

This page is mainly introduced the 309S chemical information, mechanical properties, physical properties, mechanical properties, heat treatment, and Micro structure, etc. It also contains the use of 309S, such as it is commonly used in bars, sheet, plates, steel coils, steel pipes, forged and other materials application.

Data Table for Grades Stainless Steels 309S

309S Standard Number:		
ITEM	Standard Number	Descriptions
1	A 213/A 213M (2011)	Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes
2	A 240/A 240M (2012)	Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
3	A 249/A 249M (2010)	Welded Austenitic Steel Boiler, Superheater, Heat-Exchanger, and Condenser Tubes
4	A 276 (2010)	Stainless Steel Bars and Shapes
5	A 312/A 312M (2012)	Seamless, Welded, and Heavily Cold Worked Austenitic Stainless Steel Pipes
6	A 314 (2008)	Stainless Steel Billets and Bars for Forging
7	A 358/A 358M (2008)	Electric-Fusion-Welded Austenitic Chromium-Nickel Stainless Steel Pipe for High-Temperature Service and General Applications
8	A 409/A 409M (2009)	Welded Large Diameter Austenitic Steel Pipe for Corrosive or High-Temperature Service
9	A 473 (2009)	Stainless Steel Forgings
10	A 478 (2008)	Chromium-Nickel Stainless Steel Weaving and Knitting Wire
11	A 479/A 479M (2011)	Stainless Steel Bars and Shapes for Use in Boilers and Other Pressure Vessels
12	A 511/A 511M (2012)	Seamless Stainless Steel Mechanical Tubing
13	A 554 (2011)	Welded Stainless Steel Mechanical Tubing
14	A 580/A 580M (2012)	Stainless Steel Wire
15	A 813/A 813M (2009)	Single- or Double-Welded Austenitic Stainless Steel Pipe
16	A 814/A 814M (2008)	Cold-Worked Welded Austenitic Stainless Steel Pipe
17	A 943/A 943M (2009)	Spray-Formed Seamless Austenitic Stainless Steel Pipes
18	A 959 (2011)	Standard Guide for Specifying Harmonized Standard Grade Compositions for Wrought Stainless Steels
19	SAE J 405 (1998)	Chemical compositions of SAE wrought stainless steels
20	SAE J 467 (1968)	Special Purpose Alloys ("Superalloys")

309S Chemical composition(mass fraction)(wt.%)		
Chemical	Min.(%)	Max.(%)
C		0.08

Si		1.00
Mn		2.00
P		0.045
S		0.03
Cr	22.0	24.0
Ni	12.0	15.0

309S Physical Properties

Tensile strength	115-234	σ_b /MPa
Yield Strength	23	$\sigma_{0.2} \geq$ /MPa
Elongation	65	$\delta_5 \geq$ (%)
ψ	-	$\psi \geq$ (%)
Akv	-	Akv $\geq$ /J
HBS	123-321	-
HRC	30	-

309S Mechanical Properties

Tensile strength	231-231	σ_b /MPa
Yield Strength	154	$\sigma_{0.2} \geq$ /MPa
Elongation	56	$\delta_5 \geq$ (%)
ψ	-	$\psi \geq$ (%)
Akv	-	Akv $\geq$ /J
HBS	235-268	-
HRC	30	-

309S Heat Treatment Regime

Annealing	Quenching	Tempering	Normalizing	Q & T
√	√	√	√	√

309S Range of products

Product type	Products	Dimension	Processes	Deliver Status
Plates / Sheets	Plates / Sheets	0.08-200mm(T)*W*L	Forging, hot rolling and cold rolling	Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting
Steel Bar	Round Bar, Flat Bar, Square Bar	Φ8-1200mm*L	Forging, hot rolling and cold rolling, Cast	Black, Rough Turning, Shot Blasting,

Coil / Strip	Steel Coil /Steel Strip	0.03-16.0x1200mm	Cold-Rolled & Hot-Rolled	Annealed, Solution and Aging, Q+T, ACID-WASHED, Shot Blasting
Pipes / Tubes	Seamless Pipes/Tubes, Welded Pipes/Tubes	OD:6-219mm x WT:0.5-20.0mm	Hot extrusion, Cold Drawn, Welded	Annealed, Solution and Aging, Q+T, ACID-WASHED

We can produce Stainless Steels the specifications follows:

Note:

- (1) listed in the table apex diameter (d), to steel thickness (a) multiples said.
- (2) in the ASTM A6 standard specified scope can meet any additional conditions.
- (3) from the standard for 50 mm (2 in).

Mechanical properties

Mechanische Eigenschaften

Caracteristiques mecaniques

ReH Minimum yield strength / Mindestwert der oberen Streckgrenze / Limite d'élasticite minimale

Rm Tensile strength / Zugfestigkeit / Resistance a la traction

A Minimum elongation / Mindestwert der Bruchdehnung / Allongement minimal

J Notch impact test / Kerbschlagbiegeversuch / Essai de flexion par choc

Round bar:

Diameter : 1mm-2000mm

Square bar:

Size: 50mm * 50mm-600mm *600mm

Plate steel/flat bar:

Size: Thickness: 0.1mm-800mm Width: 10mm to 1500mm

Tube/pipe:

Size: OD: 6-219mm WT: 1-35 mm.

Cold-rolled sheet: Thickness: 2-5mm Width:1000mm Length: 2000mm

Hot-rolled sheet: Thickness:6-80mm Width: 210-610mm

Length: We can supply any length based on the customer's requirement.

Forging/hot rolling/ extrusion of steel.

Forging: Shafts with flanks/pipes/tubes/slugs/donuts/cubes/other shapes

Finished goods condition: hot forging/hot rolling + annealing/normalizing + tempering/quenching + tempering/any conditions based on the customer's requirement

Surface conditions: scaled (hot working finish)/ground/rough machining/fine machining/based on the customer's requirement

Furnaces for metallurgical processing: electrode arc + LF/VD/VOD/ESR/Vacuum consumable electrode.

Ultrasonic inspection: 100% ultrasonic inspection for any imperfections or based on the customer's requirement.

UTS according to SEP 1921 C/c,D/d,E/e;A388 or GB/T 6402

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We serve you with our honesty, integrity, and professionalism.