

### **Stainless Steel Wire Rods**

#### Head Office

2-6-1 Otemachi, Chiyoda-ku, Tokyo 100-0004, Japan Phone +81-3-3276-4800

### Sales Offices

#### Osaka Sales Office

Yodoyabashi-Mitsui Bldg. 3F, 4-1-1 Imabashi, Chuo-ku, Osaka-shi, Osaka 541-0042, Japan Phone +81-6-4706-1180

#### **Kyushu Sales Office**

Hakata-NS Bldg. 4F, 5-18 Tenya-machi, Hakata-ku, Fukuoka-shi, Fukuoka 812-8522, Japan Phone +81-92-273-7090

### Niigata Sales Office

Mitsuibussan Bldg. 8F, 1-4-2 Higashi Oodori, Chuo-ku, Niigata-shi, Niigata 950-0087, Japan Phone +81-25-246-3113

#### Nagoya Sales Office

NS Bldg. 5F, 2-13-18 Meieki-minami, Nakamura-ku, Nagoya-shi, Aichi 450-0003, Japan Phone +81-52-581-2012

#### Chugoku Sales Office

Hiroshima-Teppou-chou Bldg. 14F, 10-12 Teppou-chou, Naka-ku Hiroshima-shi, Hiroshima 730-0017, Japan Phone +81-82-511-5115

### Overseas Offices

### NSSC Bangkok Office

NS-Thainox Auto Company Limited, 20th Floor, Thosapol Land, 947 Moo 12 Bangna-Trad Km. 3 Road, Bangna, Bangkok, Thailand Phone +66-2-744-0720

### NSSC Guangzhou Office

Rm No.1206-1208 Garden Tower, 368 Huanshi Dong Lu, Guangzhou 510064, China Phone +86-20-83652458

### Works

#### Hikari Works

3434 Ooaza-shimada, Hikari-shi, Yamaguchi 743-8550, Japan Phone +81-833-71-5004

#### **Kashima Works**

2-1 Hikari, Kashima-shi, Ibaraki 314-0014, Japan Phone +81-299-84-3702

#### Yawata Works

2108-1 Aza-hato, Ooaza-maeda, Yawatahigashi-ku, Kitakyushu-shi, Fukuoka 805-0058, Japan Phone +81-93-672-2356

For further information, please contact to the following department or nearest office
Wire Rod & Bar Marketing & Sales Division,
Nippon Steel & Sumikin Stainless Steel Corporation Head Office
Phone: +81-3-3276-4830

### **Nippon Steel & Sumikin Stainless Steel Corporation**



# **Stainless Steel Wire Rods**

**Nippon Steel & Sumikin Stainless Steel Corporation** 



( Printed on recycled paper ) Cat.No. WE001 2004.10 ① 2004.10 ①



The stainless steel divisions of Nippon Steel Corporation and Sumitomo Metal Industries, Ltd. were consolidated into a new company named Nippon Steel & Sumikin Stainless Steel Corporation in 2003.

The most sophisticated stainless steel manufacturing technologies as well as state-of-the-art quality control systems, developed and held by each of these two companies, have now been integrated and wholly taken over by this new company. Moreover, as Nippon Steel & Sumikin Stainless Steel Corporation plans to strengthen R&D focusing on stainless steel, the company is confident that it will be able to meet the strictest requirements demanded by customers with its stainless steel wire rods.

### **Stainless Steel Wire Rods**

### Contents

- 1 Features
- 2 Manufacturing Flow
- 4 Characteristic Properties and Application Examples by Grades and Type
- 6 System Diagram of Stainless Steels
- 8 Application Examples
- 10 Chemical Composition
- 13 Mechanical Properties
- 14 Sizes Available
- 15 Specifications and Bundling of Coil

### Important notice

The technical information in this document simply describes typical characteristics and performance of the product and does not provide any guarantees except for the items clearly stated as specifications or standard values.

Note that NSSC takes no responsibility whatsoever for damage resulting from user failure to observe the instructions presented in this document or improper handling of the product.

The information presented in this document is subject to change without notice. Please contact the relevant division for the latest information.

No part of this document may be copied or reproduced in any form without the consent of NSSC.

### **Stainless Steel Wire Rods**

### **Features**

Nippon Steel & Sumikin Stainless Steel Corporation's stainless wire rods are produced and supplied under the motto "Higher Quality, Greater Variety of Steel Grades, Quicker Delivery" with its advanced technologies in order to provide customers with full satisfaction.

# 1

# **Excellent Quality**

Based on ISO9001, an international quality control system standard, strict quality control is being exercised on an integrated basis from steelmaking to product shipments.

A combination of the most advanced equipment and superb manufacturing technologies, including in-line heat treatment, makes available stainless steel wire rods with the mechanical properties and surface textures being uniform and excellent over the entire length.

# 2

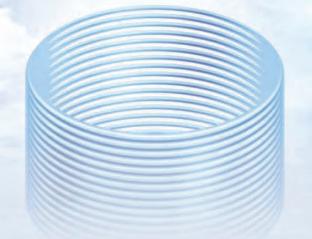
# A Wide Variety of Steel Grades and Sizes Available

A wide selection of steel grades ranging from Cr to Ni types is available to suit intended applications. Wire rods are also available in diameters ranging from 5.5 to 34mm.

# 3

# Quick Delivery

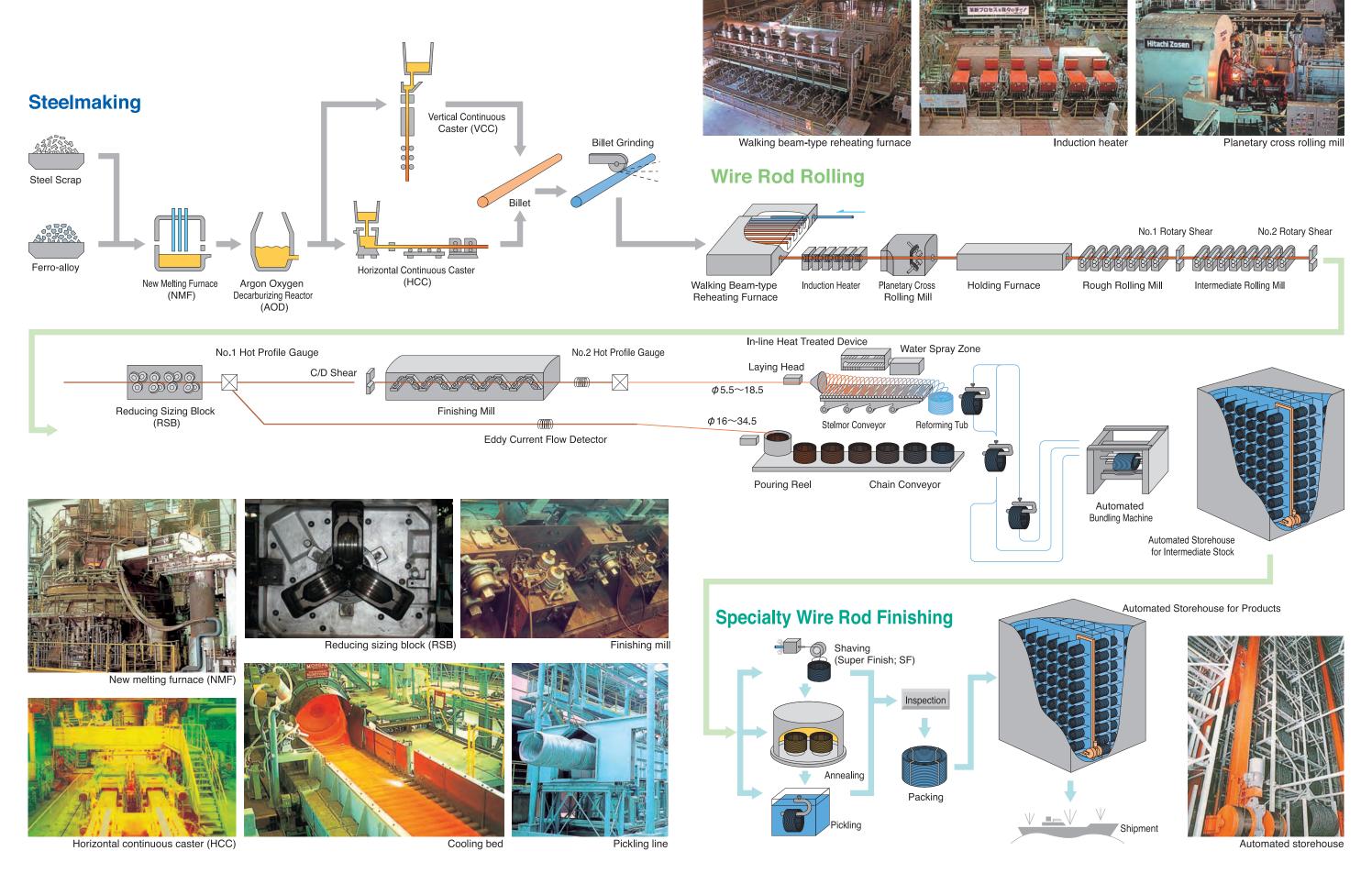
The stringent process management exercised over the entire sequence of manufacturing stainless steel wire rod also ensures the customers' full satisfaction with delivery time.



Stainless Steel Wire Rods

Manufacturing Flow

# Manufacturing Flow



Application examples

# Characteristic Properties and Application Examples by Grades and Type

### Martensitic Stainless Steels

- ●It is an Fe-Cr type alloy stainless steel containing 13%Cr.
- It possesses heat-treatment characteristics similar to those of most alloy steels and demonstrates wide-ranging mechanical properties after appropriate heat treatment.
- This steel grade possesses strong magnetic properties.

### Ferritic Stainless Steels

- It is an Fe-Cr alloy steel containing 18% or more Cr. It generates nearly no  $\gamma$  phase at high temperatures and is nearly a ferritic single-phase steel.
- This type of steel does not harden significantly with heat treatment.
- It demonstrates maximum softness, ductility and corrosion resistance in the as-annealed state, and possesses magnetic properties similar to those of martensitic stainless steel.

### Austenitic Stainless Steels

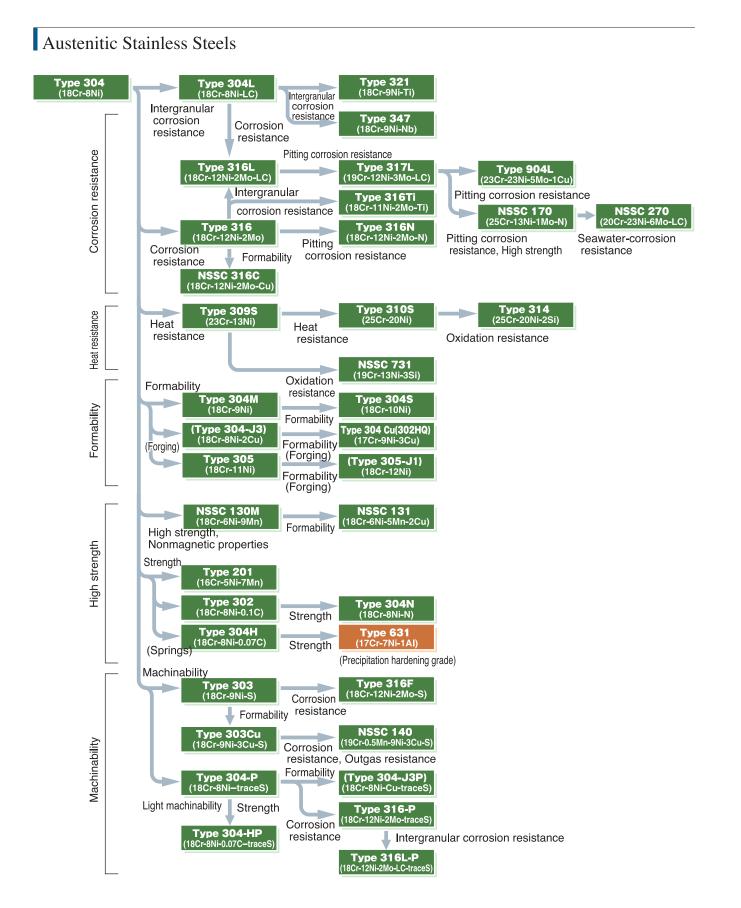
- ●It is an Fe-Cr-Ni alloy steel and its representative type is 18Cr-8Ni steel and is an austenitic single-phase steel non-magnetic in the range from room temperature to high temperature.
- •It does not harden with heat treatment.
- Austenitic stainless steel incurs work hardening and work-induced transformation due to cold working, demonstrating wideranging mechanical properties and showing magnetism in some cases.
- Austenitic stainless steel is annealed and its precipitation of carbides is restricted through rapid cooling from high temperatures, which enables the steel to demonstrate maximum softness, ductility and corrosion resistance.

### Application Examples

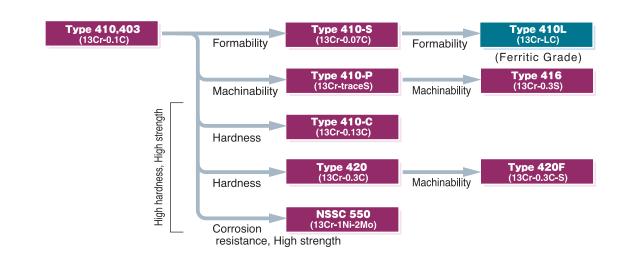
Grades	Type No.					Application	i examples				
Grados	1,50 1101	Spring	Small screw	Bolt/nut	Steel mesh	Shaft/pin	Needle	Nail	Rope	Washer	Machining parts
	403			0		0					
	410		0			0					
Martensitic	416					0					0
Martensilic	420J2					0					
	420F					0					0
	NSSC 550		0	0			0	0			
	410L			0							
	430		0		0	0					
Ferritic	430F										0
remile	434		0								
	NSSC 180		0	0	0	0					
	NSSC 190				0	0					
	201					0	0				
	302	0				0	0				
	303					0					0
	303Cu					0					0
	304	0		0	0	0	0	0	0	0	
	304L		0	0	0						
	304N1					0		0		0	
	304J3			0				0			
	305		0	0							
	305J1		0								
	309S				0						
	310S				0						
Austenitic	316	0		0	0				0		
	316L				0						
	316C		0	0							
	316F					0					0
	317			0	0						
	317L			0	0						
	321			0	0						
	347			0	0						
	XM7		0	0							
	NSSC 170				0	0					
	NSSC 270R		0	0	0				0		
	NSSC 130M	0				0					
	NSSC 131					0					
Precipitation-hardening	631J1	0				0					

Stainless Steel Wire Rods
System Diagram of Stainless Steels

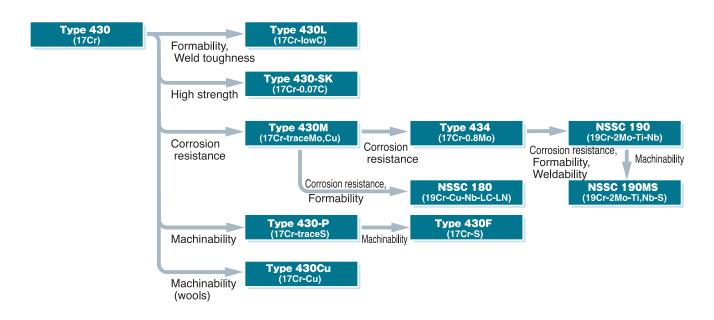
# System Diagram of Stainless Steels



### Martensitic Stainless Steels



### Ferritic Stainless Steels



Dual-phase (austenitic-ferritic) Stainless Steels

Precipitation Hardening Stainless Steels

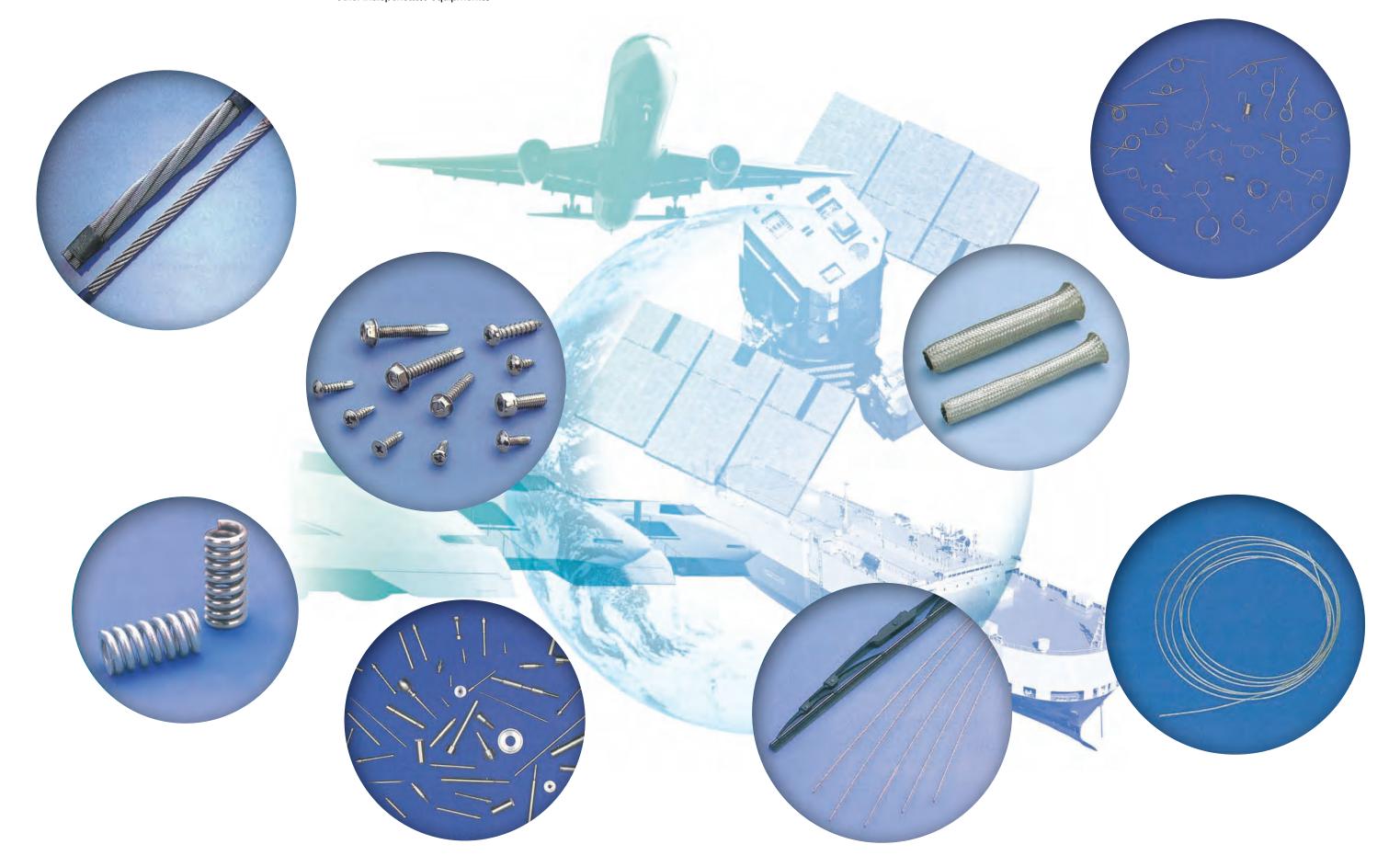


(17Cr-4Ni-3Cu)

Type 631
(17Cr-7Ni-1Al)

Stainless Steel Wire Rods Application Examples

Application Examples Stainless steel wire rods are used for components of automobiles, aircraft, electric railway cars, ships, rockets, artificial satellites and other indispensable equipments.



Chemical Composition Stainless Steel Wire Rods

# **Chemical Composition**

### Standard Types (Stainless and Heat-resistant Steels)

Grades	AISI Type No.					Chemica	l Compos	ition (%)				
Grades	&	[UNS No.]	С	Si	Mn	Р	S	Ni	Cr	Мо	Cu	Others
	403	[S40300]	≦0.15	<b>≦</b> 0.50	≦1.00	≦0.040	≦0.030	≦0.60	11.50/13.00	_	_	_
	410	[S41000]	≦0.15	<b>≦1.00</b>	≦1.00	≦0.040	≦0.030	≦0.60	11.50/13.00	_	_	_
Martensitic	410S	[S41008]	≦0.08	<b>≦1.00</b>	≦1.00	≦0.040	≦0.030	≦0.60	11.50/13.50	_	_	_
Marterisitic	416	[S41600]	≦0.15	<b>≦1.00</b>	≦1.25	≦0.060	≧0.15	≦0.60	12.00/14.00	≦0.60	_	_
	420	[S42000]	0.16/0.25	<b>≦1.00</b>	≦1.00	≦0.040	≦0.030	≦0.60	12.00/14.00	_	_	_
	420F	[S42020]	0.26/0.40	≦1.00	≦1.25	≦0.060	≧0.15	≦0.60	12.00/14.00	≦0.60	_	—
	430	[S43000]	≦0.12	≦0.75	≦1.00	≦0.040	≦0.030	≦0.60	16.00/18.00	_	_	
Ferritic	430F	[S43020]	≦0.12	≦1.00	≦1.25	≦0.060	≧0.15	≦0.60	16.00/18.00	≦0.60	_	_
	434	[S43400]	≦0.12	≦1.00	≦1.00	≦0.040	≦0.030	≦0.60	16.00/18.00	0.75/1.25	_	_
	201	[S20100]	≦0.15	≦1.00	5.50/7.50	≦0.060	≦0.030	3.50/5.50	16.00/18.00	_	_	N≦0.25
	302	[S30200]	≦0.15	≦1.00	≦2.00	≦0.045	≦0.030	8.00/10.00	17.00/19.00	_	_	_
	303	[S30300]	≦0.15	<b>≦1.00</b>	≦2.00	≦0.20	≧0.15	8.00/10.00	17.00/19.00	≦0.60	_	_
	304	[S30400]	≦0.08	<b>≦1.00</b>	≦2.00	≦0.045	≦0.030	8.00/10.50	18.00/20.00	_	_	_
	304L	[S30403]	≦0.030	≦1.00	≦2.00	≦0.045	≦0.030	9.00/13.00	18.00/20.00	_	_	_
	305	[S30500]	≦0.12	≦1.00	≦2.00	≦0.045	≦0.030	10.50/13.00	17.00/19.00	_	_	_
	309S	[S30908]	≦0.08	≦1.00	≦2.00	≦0.045	≦0.030	12.00/15.00	22.00/24.00	_	_	_
	310S	[S31008]	≦0.08	<b>≦1.50</b>	≦2.00	≦0.045	≦0.030	19.00/22.00	24.00/26.00	_	_	_
Austenitic	316	[S31600]	≦0.08	<b>≦1.00</b>	≦2.00	≦0.045	≦0.030	10.00/14.00	16.00/18.00	2.00/3.00	_	_
Austernitic	316L	[S31603]	≦0.030	≦1.00	≦2.00	≦0.045	≦0.030	12.00/15.00	16.00/18.00	2.00/3.00	_	_
	316F	[S31620]	≦0.08	<b>≦1.00</b>	≦2.00	≦0.045	≧0.10	10.00/14.00	16.00/18.00	2.00/3.00	_	_
	317	[S31700]	≦0.08	≦1.00	≦2.00	≦0.045	≦0.030	11.00/15.00	18.00/20.00	3.00/4.00	_	_
	317L	[S31703]	≦0.030	≦1.00	≦2.00	≦0.045	≦0.030	11.00/15.00	18.00/20.00	3.00/4.00	_	_
	904L	[N08904]	≦0.020	≦1.00	≦2.00	≦0.045	≦0.030	23.00/28.00	19.00/23.00	4.00/5.00	1.00/2.00	_
	321	[S32100]	≦0.08	≦1.00	≦2.00	≦0.045	≦0.030	9.00/13.00	17.00/19.00	_	_	Ti≧5×C%
	347	[S34700]	≦0.08	≦1.00	≦2.00	≦0.045	≦0.030	9.00/13.00	17.00/19.00	_	_	Nb≧10×C%
	304CL (302HC	1,0,004,001	≦0.08	≦1.00	≦2.00	≦0.045	≦0.030	8.50/10.50	17.00/19.00	_	3.00/4.00	_
Precipitation-	630	[S17400]	≦0.07	≦1.00	≦1.00	≦0.040	≦0.030	3.00/5.00	15.00/17.50	_	3.00/5.00	Nb:0.15/0.45
hardening	631	[S17700]	≦0.09	≦1.00	≦1.00	≦0.040	≦0.030	6.50/7.75	16.00/18.00	_	_	Al:0.75/1.50

For information on other steel types than listed in this table, inquire us.

## NSSC Standard

	Series and	Type No.				Chemica	l Compos	ition (%)				
	Grades	туре но.	С	Si	Mn	Р	S	Ni	Cr	Мо	Cu	Others
	Type303M		≦0.15	≦1.00	≦2.00	≦0.20	0.20/0.25	8.00/10.00	17.00/19.00	≦0.60	_	_
Т		Type303H	≦0.15	≦1.00	≦2.00	≦0.20	0.25/0.30	8.00/10.00	17.00/19.00	≦0.60	_	_
Ιy	pe303 series	Type303F	≦0.15	≦1.00	≦2.00	≦0.20	0.30/0.35	8.00/10.00	17.00/19.00	≦0.60	_	_
		Type303CU	≦0.15	≦1.00	≦3.00	≦0.20	≧0.15	8.00/10.00	17.00/19.00	≦0.60	1.50/3.50	_
		Type304H	0.06/0.08	≦1.00	≦2.00	≦0.045	≦0.030	8.00/8.90	18.00/20.00	_	_	_
		Type304M	≦0.06	≦1.00	≦2.00	≦0.045	≦0.030	8.90/10.00	18.00/20.00	_	_	_
Тур	pe304 series	Type304S	≦0.06	≦1.00	≦2.00	≦0.045	≦0.030	10.00/10.50	18.00/20.00	_	_	_
		Type304-J3	≦0.08	<b>≦1.00</b>	≦2.50	≦0.045	≦0.030	7.00/10.50	18.00/20.00	_	1.00/3.00	_
		Type304N	≦0.08	≦1.00	≦2.00	≦0.045	≦0.030	8.00/10.50	17.00/19.00	_	_	N:0.10/0.25
Тур	pe430 series	Type430CU (Type434A)	≦0.12	≦1.00	≦1.00	≦0.040	≦0.030	≦0.60	16.00/18.00	_	0.70/1.25	_
	Martensitic	NSSC 550	0.10/0.20	≦1.00	≦1.00	≦0.040	≦0.010	1.00/2.40	12.50/14.00	1.80/2.30	_	N:0.05/0.15
		NSSC 180	≦0.020	≦1.00	≦1.00	≦0.040	≦0.006	≦0.60	19.00/21.00	_	0.30/0.60	Nb≧ 10×(C+N)
	Ferritic	NSSC 190*1)	≦0.015	≦0.50	≦0.50	≦0.040	≦0.030	_	18.00/20.00	1.75/2.25	_	Ti+Nb≧ 16X(C+N)
series		NSSC 410W*2)	≦0.030	≦1.00	≦1.00	≦0.040	≦0.030	_	11.50/13.50	_	_	_
C se		NSSC 130M*3)	0.07/0.12	≦1.00	9.00/10.00	≦0.030	≦0.030	5.00/6.00	17.00/19.00	_	_	N:0.20/0.35
NSSC (		NSSC 131	0.01/0.05	≦1.00	3.00/7.00	≦0.040	≦0.030	5.00/6.00	17.00/19.00	_	_	N:0.10/0.30
		NSSC 304UL*4)	≦0.020	≦1.00	≦2.00	≦0.040	≦0.030	9.00/13.00	18.00/20.00	_	_	_
	Austenitic	NSSC 316C	≦0.08	≦1.00	≦2.00	≦0.045	≦0.030	10.00/14.00	16.00/18.00	2.00/3.00	2.00/4.00	_
		NSSC 170	≦0.06	≦1.50	≦2.00	≦0.040	≦0.030	12.00/16.00	23.00/26.00	0.50/1.20	_	N:0.25/0.40
		NSSC 270R	≦0.020	≦0.80	≦1.00	≦0.030	≦0.015	22.00/23.50	19.00/21.00	5.50/6.50	0.50/1.00	N≦0.05
		NSSC XM7SH	≦0.030	≦1.00	≦2.00	≦0.045	≦0.030	8.50/10.50	17.00/19.00	_	3.00/4.00	_

11

Stainless Steel Wire Rods Chemical Composition Stainless Steel Wire Rods

### Stainless Steel for Welding Application

Grades	AWS Classification				Che	mical Co	mposition	(%)			
Grades	AVV5 Classification	С	Si	Mn	Р	S	Ni	Cr	Мо	Cu	Others
	ER410	≦0.12	≦0.50	≦0.60	≦0.030	≦0.030	≦0.60	11.50/13.50	≦0.75	<b>≦</b> 0.75	_
Martensitic	ER420	0.25/0.40	≦0.5	≦0.6	≦0.03	≦0.03	≦0.6	12.0/14.0	≦0.75	<b>≤</b> 0.75	_
	ER409Cb	≦0.08	≦1.0	≦0.8	≦0.04	≦0.03	≦0.6	10.5/13.5	≦0.50	≦ 0.75	Nb≧10×C%
Ferritic	ER430	≦0.10	≦0.50	≦0.60	≦0.030	≦0.030	≦0.60	15.50/17.00	_	_	_
	ER308	≦0.08	0.30/0.65	1.00/2.50	≦0.030	≦0.030	9.00/11.00	19.50/22.00	≦0.75	<b>≤</b> 0.75	_
	ER308L	≦0.030	0.30/0.65	1.00/2.50	≦0.030	≦0.030	9.00/11.00	19.50/22.00	≦0.75	<b>≤</b> 0.75	_
	ER308LSi	≦0.030	0.65/1.00	1.00/2.50	≦0.030	≦0.030	9.00/11.00	19.50/22.00	≦0.75	<b>≤</b> 0.75	_
	ER309	≦0.12	0.30/0.65	1.00/2.50	≦0.030	≦0.030	12.00/14.00	23.00/25.00	≦0.75	<b>≤</b> 0.75	_
	ER309L	≦0.030	0.30/0.65	1.00/2.50	≦0.030	≦0.030	12.00/14.00	23.00/25.00	≦0.75	<b>≤</b> 0.75	_
	ER309LSi	≦0.030	0.65/1.00	1.00/2.50	≦0.030	≦0.030	12.00/14.00	23.00/25.00	≦0.75	<b>≤</b> 0.75	_
	ER310	0.08/0.15	0.30/0.65	1.00/2.50	≦0.030	≦0.030	20.00/22.50	25.00/28.00	≦0.75	≦ 0.75	_
Austenitic	ER312	≦0.15	0.30/0.65	1.00/2.50	≦0.030	≦0.030	8.00/10.50	28.00/32.00	≦0.75	≦ 0.75	_
Austernite	ER316	≦0.08	0.30/0.65	1.00/2.50	≦0.030	≦0.030	11.00/14.00	18.00/20.00	2.00/3.00	≦ 0.75	_
	ER316L	≦0.030	0.30/0.65	1.00/2.50	≦0.030	≦0.030	11.00/14.00	18.00/20.00	2.00/3.00	≦ 0.75	_
	ER316LSi	≦0.030	0.30/0.65	1.00/2.50	≦0.030	≦0.030	11.00/14.00	18.00/20.00	2.00/3,00	≦ 0.75	_
	ER317	≦0.08	0.30/0.65	1.00/2.50	≦0.030	≦0.030	13.00/15.00	18.50/20.50	3.00/4.00	≦ 0.75	_
	ER317L	≦0.030	0.30/0.65	1.00/2.50	≦0.030	≦0.030	13.00/15.00	18.50/20.50	3.00/4.00	≦ 0.75	_
	ER347	≦0.08	0.30/0.65	1.00/2.50	≦0.030	≦0.030	9.00/11.00	19.00/21.50	≦ 0.75	≦ 0.75	Nb+Ta≧ 10×C%
	ER307	0.04/0.14	0.30/0.65	3.3/4.75	≦0.03	≦0.03	8.0/10.7	19.5/22.0	0.5/1.5	≦ 0.75	_
	ER318	≦0.08	0.30/0.65	1.00/2.50	≦0.030	≦0.030	11.0/14.0	18.0/20.0	2.0/3.0	≦ 0.75	Nb+Ta≧ 8×C%
Precipitation-hardening	ER630	≦0.05	≦0.75	0.25/0.75	≦0.030	≦0.030	4.5/5.0	16.0/16.75	≦0.75	3.25/4.00	Nb+Ta: 0.15/0.30

For information on other steel types than listed in this table, please inquire us.

# **Mechanical Properties**

Grades	Type No.	[Reference] Me				eat treatment)	[Reference]	Heat treatme	nt conditions	(JIS G 4303)
	туре по.	Heat treatment	Tensile strength (N/mm²)	Elongation (%)	Reduction of area (%)	Hardness (Hv)	Annealing (°C)	Quenching (°C)	Tempering (°C)	Solid-solution treatment (°C)
	Type403	Annealing	≦600	≧20	≧55	≦240	800 to 900 slow cooling or approx. 750 rapid cooling	950 to 1,000 oil quenching	700 to 750 rapid cooling	_
Martensitic	Type410	Annealing	≦600	≧20	≧55	≦240	800 to 900 slow cooling or approx. 750 rapid cooling	950 to 1,000 oil quenching	700 to 750 rapid cooling	_
iviai tei isitic	Type416	Annealing	≦600	≧20	≧55	≦240	800 to 900 slow cooling orapprox. 750 rapid cooling	950 to 1,000 oil quenching	700 to 750 rapid cooling	_
	Type420	Annealing	≦800	≧12	≧40	_	800 to 900 slow cooling orapprox. 750 rapid cooling	950 to 980 oil quenching	600 to 750 rapid cooling	_
	Type430	Annealing	≦600	≧20	≧50	≦240	780 to 850 air cooling or slow cooling	_	_	_
Ferritic	Type430F	Annealing	≦600	≧20	≧50	≦240	680 to 820 air cooling or slow cooling	_	_	_
	Type434	Annealing	≦600	≧20	≧60	≦240	780 to 850 air cooling or slow cooling	_	_	_
	Type201	Solid-solution treatment	≦900	≧35	≧45	≦330	_	_	_	1,010 to 1,120 rapid cooling
	Type302	Solid-solution treatment	<b>≦</b> 700	≧35	≧60	≦330	_	_	_	1,010 to 1,150 rapid cooling
	Type303	Solid-solution treatment	<b>≦</b> 700	≧35	≧50	≦270	_	_	_	1,010 to 1,150 rapid cooling
	Type304	Solid-solution treatment	<b>≦</b> 700	≧40	≧60	≦260	_	_	_	1,010 to 1,150 rapid cooling
	Type304L	Solid-solution treatment	≦650	≧40	≧60	≦255	_	_	_	1,010 to 1,150 rapid cooling
Austenitic	Type305	Solid-solution treatment	≦600	≧40	≧60	≦240	_	_	_	1,010 to 1,150 rapid cooling
Addicinite	Type309S	Solid-solution treatment	<b>≦</b> 750	≧40	≧60	≦270	_	_	_	1,030 to 1,150 rapid cooling
	Type310S	Solid-solution treatment	≦650	≧40	≧50	≦255	_	_	_	1,030 to 1,180 rapid cooling
	Type316	Solid-solution treatment	≦650	≧40	≧60	≦255	_	_	_	1,010 to 1,150 rapid cooling
	Type316L	Solid-solution treatment	<b>≦</b> 650	≧40	≧60	≦255	_	_	_	1,010 to 1,150 rapid cooling
	Type321	Solid-solution treatment	<b>≦</b> 700	≧40	≧50	≦270	_	_	_	920 to 1,150 rapid cooling
	TypeXM7	Solid-solution treatment	<b>≦</b> 550	≧40	≧60	≦225	_	_	_	1,010 to 1,150 rapid cooling
Precipitation- hardening	Type631	Solid-solution treatment	≦1050	≧20	≧60	≦315	_	_	_	1,000 to 1,100 rapid cooling

12

## Sizes Available

### General Materials

Millimeter size	Inch size (millimeter conversion value)	Reference	Millimeter size	Inch size (millimeter conversion value)	Reference
5.5	9/32 (5.56)		11.0		
5.7			11.2		*1)
6.0	15/64 (5.95)		11.5	29/64 (11.51)	
6.15		*1)	11.9		*1)
6.35	1/4 (6.35)		12.0	13/32 (11.91)	
6.5			12.3		*1)
6.75			12.5		
7.0			12.7	1/2 (12.70)	
7.3			13.0		
7.5	19/64 (7.54)		13.5		
8.0	5/16 (7.94)		14.0		
8.1		*1)	14.5		*1)
8.3	21/64 (8.33)		14.7		*1)
8.5			15.0	19/32 (15.08)	
8.7	11/32 (8.73)		15.5	39/64 (15.48)	
9.0			15.7		*1)
9.5	3/8 (9.52)		16.0		
9.7		*1)	16.3		*1)
10.0	25/64 (9.92)		16.5		
10.3		*1)	17.0	43/64 (17.07)	*1)
10.5			17.5	11/16 (17.46)	
10.7	27/64 (10.72)		18.0		

<sup>\*1)</sup> Because of non-standard size, please consult us when ordering.

### SF (Super Finish) Materials

Grade	Description
А	An as-rolled size is specified and scalping is performed to assure surface quality.
В	A finished size after scalping is specified.

### ■Basic Diameters in Grade A

Nominal size	A6.0	A6.35	A7.0	A8.0	A8.7	A9.0	A9.5	A10.0	A11.0	A12.0	A13.0	A14.0	A15.0	A16.0	A17.0	A18.0
Basic diameter (at SF-P)	5.4	5.75	6.4	7.4	8.1	8.4	8.9	9.4	10.4	11.4	12.4	13.4	14.4	15.4	16.4	17.4

Inch size

53/64 (21.03)

27/32 (21.43)

29/32 (23.02) 59/64 (23.42)

63/64 (25.00)

\*1)

Millimeter size 18.5

19.0

19.5

20.0 20.5

21.0 21.5

22.0 22.7

23.0

23.5 24.0

25.0

26.0 26.5

27.0 28.0 30.0 31.0 32.0

33.0

34.0

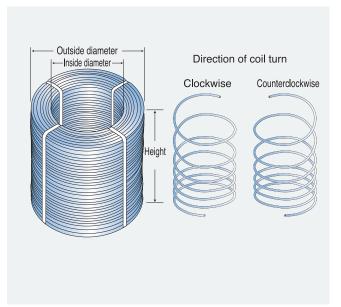
34.5

# Specifications and Bundling of Coil

### Coil Spesifications

lta	em	General	General material				
ne	2111	$5.5 \text{mm} \phi$ $16.0 \text{mm} \phi$ $\sim 18.5 \text{mm} \phi$ $\sim 34.5 \text{mm}$		A6.0 to A18.0			
Coil woight	Name	1 (ton)	1 (ton)	1 (ton) *1)			
Coil weight (kg)	Standard	1,050	1,050	1,000 *1)			
	Range	500~1,100 (min.200)	500~1,100 (min.200)	400~1,050*1) (min.150)			
Coil size	Inside diameter	800	870	850			
(mm)	Outside diameter	1,350	1,250	1,350			
	Height (max)	1,200	900	1,200			
Direction (	of coil turn	Clockwise	Clockwise or counterclockwise	Clockwise			

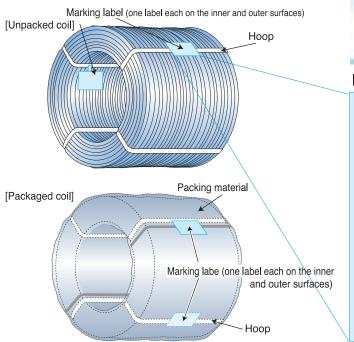
<sup>\*1)</sup> For some austenitic stainless steels, the unit coil weight may become 0.5 (ton). Confirm this in placing an order. [Standard: 500kg, range: 200 to 600 kg



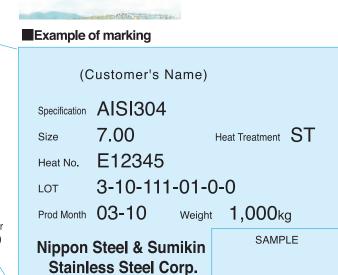
### Binding Method

Material	Hoop (resin or iron)
Number of hoops	4

### **■**Coil Shape and Marking







15

HIKARI WORKS/Made in Japan

FYI, sizes more than  $\phi$ 16 are available at a pitch of 0.1mm.

<sup>1)</sup> Actual diameter of A7 is 6.4mm, while actual diameter of B7 is 7.0mm. 2) For Grade B, please consult us when ordering.