSS 439)

Applications

Kitchen goods, home electric appliances, and others

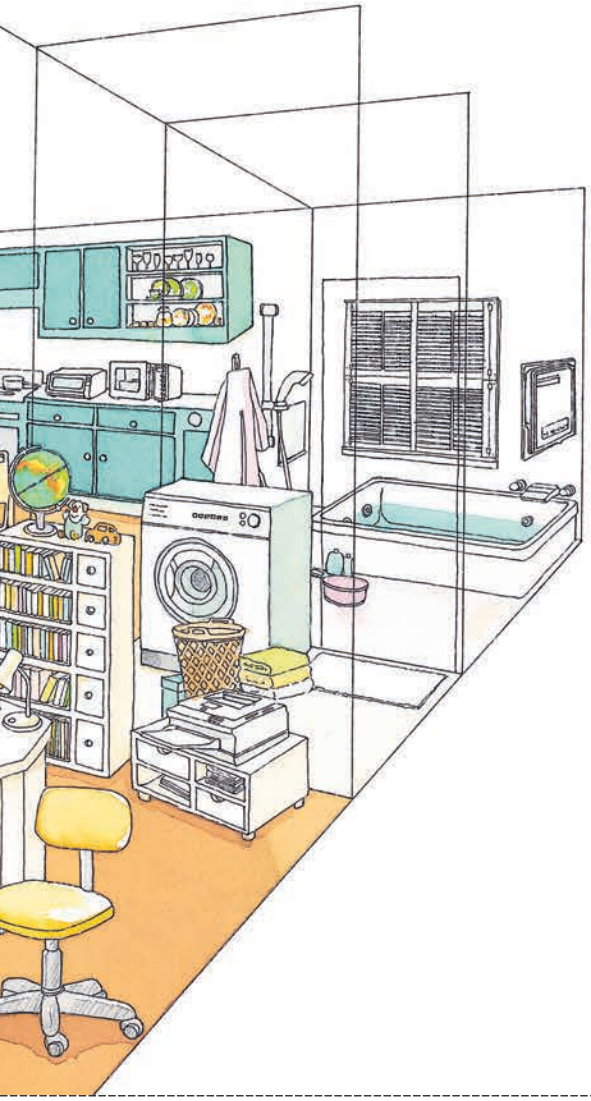
Golf club heads (NSS HT1770)

System kitchen (SUS304, SUS430)

Edge tool, scissors (NSS WR Series)

IH rice cooker
(Pearl-like color clear coat)

EcoCute water heater
(NSS 445M2)



Drum-type washer-dryer
(NSS 430M2)

Bath scale
(SUS403/star light emboss)

Applications

Exteriors, building materials, monuments

Terminal 1 of Narita International Airport (Toki no Hana – Flowers reflecting the seasons by N. Sakagami - SUS304, fine color/Tsukiboshi Art Co., Ltd.)

Terminal 1 of Tokyo International Airport (Tsubasa – Niji ni Somatte – Wings – Arriving with the rainbow by N. Sakagami - SUS304, fine color/Tsukiboshi Art Co., Ltd.)

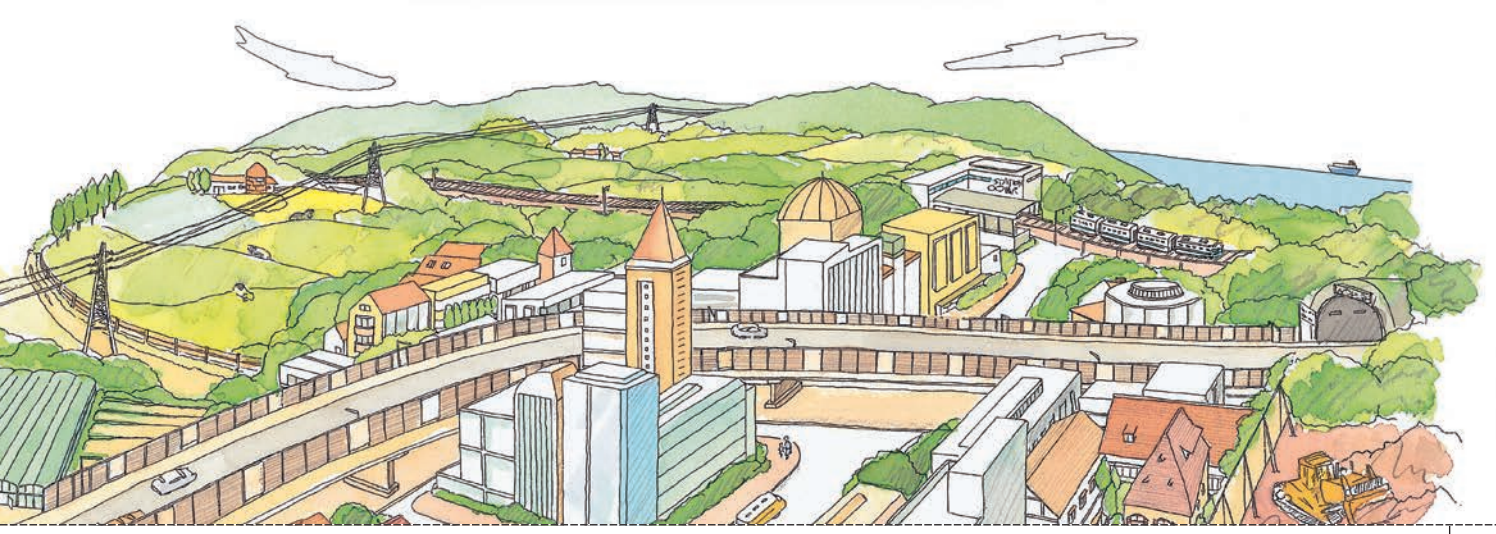
Nakanoshima Mitsui Building (SUS304)

Water tank (NSS 445M2)

Nagoya City Science Museum (SUS445J1)

Saitama Super Arena (Tough-Tain IU, NSS U-22)

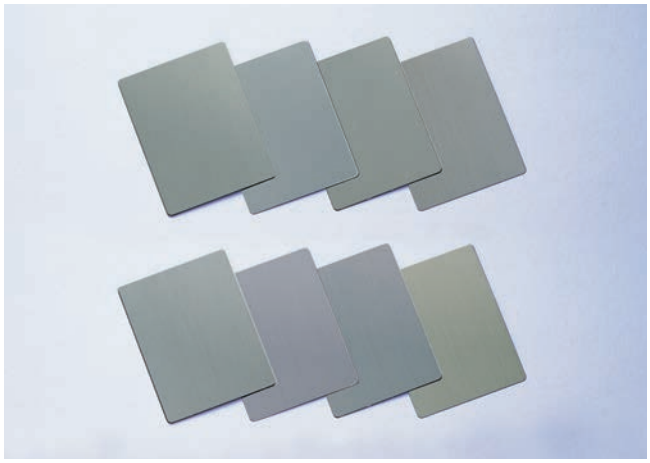
Seibu Dome (Tough-Tain IU)



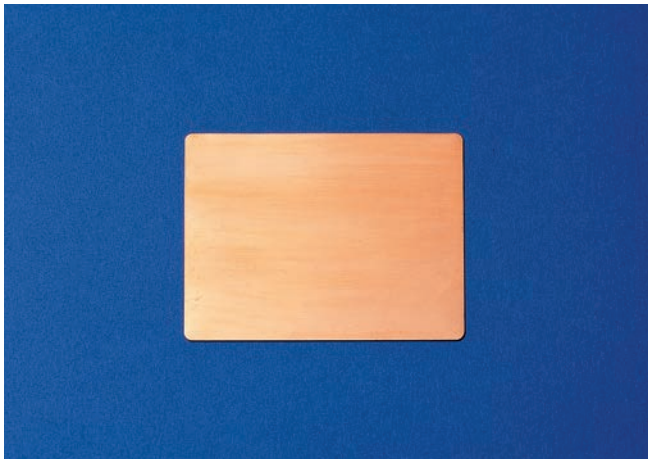
Other Types of Stainless Steels

Classification	Name	Features
Precoated stainless steel	Moon Star swan color	Stainless steel strip coated by baking with pigmented coating which is superior in weatherability
	W-Coat Stainless	Stainless steel strip coated by baking with a lubricating coating film
	Tough-Tain IU	Stainless steel strip coated by baking with a special resin for the purpose of making the surface free of a protective film (NSS 445M2)
Functional precoated stainless steel	Clear Coat Stainless	Stainless steel strip coated by baking with polyester, acrylic resin, acrylic silicone, and fluororesin coating films
	Pearl-like Color Clear Coat Stainless	Stainless steel strip coated by baking with a special pigment-containing transparent coating film
Plated stainless steel	Coppersoftain	Copper plated stainless steel strip
	Alstar Stainless	Aluminum plated stainless steel strip
Stainless steel foil	Stainless Foil	Extremely thin, extra width stainless steel strip (620 mm) with a thickness of 0.25 mm or less
Clad steel	Iron Clad Stainless	Steel strip fabricated by sandwiching common steel with stainless steel under pressure

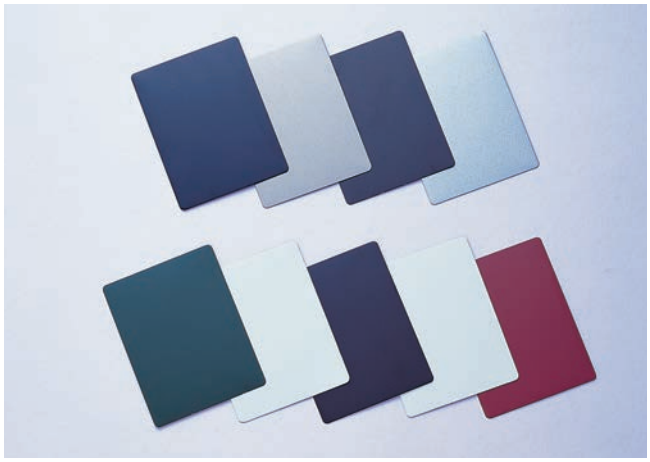
Note: Please refer to the sample books for the standard finish and skin sample.



Pearl-like Color Clear Coat Stainless



Coppersoftain



Moon Star swan color

Guide for Ordering

● **When placing an order or making an inquiry, provide us with as detailed information as possible on the following items.**

(1) Type of steel, finish, and dimensions
(2) Intended use, processing method
(3) Required specifications: thickness, width and length tolerances, packaging unit weight (inner diameter in the case of a coil)
(4) Quantity, delivery date
(5) Others: items required in particular

● **For ordering and making inquiries …**

The best performance can be brought out of our stainless steel products by selecting the optimum type of steel, depending on the intended use, design conditions, processing conditions, etc. Please contact your nearest Nisshin dealer when placing an order or making an inquiry.

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stainless.nipponsteel.com

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