



Type 317 is an austenitic chromium-nickel stainless steel with phenomenal corrosion resistance; its high Molybdenum content improves the grade's superior pitting resistance. It is the most corrosion resistant of the 300 series alloys and possesses the highest tensile and creep strength properties at high temperatures.

Type 317L is a low carbon austenitic chromium-nickel stainless steel that can be utilized in applications where it is not possible to anneal after welding and where maximum corrosion resistance is needed. It gives good oxidation resistance in intermittent service to 1600°F and in continuous service to 1700°F.

Applications

- Air Pollution Control — flue gas desulfurization systems (FGD)
- Chemical and Petrochemical Processing
- Explosives
- Food and Beverage Processing
- Petroleum Refining
- Power Generation — condensers
- Pulp and Paper

Characteristics

- Improved general and localized corrosion to 316L stainless
- Good formability
- Good weldability

S. S. 317 / 317L

Machining

To work harden low speeds and heavy feeds will minimize this alloy's tendency. It is tougher than 304 stainless steels with long stringy chips. The utilization of chip breakers is recommended.

Welding

All common fusion and resistance process aside from oxyacetylene welding have proven successful.

Hot Working

All common hot working process is possible with this alloy. Heat to 2100-2300 F (1149-1260 C). Avoid working this material beneath 1700 F (927 C). For ideal corrosion resistance, a post-work annealing is recommended.

Cold Working

This alloy can be successfully performed with the help of shearing, stamping, heading and drawing. To remove internal stresses, a post-work annealing is recommended.

Annealing

1850-2050 F (1010-1121 C) followed by fast cooling.

Hardening

These alloys do not reply to heat treatment. Cold work will cause an increase in both hardness and strength.

Chemical Properties

Grade	C	N	Si	P	S	Cr	Mn	Ni	Mo	Fe
317	0.08 max	0.1 max	0.75 max	0.045 max	0.03 max	18.0-20.0	2.0 max	11.0-15.0	3.0-4.0	Remainder
317L	0.03 max	0.1 max	0.75 max	0.045 max	0.03 max	18.0-20.0	2.0 max	11.0-15.0	3.0-4.0	Remainder

S. S. 317 / 317L

Mechanical Properties

Grade	Tensile Strength (ksi)	0.2% Yield Strength (ksi)	Elongation% in 2 inches
317	75	30	35
317L	75	30	40

Physical Properties

Properties	317	317L	Temperature in °C
Density	7.99 g/cm ³	7.99 g/cm ³	Room
Specific Heat	0.12 Kcal/kg.C	0.12 Kcal/kg.C	22°
Melting Range	1371-1421°C	1371-1421°C	-
Modulus of Elasticity	193 KN/mm ²	193 KN/mm ²	20°
Electrical Resistivity	74 μΩ.cm	79 μΩ.cm	Room
Coefficient of Expansion	16.0 μm/m °C	16.0 μm/m °C	20-100°
Thermal Conductivity	16.2 W/m-°K	16.2 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
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
-
-
-

Disclaimer

The data and information in this data sheet are accurate to the best of our knowledge and belief, but are intended for general information only. Applications recommended for the materials are described only to help readers make their own evaluations and decisions, and are neither guarantees nor to be construed as express or implied warranties of suitability for these or other applications. Data referring to mechanical properties and chemical analyses are the result of tests performed on specimens obtained from specific locations with prescribed sampling procedures; any warranty thereof is limited to the values obtained at such locations and by such procedures. There is no warranty with respect to values of the materials at other locations. Sunmach and the Sunmach logo are registered trademarks of Sunmach Company. The contents & images of this datasheet are introduced for information purposes only and all the registered trademarks of their respective owners.

SUNRISE MACHINATION LLP

www.sunmach.net

