



310 SPECIFICATIONS



Penn Stainless inventory now includes 310 and 310S Plate and Processed Flat Bar (Alloy 310 UNS S31000 / Alloy 310S UNS S31008), ideally suited for high-temperature applications such as heat treatment and chemical processing equipment.

General Properties

Alloy 310 is an austenitic stainless steel that combines excellent high temperature properties with good ductility and weldability. It is typically used for elevated temperature applications as its high chromium and nickel content provide solid corrosion resistance, excellent resistance to oxidation, and superior strength in temperatures up to 2100°F. Due to its high chromium and nickel content, it is superior to 304 or 309 stainless in most environments.

Applications

The higher alloyed stainless steels generally have excellent strength at elevated temperatures along with outstanding resistance to creep deformation and environmental attack. Therefore, Alloy 310 is used widely in industries such as heat treatment and chemical processing. Some examples include:

- Furnace parts
- Oil burner parts
- Heat exchangers
- Welding filler wire and electrodes
- Annealing covers
- Combustion tubes
- Fire box sheets

PENN STAINLESS CAN PROVIDE YOU WITH CUSTOM CUT, SIZED AND PROCESSED ALLOY 310 THROUGH ANY OF OUR AVAILABLE PROCESSING METHODS:

- SHEAR CUTTING
- PLASMA CUTTING
- HQ PLASMA CUTTING
- DYNAMIC WATER JET CUTTING
- SAW CUTTING
- GAUER PROCESSING
- MACHINE CUTTING



FORMS IN-STOCK:

- PROCESSED FLAT BAR
- ROUND BAR
- SHEET
- SHEET COIL
- PLATE
- PLATE COIL

Corrosion Resistance

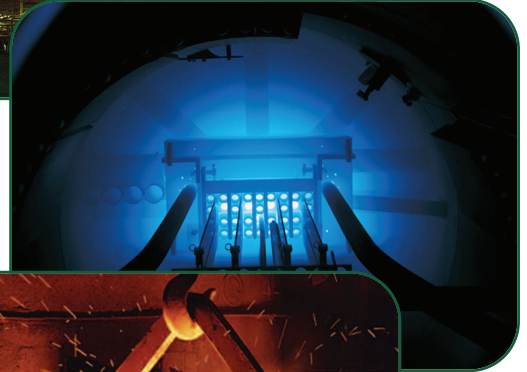
- Provides excellent corrosion resistance
- High chromium content allows for good aqueous corrosion resistance
- Excellent resistance at normal temperatures and also has good resistance to oxidizing and carburizing atmospheres

Fabrication

- Commonly used in the heat treatment and process industries due to high temperature and corrosive environments
- Often fabricated into complex structures
- Roller-forms, stamps and draws readily
- Because 310 work hardens, severe forming operations should be followed by an anneal.

Weldability

- Austenitic stainless steel is generally considered to be weldable
- Generally considered to have weldability equivalent to 304 and 304L
- Special consideration is needed to compensate for a higher coefficient of thermal expansion to avoid warping and distortion



Chemical Properties

%	Cr	Ni	C	Si	Mn	P	S	Mo	Cu	Fe
310	min: 24.0 max: 26.0	min: 19.0 max: 22.0	0.25	0.75	2.0	0.045	0.030	0.75	0.5	balance
310S	min: 24.0 max: 26.0	min: 19.0 max: 22.0	0.08	1.00	2.0	0.045	0.030	0.75	0.5	balance

Mechanical Properties

Grade	Tensile Strength ksi (min)	Yield Strength 0.2% offset ksi (min)	Elongation - % in 50mm (min)	Hardness (Brinell) MAX	Hardness (Rockwell B) MAX
310/310S	75	30	40	217	95

Physical Properties

Density lb _m /in ³	Coefficient of Thermal Expansion (min/in)·°F			Electrical Resistivity mW·in		Thermal Conductivity BTU/hr·ft·°F		Specific Heat BTU/lb _m ·°F	Magnetic Permeability (annealed) ¹	Modulus of Elasticity (annealed) ² - psi	
	at 68 - 212°F	at 68 - 932°F	at 68 - 1832°F	at 68°F	at 1200°F	at 68 - 1832°F	at 68 - 932°F			at 32 - 212°F	at 200H
at 68°F	8.8	9.5	10.5	30.7	—	10.5	10.8	0.12	1.02	29 x 10 ⁶	11.2 x 10 ⁶

¹ Common value for both alloys, no units

² Common value for both alloys



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