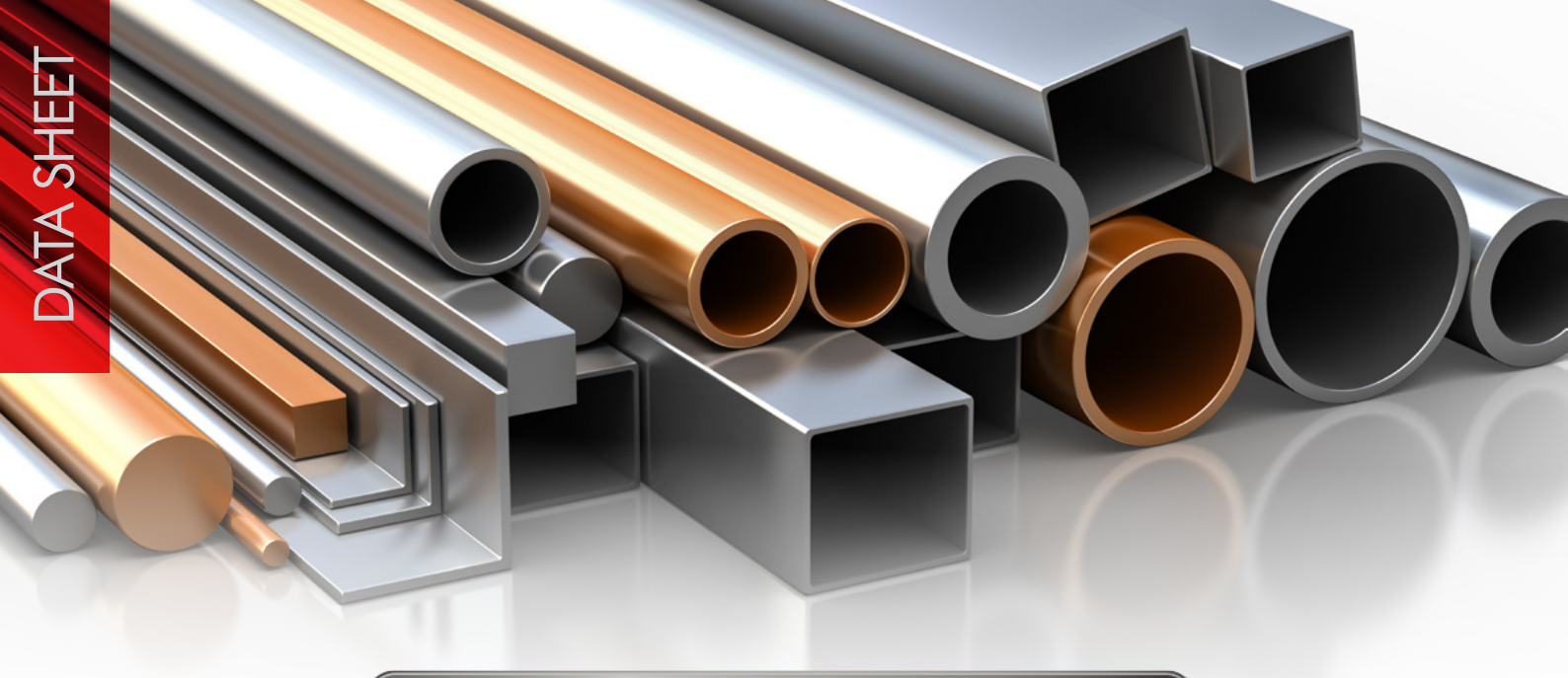
DATA SHEET



S. S. 310 / 310S

UNS No - S31000 / S31008

Stainless Steel 310 is an austenitic heat resistant alloy with phenomenal resistance to oxidation under mildly cyclic conditions through 2000°F. Its nickel and high chromium contents provide similar corrosion resistance, superior resistance to oxidation and the retention of a larger fraction of room temperature strength than the common austenitic alloys like Type 304. Stainless 310 is frequently utilized at cryogenic temperatures, with excellent toughness to -450°F. temperatures, with excellent toughness to -450°F, and low magnetic permeability.

Stainless Steel 310S is austenitic chromium, nickel stainless steel (.08% max carbon) with good oxidation resistance and strength at high temperatures. It resist oxidation in continuous service up to 2000°F gave decreasing sulphur gasses are not present. It is additionally utilized for intermittent service at temperatures up to 1900°F due to it resists rescaling and has a low coefficient of expansion. This factor reduces the tendency of the steel to warp in heat service. 310s are same as 310 aside from lower carbon content to minimize carbide precipitation during welding.

Applications

- Kilns
- Heat Exchangers
- Radiant Tubes
- Muffles, retorts, annealing covers
- Tube hangers for petroleum refining and steam boilers
- Coal gasifier internal components
- Saggers
- Furnace parts, conveyor belts, rollers, oven linings, fans
- Food processing equipment
- Cryogenic structures

Characteristics

- Oxidation resistance to 2000°F
- Moderate strength at high temperature
- Resistance to hot corrosion
- Strength and toughness at cryogenic temperatures

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S. S. 310 / 310S

Fabrication
Type 310/310S is promptly fabricated by a standard commercial process. In comparison to carbon steel, stainless steels are tougher and tend to work harden quickly. By using all of the common welding processes type 310/310S can be easily welded.

Machining
This alloy machines same as type 304 stainless steel. The chips of this alloy are stringy and it will work harden very quickly. It is compulsory to keep the tool cutting at all times and utilize chip breakers.

Welding
By using fusion or resistance technique most of the austenitic stainless steels can be quickly welded. Oxyacetylene welding is not recommended. Filler metal should be AWS E/ER 310.

Hot Working
After uniform heating to 2150 F (1177 C) most common hot work techniques can be successfully performed. Do not forge down 1800 F (982 C). Fast cooling is required to maximize corrosion resistance.

Cold Working
In spite of the fact that this alloy has a high work hardening rate, this alloy can be drawn, headed, upset and stamped. To remove internal stress full annealing is required after cold work.

Annealing
1900-2050 F (1038-1121 C) water quench.

Hardening
This alloy doesn't reply to heat treatment. Cold work will cause an increase in both hardness and strength.

Chemical Properties

Grade	C	Si	P	S	Cr	Mn	Ni	Fe
310	0.025 max	1.50 max	0.045 max	0.03 max	24.0-26.0	2.0 max	19.0-22.0	Remainder
310S	0.08 max	1.50 max	0.045 max	0.03 max	24.0-26.0	2.0 max	19.0-22.0	Remainder

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Mechanical Properties

Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
75	30	40

Physical Properties

Properties	310	310S	Temperature in °C
Density	8.0 g/cm^3	9.01 g/cm^3	Room
Specific Heat	0.12 Kcal/kg.C	0.12 Kcal/kg.C	22°
Melting Range	1400-1455°C	1399-1454°C	-
Modulus of Elasticity	193-200 KN/mm^2	200 KN/mm^2	22°
Electrical Resistivity	77 µΩ.cm	94 µΩ.cm	Room
Coefficient of Expansion	15.8 µm/m °C	14.4 µm/m °C	20-100°
Thermal Conductivity	16.2 W/m-°K	13.8 W/m-°K	20°

ASTM Specifications

Pipe / Tube (SMLS)	Sheet / Plate	Bar	Forging	Fitting
A 213, A 249	A 167, A 240	A 276	A 182	A 403

Availability

MANUFACTURING
Refractory Anchors
Fasteners
Custom Machining
Custom Fabrication
Piping / Spools
Stamped Parts
B/W Fittings
S/W Fittings
Flanges
Compression Fittings

RAW MATERIALS
Pipes
Tubes
Bars
Sheets
Plates
-
-
-
-