

**DESIGNER**

**HANDBOOK**

# **S**PECIFICATIONS

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**FOR**

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**STAINLESS**

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**STEEL**

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**STAINLESS STEEL PRODUCERS  
SPECIALTY STEEL INDUSTRY OF NORTH AMERICA**

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The Specialty Steel Industry of North America (SSINA) and the individual companies it represents have made every effort to ensure that the information presented in this handbook is technically correct. However, neither the SSINA nor its member companies warrants the accuracy of the information contained in this handbook or its suitability for any general and specific use. The SSINA assumes no liability or responsibility of any kind in connection with the use of this information. The reader is advised that the material contained herein should not be used or relied on for any specific or general applications without first securing competent advice.

## **INTRODUCTION**

This designer handbook has been written to provide the designer, engineer, specification writer, producer and user of STAINLESS STEEL with a listing of all the current ASTM (American Society for Testing and Materials) standards. These standards are listed by mill shape (BAR, SHEET, WIRE, etc.) and by product (bolts, fittings). Stainless types are also listed, along with a selection of applicable society and military specifications.

## **ACKNOWLEDGMENT**

An original version was initially published by the Committee of Stainless Steel Producers, American Iron and Steel Institute (AISI), Washington, D.C., and was used, with thanks, as a basis for this updated handbook.

The 2001 Annual Book of ASTM Standards, Sections 1 and 13 were used as the reference base for listed ASTM specifications.

## **GENERAL INFORMATION**

Stainless steel is not a single alloy, but rather the name applies to a group of iron based alloys containing a minimum of 10.5% chromium. Other elements are added and the chromium content is increased to improve corrosion resistance and/or enhance mechanical properties. There are over 50 stainless steel types originally recognized by the AISI and are detailed in a designer handbook, "Design Guidelines for the Selection and Use of Stainless Steel," available from the Specialty Steel Industry of North America (SSINA).

The assumption is made that the reader is well aware of the various types of stainless steels including the five metallurgical classifications (austenitic, ferritic, martensitic, austenitic/ferritic-or-duplex, and precipitation hardening). Where possible, these five classifications are generally shown with austenitic first. In some cases the ASTM reference is to the content rather than the classification. In those cases the basic content is listed (i.e., iron-chromium-nickel).

Specifications by type are listed by the types generally in use and do not cover all the stainless steel types that are available.



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## ASTM STAINLESS STEEL STANDARDS

### SPECIFICATIONS

A167	Plate, sheet and strip, chromium-nickel	A565	Bars, forgings and forging stock for high temperature service, martensitic
A176	Plate, sheet and strip, chromium	A579	Superstrength alloy forgings
A182	Forged flanges, fittings and valves	A580	Wire
A193	Bolts	A581	Wire, free-machining
A194	Nuts	A582	Bars, hot-rolled or cold-finished, free-machining
A213	Seamless ferritic and austenitic alloy boiler, superheater and heat exchanger tubes	A608	Centrifugally cast iron-chromium-nickel high alloy tubing for pressure application at high temperatures
A217	Castings, martensitic stainless and alloy	A632	Seamless and welded tubing, small diameter, for general service, austenitic
A240	Plate, sheet and strip for pressure vessels	A638	Iron-base superalloy bars, forgings and forging stock for high temperature service, precipitation hardening
A249	Tubes, welded boiler, superheater, heat-exchanger and condenser, austenitic	A666	Sheet, strip, plate and flat bar, for structural and architectural applications, austenitic
A263	Clad plate, sheet and strip, chromium	A688	Welded feedwater heater tubes, austenitic
A264	Clad plate, sheet and strip, chromium-nickel	A693	Plate, sheet and strip, precipitation hardening
A268	Tubing, seamless and welded, ferritic	A705	Forgings, age hardening
A269	Tubing, seamless and welded, austenitic	A733	Welded and seamless carbon steel and austenitic stainless steel pipe nipples
A270	Sanitary tubing, austenitic	A743	Castings, iron-chromium, iron-chromium-nickel and nickel-base, corrosion resistant, for general service
A276	Bars and shapes	A744	Castings, Iron-chromium-nickel, for severe service
A297	Castings, iron-chromium, iron-chromium-nickel, heat resistant, for general application	A747	Castings, precipitation hardening
A312	Pipe, austenitic	A756	Anti-friction bearing steel
A313	Spring wire, chromium-nickel	A757	Castings, ferritic and martensitic for pressure-containing and other applications for low temperature service
A314	Bars and billets for forging	A771	Tubing for breeder reactor core components, austenitic
A320	Bolting for low temperature service	A774	As-welded fittings for general corrosive service at low and moderate temperatures, austenitic
A336	Forgings for pressure and high temperature parts	A778	Welded tubular products, unannealed austenitic
A351	Castings for pressure-containing parts, austenitic, austenitic-ferritic (duplex)	A781	Castings, common requirements for general industrial use
A352	Castings for pressure-containing parts suitable for low temperature service, ferritic and martensitic	A789	Seamless and welded tubing for general service, ferritic/austenitic
A356	Heavy-walled castings for steam turbines	A790	Seamless and welded pipe, ferritic/austenitic
A358	Electric fusion welded pipe, austenitic	A791	Welded tubing, unannealed ferritic
A368	Wire strand	A793	Rolled floor plate, austenitic
A376	Pipe for high-temperature central station service, austenitic	A803	Welded feedwater heater tubes, ferritic
A403	Pipe fittings	A813	Single- or double-welded pipe, austenitic
A409	Welded large diameter pipe, austenitic	A814	Cold-worked welded pipe, austenitic
A426	Centrifugally-cast pipe, ferritic	A815	Pipe fittings, ferritic, ferritic/austenitic and martensitic
A430	Forged and bored pipe, austenitic	A826	Duct tubes for breeder reactor core components, austenitic and ferritic
A437	Alloy steel turbine-type bolting material specially heat treated for high temperature service	A831	Bars, billets and forgings for use in core components
A447	Castings for high temperature service, chromium-nickel-iron	A851	High-frequency, induction-welded condenser tubes, austenitic
A450	General requirements for tubes, austenitic and ferritic	A872	Centrifugally cast pipe for corrosive environments, ferritic/austenitic
A451	Centrifugally cast austenitic steel pipe for high temperature service	A887	Borated stainless steel plate, sheet and strip for nuclear applications
A453	Bolting materials, high temperature, 50 to 120 ksi yield strength with expansion coefficients comparable to austenitic steels	A890	Castings, iron-chromium-nickel-molybdenum, for general application, duplex (austenitic/ferritic)
A473	Forgings	A891	Iron-base superalloy forgings for turbine rotor disks and wheels, precipitation hardening
A478	Weaving wire, chromium-nickel	A895	Plate, sheet and strip, free machining
A479	Bars and shapes for use in boilers and other pressure vessels	A908	Needle tubing
A480	General requirements for plate, sheet and strip	A928	Pipe, electric fusion welded with addition of filler metal, ferritic/austenitic (duplex)
A484	General requirements for bars, billets and forgings	A943	Spray-formed seamless pipes, austenitic
A487	Castings suitable for pressure service, martensitic	A946	Plate, sheet and strip, chromium-nickel-silicon alloy
A492	Rope wire	A947M	Textured sheet
A493	Cold heading and cold forging bar and wire	A949	Spray-formed seamless pipe, ferritic/austenitic
A498	Seamless and welded carbon, ferritic and austenitic alloy heat exchanger tubes with integral fins	A953	Seamless and welded tubing, austenitic chromium-nickel-silicon alloy
A511	Seamless mechanical tubing		
A530	Specialized carbon and alloy steel pipe, general requirements		
A554	Welded mechanical tubing		
A555	General requirements for wire and wire rods		
A564	Bars and shapes, hot-rolled and cold-finished, age hardening		

A954 .....	Seamless and welded pipe, austenitic chromium-nickel-silicon alloy	A700 .....	Packaging, marketing and loading methods for steel products for domestic shipment <b>01.01, 01.03, 01.04, 01.05</b>
A955 .....	Deformed and plain bars for concrete reinforcement	A745 .....	Ultrasonic examination of austenitic steel forgings <b>01.05</b>
A957 .....	Investment castings, steel and alloy, common requirements for general industrial use	A763 .....	Detecting susceptibility to intergranular attack in ferritic stainless steels <b>01.03</b>
A959 .....	Guide for specifying harmonized standard grade compositions for wrought stainless steels	A799 .....	Instrument calibration for estimating ferrite content of stainless steel castings <b>01.02</b>
A960 .....	Common requirements for wrought steel pipe fittings	A800 .....	Estimating ferrite content of austenitic alloy steel castings <b>01.02</b>
A968 .....	Bars and shapes, chromium-nickel-silicon alloy	A880 .....	Criteria for use in evaluation of testing laboratories and organizations for examination of steel, stainless steel and related alloys <b>01.03</b>
A965 .....	Forgings for pressure and high temperature parts	A967 .....	Chemical passivation treatments for stainless steel parts <b>01.03</b>
A988 .....	Hot isostatically-pressed flanges, fittings, valves and parts	B254 .....	Preparation of and electroplating on stainless steel <b>02.05</b>
A995 .....	Castings for pressure-containing parts, austenitic-ferritic (duplex)	D2651 .....	Preparation of metal surfaces for adhesive bonding <b>15.06</b>
A999 .....	General requirements for alloy and stainless pipe	E426 .....	Practice for electromagnetic (eddy-current) testing of seamless and welded tubular products, austenitic stainless steels and similar alloys <b>03.03</b>
A1010 .....	Higher strength plate, sheet and strip, martensitic	E527 .....	Practice for numbering metals and alloys (UNS)
A1012 .....	Seamless and welded ferritic, austenitic and duplex alloy steel condenser and heat exchanger tubes with integral fins	G35 .....	Determining the susceptibility of stainless steels and related nickel-chromium-iron alloys to stress corrosion cracking in polythionic acids <b>03.02</b>
A1016 .....	General requirements for alloy and stainless tubes	G46 .....	Examination and evaluation of pitting corrosion <b>03.02</b>
A1021 .....	Martensitic stainless steel forgings for high temperature service	G58 .....	Preparation of stress-corrosion test specimens for weldments <b>03.02</b>
A1022 .....	Stainless steel wire for concrete reinforcement	G78 .....	Guide for crevice corrosion testing of iron base and nickel base stainless alloys in seawater and other chloride-containing environments <b>03.02</b>
A1028 .....	Stainless steel bars for compressor and turbine airfoils		
A1049 .....	Stainless steel forgings, ferritic/austenitic (duplex) for pressure vessels		
A1053 .....	Welded ferritic-martensitic (dual phase) pipe		
C795 .....	Thermal insulation for use in contact with austenitic stainless steel		
E454 .....	Industrial perforated plate and screens (square opening series)		
E674 .....	Industrial perforated plate and screens (round opening series)		
F138 .....	Surgical implants, bar and wire, special quality		
F139 .....	Surgical implants, sheet and strip, special quality		
F593 .....	Bolts, hex cap screws and studs		
F594 .....	Nuts		
F621 .....	Forgings for surgical implants		
F738M .....	Metric bolts, screws and studs		
F745 .....	Shot/bar/ingot for cast/solution treated implants		
F836M .....	Metric nuts		
F837 .....	Socket head cap screws		
F879M .....	Metric socket button and flat countersunk cap screws		
F880 .....	Socket set screws		
F899 .....	Billet, bar and wire for surgical instruments		
F957 .....	Investment castings, steel and alloy		
F993 .....	Valve locking devices		
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F2281 .....	Stainless steel and nickel alloy bolts, hex cap screws and studs for heat resistance and high temperature applications		

## PRACTICES

(ASTM Volume No. follows each entry)

A262 .....	Detecting susceptibility to attack in austenitic stainless steels <b>01.03, 01.05, 03.02</b>
A380 .....	Cleaning and descaling stainless steel parts, equipment and systems <b>01.03, 02.05</b>
A609 .....	Castings, carbon, low-alloy, and martensitic stainless steel, ultrasonic examination thereof <b>01.02</b>

## TEST METHODS

A370 .....	Mechanical testing of steel products <b>01.01, 01.02, 01.03, 01.04, 01.05</b>
A604 .....	Standard Test Method for Macroetch Testing of Consumable Electrode Remelted Steel Bars and Billets, <b>01.05</b>
A751 .....	Test methods, practices and terminology for chemical analysis of steel products <b>01.01, 01.02, 01.03, 01.04, 01.05, 03.05</b>
A923 .....	Detecting detrimental intermetallic phase in wrought ferritic-austenitic (duplex) stainless steels <b>01.03</b>
E112 .....	Determining average grain size <b>03.01</b>
E327 .....	Optical emission spectrometric analysis of stainless type 18-8 steels by the point-to-plane technique <b>03.05</b>
E340 .....	Macroetch Testing on Air Melted Products (also see E381), <b>03.01</b>
E572 .....	X-ray emission spectrometric analysis of stainless steel <b>03.06</b>
E1086 .....	Optical emission vacuum spectrometric analysis of stainless steel by the point-to-plane excitation technique <b>03.06</b>
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G98 .....	Galling resistance of materials <b>03.02</b>
G108 .....	Electrochemical reactivation (EPR) for detecting sensitization of AISI Type 304 and 304L stainless steels <b>03.02</b>



## HARDNESS CONVERSION TABLES

E140 ..... Standard hardness conversion tables for metals (includes tables for austenitic stainless steel plate and sheet) **03.01**

## SPECIFICATIONS BY MILL SHAPE

### Bar (ASTM Volume 01.03)

A276 ..... Bars and shapes  
A479 ..... Bars and shapes for use in boilers and other pressure vessels  
A484 ..... General requirements for bars, billets and forgings  
A564 ..... Bars and shapes, hot-rolled and cold-finished, age hardening  
A565 ..... Bars, forgings and forging stock for high temperature service, martensitic  
A582 ..... Bars, hot-rolled or cold-finished, free-machining  
A831 ..... Bars, billets and forgings for use in core components  
A955 ..... Deformed and plain bars for concrete reinforcement **01.04**  
A968 ..... Bars and shapes, chromium-nickel-silicon alloy  
A1028 ..... Stainless steel bars for compressor and turbine airfoils

### Castings (ASTM Volume 01.02)

A217 ..... Castings, martensitic stainless and alloy  
A297 ..... Castings, iron-chromium, iron-chromium-nickel, heat resistant, for general application  
A351 ..... Castings for pressure-containing parts, austenitic, austenitic-ferritic (duplex)  
A352 ..... Castings for pressure-containing parts suitable for low temperature service, ferritic and martensitic  
A356 ..... Heavy-walled castings for steam turbines  
A447 ..... Castings for high temperature service, chromium-nickel-iron  
A487 ..... Castings suitable for pressure service, martensitic  
A608 ..... Centrifugally cast iron-chromium nickel high alloy tubing for pressure application at high temperatures  
A743 ..... Castings, iron-chromium, iron-chromium-nickel and nickel-base, corrosion resistant, for general service  
A744 ..... Castings, iron-chromium-nickel, for severe service  
A747 ..... Castings, precipitation hardening  
A757 ..... Castings, ferritic and martensitic for pressure-containing and other applications for low temperature service  
A781 ..... Castings, common requirements for general industrial use  
A890 ..... Castings, iron-chromium-nickel-molybdenum for general application, duplex (austenitic/ferritic)  
A957 ..... Investment castings, steel and alloy, common requirements for general industrial use  
A995 ..... Austenitic-ferritic (duplex) castings for pressure-containing parts

### Forgings (ASTM Volume 01.05)

A314 ..... Bars and billets for forging  
A336 ..... Forgings for pressure and high temperature parts  
A473 ..... Forgings  
A484 ..... General requirements for bars, billets and forgings

A705 ..... Forgings, age hardening  
A965 ..... Forgings for pressure and high temperature, austenitic  
A1021 ..... Martensitic stainless steel forgings for high temperature service  
A1049 ..... Stainless steel forgings, ferritic/austenitic (duplex) for pressure vessels

### Pipe (ASTM Volume 01.01)

A312 ..... Pipe, austenitic  
A358 ..... Electric fusion welded pipe, austenitic  
A376 ..... Pipe for high-temperature central station service, austenitic  
A409 ..... Welded large diameter pipe, austenitic  
A426 ..... Centrifugally-cast pipe, ferritic  
A430 ..... Forged and bored pipe, austenitic  
A530 ..... Specialized carbon and alloy steel pipe, general requirements  
A733 ..... Welded and seamless carbon steel and austenitic stainless steel pipe nipples  
A790 ..... Seamless and welded pipe, ferritic/austenitic  
A813 ..... Single- or double-welded pipe, austenitic  
A814 ..... Cold-worked welded pipe, austenitic  
A815 ..... Pipe fittings, ferritic, ferritic/austenitic and martensitic  
A872 ..... Centrifugally cast pipe for corrosive environments, ferritic/austenitic  
A928 ..... Pipe, electric fusion welded with addition of filler metal, ferritic/austenitic (duplex)  
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A954 ..... Seamless and welded pipe, austenitic chromium-nickel-silicon alloy  
A960 ..... Common requirements for wrought steel pipe fittings.  
A999 ..... General requirements for alloy and stainless steel pipe  
A1053 ..... Welded ferritic-martensitic (dual phase) pipe

### Plate, Sheet and Strip (ASTM Volume 01.03)

A167 ..... Plate, sheet and strip, chromium-nickel  
A176 ..... Plate, sheet and strip, chromium  
A240 ..... Plate, sheet and strip for pressure vessels  
A263 ..... Clad plate, sheet and strip, chromium  
A264 ..... Clad plate, sheet and strip, chromium-nickel  
A666 ..... Sheet, strip, plate and flat bar, for structural and architectural applications, austenitic  
A693 ..... Plate, sheet and strip, precipitation hardening  
A793 ..... Rolled floor plate, austenitic  
A887 ..... Borated stainless steel plate, sheet and strip for nuclear applications  
A895 ..... Plate, sheet and strip, free machining  
A946 ..... Plate, sheet and strip, chromium-nickel-silicon alloy  
A947M ..... Textured sheet  
A1010 ..... Higher strength plate, sheet and strip, martensitic

### Tube (ASTM Volume 01.01)

A213 ..... Seamless ferritic and austenitic alloy boiler, superheater and heat exchanger tubes  
A249 ..... Tubes, welded boiler, superheater, heat-exchanger and condenser, austenitic  
A268 ..... Tubing, seamless and welded, ferritic  
A269 ..... Tubing, seamless and welded, austenitic  
A270 ..... Sanitary tubing, austenitic  
A450 ..... General requirements for tubes, austenitic and ferritic  
A498 ..... Seamless and welded carbon, ferritic and austenitic alloy heat exchanger tubes with integral fins

A511	Seamless mechanical tubing
A554	Welded mechanical tubing
A608	Centrifugally cast iron-chromium nickel high alloy tubing for pressure application at high temperatures
A632	Seamless and welded tubing, small diameter, for general service, austenitic
A688	Welded feedwater heater tubes, austenitic
A771	Tubing for breeder reactor core components, austenitic
A778	Welded tubular products, unannealed austenitic
A789	Seamless and welded tubing for general service, ferritic/austenitic
A791	Welded tubing, unannealed ferritic
A803	Welded feedwater heater tubes, ferritic
A826	Duct tubes for breeder reactor core components, austenitic and ferritic
A851	High-frequency, induction-welded condenser tubes, austenitic
A908	Needle tubing
A953	Seamless and welded tubing, austenitic chromium-nickel-silicon alloy
A1012	Seamless and welded ferritic, austenitic and duplex alloy steel condenser and heat exchanger tubes with integral fins
A1016	General requirements for alloy and stainless steel tubes

#### Wire and Wire Rod (ASTM Volume 01.03)

A313	Spring wire, chromium-nickel
A368	Wire strand
A478	Weaving wire, chromium-nickel
A492	Rope wire
A493	Cold heading and cold forging bar and wire
A555	General requirements for wire and wire rods
A580	Wire
A581	Wire, free-machining
A1022	Stainless steel wire for concrete reinforcement

#### STAINLESS STEEL SPECIFICATIONS ACCORDING TO PRODUCT TYPE

##### Architectural Applications

A666	Sheet, strip, plate and flat bar, for structural and architectural applications, austenitic (ASTM Volume 01.03)
A947M	Textured sheet (ASTM Vol. 01.03)

##### Bearings (ASTM Volume 01.05)

A756	Anti-friction bearing steel
F2215	Balls, bearing, ferrous and nonferrous

##### Bolts and Nuts (ASTM Volume 01.01)

A193	Bolts
A194	Nuts
A320	Bolting for low temperature service
A437	Alloy steel turbine-type bolting material specially heat treated for high temperature service
A453	Bolting materials, high temperature, 50 to 120 ksi yield strength with expansion coefficients comparable to austenitic steels
F2281	Stainless steel and nickel alloy bolts, hex cap screws and studs for heat resistance and high temperature applications

##### Fasteners (ASTM Volume 15.08)

F593	Bolts, hex cap screws and studs
F594	Nuts
F738M	Metric bolts, screws and studs
F836M	Metric nuts
F837	Socket head cap screws
F879M	Metric socket button and flat countersunk cap screws
F880	Socket set screws
F1667	Driven fasteners: nails, spikes and staples

##### Fittings, Flanges & Valves (ASTM Volume 01.01)

A182	Forged flanges, fittings and valves
A403	Pipe fittings
A774	As-welded fittings for general corrosive service at low and moderate temperatures, austenitic
A815	Pipe fittings, ferritic, ferritic/austenitic and martensitic
A988	Hot isostatically-pressed flanges, fittings, valves and parts for high temperature service
F993	Valve locking devices

##### Floor Plate (ASTM Volume 01.03)

A793	Rolled floor plate, austenitic
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##### Industrial Wire Cloth, Screens & Perforated Plate (ASTM Volume 14.02)

E437	Industrial wire cloth and screens (square opening series)
E454	Industrial perforated plate and screens (square opening series)
E674	Industrial perforated plate and screens (round opening series)

##### Needle Tubing (ASTM Volume 01.01)

A908	Needle tubing
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##### Nuclear Applications

A771	Tubing for breeder reactor core components, austenitic (01.01)
A826	Duct tubes for breeder reactor core components, austenitic and ferritic (01.01)
A831	Bars, billets and forgings for use in core components (01.03)
A887	Borated stainless steel plate, sheet and strip for nuclear applications (01.03)

##### Sanitary Tubing (ASTM Volume 01.01)

A270	Sanitary tubing, austenitic
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##### Surgical Implant Materials (ASTM Volume 13.01)

F138	Surgical implants, bar and wire, special quality
F139	Surgical implants, sheet and strip, special quality
F621	Forgings for surgical implants
F745	Shot/bar/ingot for cast/solution treated implants
F899	Billet, bar and wire for surgical instruments
F1079	Inserted and noninserted surgical scissors
F1350	Surgical fixation wire
F1586	Bar for surgical implants nitrogen-strengthened, 21Cr-10Ni-3Mn-2.5Mo
F1613	Surgical forceps



**SELECTED STAINLESS STEEL TYPES AND APPLICABLE SPECIFICATIONS**

TYPE	UNS	ASTM	ASME	AMS	SAE	MILITARY	ACI
201	S20100	A213 A240 A249 A276 A473 A666 A480 A1012			20201 J405 J412		
202	S20200	A213 A240 A249 A276 A314 A473 A666 A480 A1012		QQ-S-763	20202 J405 J412	MIL-W-6712	
205	S20500	A276 A473 A666					
301	S30100	A240 A264 A554 A666 F899		5517 5518 5519 5901 5902	30301 J405 J412	MIL-T-5695	
302	S30200	A240 A264 A276 A313 A314 A368 A473 A478 A479 A480 A492 A493 A511 A554 A580 A666 F599 F899 F1669 F2215	SA-240	5358 5500 5515 5516 5600 5636 5637 5688 5693 5866 5903 5904 5905 5906 6693 7241 AS7210 AS7228 AS7472 QQ-S-763 S-7720	30302 J230 J405 J412 J467	MIL-S-854 MIL-S-862 MIL-S-46044 MIL-T-5677 MIL-W-6712	CF-20
302B	S30215	A167 A276 A314 A473 A480 A580			30302B		HF
303	S30300	A194 A314 A320 A473 A581 A582 A895 F593 F594 F738 F836 F837 F880 F899	SA194 SA320	5640	30303 J412		CF-16F
303Se	S30323	A194 A314 A320 A473 A511 A581 A582 A895 F593 F594 F738 F836 F880	SA-194 SA-320	5640 5641 5738	30303Se		
304	S30400	A182 A193 A194 A213 A240 A249 A269 A270 A276 A312 A313 A314 A320 A336 A358 A368 A376 A403 A409 A430 A473 A478 A479 A492 A493 A511 A554 A580 A632 A666 A688 A774 A793 A813 A814 A851 A908 A943 A965 A988 A593 A738 A836 A837 A879 A880 A899 A1022 A1049 F1667 F2215	SA182 SA194 SA213 SA240 SA249 SA312 SA320 SA358 SA376 SA403 SA409 SA479 SA688	5501 5513 5560 5563 5564 5565 5566 5567 5639 5697 5857 5868 5910 5911 5912 5913 AS7524 QQ-S-763 T-6845 T-8506	30304 J405 J412 J467 J2515	MIL-F-20138 MIL-P-24691/3 MIL-S-854 MIL-S-862 MIL-S-18170 MIL-S-21149/6 MIL-S-24149/3 MIL-S-24249/6 MIL-T-5695 MIL-T-8504 MIL-T-18063	CF-8
304L	S30403	A182 A213 A240 A249 A269 A270 A276 A312 A314 A358 A368 A403 A409 A473 A478 A479 A493 A511 A554 A580 A632 A666 A688 A774 A778 A793 A813 A814 A851 A924 A943 A965 A988 A1022 A1040 F593 F594 F738 F836 F837 F879 F880 F2281	SA213 SA240 SA249 SA312 SA403 SA479 SA688	5370 5371 5511 5569 5584 5647 QQ-S-763 T-6845	30304L J405 J467	MIL-S-854 MIL-S-862 MIL-S-4043 MIL-S-18170 MIL-S-18171 MIL-S-81591 MIL-T-18063	CF-3
304N	S30451	A182 A193 A194 A213 A240 A249 A276 A312 A358 A376 A403 A479 A666 A688 A813 A814 A924 A943 A965 A988 A1012	SA182 SA213 SA312 SA358 SA376 SA479		J405		
304LN	S30453	A182 A193 A194 A213 A240 A249 A269 A276 A312 A320 A358 A376 A403 A479 A666 A688 A813 A924 A943 A965 A988 A1012			J405		

Unified Numbering System: Included in the tables are six-character designations under the Unified Numbering System (UNS) for the AISI numbered stainless steels. The Unified Numbering System originated through a cooperative effort of the American Society for Testing and Materials and the Society of Automotive Engineers, and UNS numbers apply to all metals and alloys. All stainless steels will be identified under this system with the letter "S" followed by five digits.

ACI	Alloy Casting Institute	AMS	Aerospace Material Specifications
Military	United States Government	ASTM	American Society for Testing and Materials
SAE	Society of Automotive Engineers	ASME	American Society of Mechanical Engineers

**SELECTED STAINLESS STEEL TYPES AND APPLICABLE SPECIFICATIONS**

TYPE	UNS	ASTM	ASME	AMS	SAE	MILITARY	ACI
305	S30500	A193 A194 A240 A249 A276 A313 A314 A320 A368 A473 A478 A492 A493 A511 A554 A580 A1012 F593 F594 F738 F836 F837 F879 F880 F1667 F2215	SA193 SA194 SA240	5514 5685 5686 QQ-S-763	30305 J405 J412	MIL-S-24149/3 MIL-S-24149/6 MIL-W-30508	
308	S30800	A167 A276 A314 A473 A480 A580			30308	MIL-E-19933	
309	S30900	A167 A264 A276 A314 A403 A409 A473 A480 A580 F2281	SA249 SA312 SA358 SA403 SA409	QQ-S-763	30309 J412 J2515	MIL-E-19933 MIL-S-862 MIL-S-24149/3 MIL-S-24149/6	CH-20
309S	S30908	A213 A240 A249 A276 A312 A314 A358 A409 A473 A478 A479 A511 A554 A580 A813 A814 A924 A943 A1012	SA240	5523 5574 5650 7490	30309S J405 J467		HH
310	S31000	A167 A182 A213 A240 A249 A276 A312 A314 A336 A473 A580 A632 A965 A1012 A1049 F2281	SA182 SA213 SA312 SA358 SA403 SA409	QQ-S-763	30310 J412 J467	MIL-B-15382 MIL-E-19933 MIL-S-854 MIL-S-862 MIL-S-24149/3 MIL-S-24149/6	CK-20
310S	S31008	A213 A240 A249 A264 A276 A312 A314 A358 A409 A473 A479 A511 A554 A580 A813 A814 A924 A943 A1012	SA240 SA479	5521 5572 5577 5651 7490 QQ-S-763	30310S J405		HK
314	S31400	A276 A314 A473 A580		5652 7490	30314 J467		
316	S31600	A182 A193 A194 A213 A240 A249 A264 A269 A270 A271 A276 A312 A313 A314 A320 A336 A358 A368 A376 A403 A409 A430 A580 A632 A666 A688 A793 A813 A814 A826 A831 A943 A965 A988 A1012 A1022 A1049 F55 F56 F593 F594 F738 F836 F837 F879 F899 F957 F1667 F2215 F2281	SA182 SA193 SA194 SA213 SA240 SA249 SA312 SA320 SA358 SA376 SA403 SA409 SA479 SA688	5524 5573 5690 5691	30316 J412 J467	MIL-F-20138 MIL-S-854 MIL-S-862 MIL-C-24707/3 MIL-E-22200/2 MIL-S-24149/3 MIL-S-24249/6	CF-8M CF-12M
316L	S31603	A182 A213 A240 A249 A269 A270 A276 A312 A314 A336 A358 A403 A409 A473 A478 A479 A493 A511 A554 A580 A632 A666 A688 A774 A778 A793 A813 A814 A943 A965 A988 A1022 A1049 F593 F594 F738 F836 F837 F879 F2281	SA182 SA183 SA240 SA249 SA312 SA403 SA479 SA688	5507 5584 5653 S-7720 QQ-S-763	30316L J405	MIL-E-19933 MIL-S-862	CF-3M
316F	S31620			5649			
316N	S31651	A182 A193 A194 A213 A240 A312 A336 A358 A376 A403 A479 A666 A688 A813 A814 A943 A965 A988 A1012 A1022	SA182 SA213 SA240 SA249 SA312 SA358 SA376 SA403 SA479		J405		
316LN	S31653	A182 A193 A194 A213 A240 A249 A269 A276 A312 A320 A336 A358 A376 A403 A479 A688 A813 A814 A943 A965 A988 A1012 A1022 A1049			J405		

**SELECTED STAINLESS STEEL TYPES AND APPLICABLE SPECIFICATIONS**

TYPE	UNS	ASTM	ASME	AMS	SAE	MILITARY	ACI
317	S31700	A182 A213 A240 A249 A269 A276 A312 A314 A409 A473 A478 A479 A511 A554 A580 A632 A813 A814 A943 A988 A1012 A1049 F899	SA240 SA249 SA312 SA403 SA409	QQ-S-763	30317 J405	MIL-E-19933 MIL-S-862	CG-8M
317L	S31703	A182 A213 A240 A249 A312 A403 A774 A778 A813 A814 A903 A943 A988 A1012 A1049	SA240		J405		
321	S32100	A182 A193 A194 A213 A240 A249 A264 A269 A276 A312 A313 A314 A320 A336 A358 A376 A409 A430 A473 A479 A511 A554 A580 A632 A774 A778 A813 A814 A943 A965 A988 A1012 A1049 F593 F594 F738 F836 F2281	SA182 SA193 SA194 SA213 SA240 SA249 SA312 SA320 SA358 SA376 SA403 SA409 SA479	5510 5557 5559 5570 5576 5645 5689 7490 AS7325 QQ-S-763	30321 J405 J412 J467 J2515	MIL-E-19933 MIL-P-24691/3 MIL-S-854 MIL-S-862 MIL-T-16282	
329	S32900	A240 A480 A789 A790 A928 A949 A1022 F2215	SA789				
330	N08330	A554 B366 B511 B512 B535 B536 B546 B710 B739 F2281	SB366 SB511 SB536 SB710	5592 5716	30330 J412 J467		HK
347	S34700	A182 A193 A194 A213 A240 A249 A264 A269 A276 A312 A313 A314 A320 A336 A358 A376 A403 A409 A430 A473 A479 A511 A554 A580 A632 A774 A778 A813 A814 A943 A965 A1012 A1049 F593 F594 F738 F836 F2281	SA182 SA193 SA213 SA240 SA249 SA312 SA320 SA358 SA376 SA403 SA409 SA479	5512 5556 5558 5571 5575 5646 5654 5674 5790 5897 7490 AS7229 QQ-S-763	30347 J405 J412 J467	MIL-E-19933 MIL-S-862 MIL-S-18170 MIL-S-18171 MIL-T-16286 MIL-T-18063	CF-8C
348	S34800	A182 A213 A240 A249 A269 A276 A312 A314 A336 A358 A376 A403 A409 A473 A479 A580 A632 A813 A814 A943 A965 A1012 A1049 F593 F594	SA182 SA213 SA240 SA249 SA312 SA358 SA376 SA403 SA409 SA479		30348 J405	MIL-C-24707/3	
384	S38400	A493 F593 F594 F738 F837 F879 F880			30384		
403	S40300	A176 A276 A314 A479 A511 A580		5614 QQ-S-763	51403		
405	S40500	A240 A268 A276 A473 A479 A511 A580 A1012	SA240 SA268 SA479	QQ-S-763	51405		
409	S40900	A268 A651 A791 A803 A1012	SA268		51409 J405 J412 J2515		
410	S41000	A182 A193 A194 A240 A268 A276 A314 A336 A473 A479 A493 A511 A580 A815 A837 A988 A1012 A1021 A1028 A1049 F593 F594 F738 F899 F1613 F2215 F2281	SA194 SA240 SA268 SA479	5350 5504 5505 5591 5613 5776 5777 5876 QQ-S-763	51410 J405 J412 J467		

**SELECTED STAINLESS STEEL TYPES AND APPLICABLE SPECIFICATIONS**

TYPE	UNS	ASTM	ASME	AMS	SAE	MILITARY	ACI
414	S41400	A276 A314 A473 A479 A511 A580		QQ-S-763	51414 J412		
416	S41600	A194 A314 A473 A581 A582 A593 A594 A895 F738 F836 F899 F1613 F2281	SA194	5610	51416 J412		
416L	S41603	A581 A582					
416Se	S41623	A194 A314 A473 A511 A581 A582 A895 F593 F594 F738 F836	SA194	5610 QQ-S-763	51416Se		
420	S42000	A176 A182 A276 A314 A473 A580 A1049 F1079 F2215		5506 5621 AS7202 QQ-S-763	51420 J412		
420F	S42020	A582 A895 F116 F899 F1613		5620	51420F J412		
422	S42200	A176 A565		5655	51422 J467 J775		
429	S42900	A182 A240 A268 A276 A314 A473 A493 A511 A554 A815 A1049	SA182 SA240 SA268	QQ-S-763	51429 J405		
430	S43000	A182 A240 A268 A276 A314 A473 A479 A493 A511 A554 A580 A815 A1012 F593 F594 F738 F836 F2215 F2281	SA182 SA240 SA268 SA479	5503 5627 QQ-S-763	51430 J405 J412		
430F	S43020	A314 A473 A581 A582 A895 F593 F594 F738 F836 F899 F2281			51430F J412		
430FSe	S43023	A314 A473 A581 A582 A895			51430FSe		
431	S43100	A176 A276 A314 A473 A479 A493 A580 A593 A594 F738 F836 F899 F1613 F2281		5628 S-18732	51431 J412	MIL-S-8967	
434	S43400	A240			51434 J405 J412		
436	S43600	A240			51436 J405 J412		
439	S43035	A240 A268 A463 A479 A803	SA240 SA268 SA479		J2515		
440A	S44002	A276 A314 A473 A511 A580 F116 F899 F1613		5631 7445 QQ-S-763	51440A J412		
440B	S44003	A276 A314 A473 A580 F116 F899 F1613 F2215		7445 QQ-S-763	51440B		
440C	S44004	A276 A314 A473 A493 A580 F899 F116 F1613 F2215		5630 5618 5899 7445 QQ-S-763	51440C J412		
442	S44200	A176			51442 J412		
444	S44400	A213 A240 A268 A276 A479 A480 A493 A580 A791 A803 A1012			J405 J444		
446	S44600	A176 A268 A276 A314 A473 A511 A580 A815 A1012	SA268	QQ-S-763	51446 J412		
446Mo	S44660	A240 A268 A803 A1012			J405		
PH13-8Mo	S13800	A564 A693 A705	SA705	5629 5412 5840			
15-5PH	S15500	A564 A693 A705	SA705	5659 5826 5862			
17-4PH	S17400	A564 A693 A705 A982 A1028 F593 F594 F738 F836 F899	SA567 SA705	5604 5622 5643			
17-7PH	S17700	A564 A693 A705	SA705	5529 5644 AS7474			
2205	S31803	A182 A240 A276 A479 A789 A790 A815 A923 A928 A949 A988 A1022	SA240 SA789 SA790 SA815		J405		