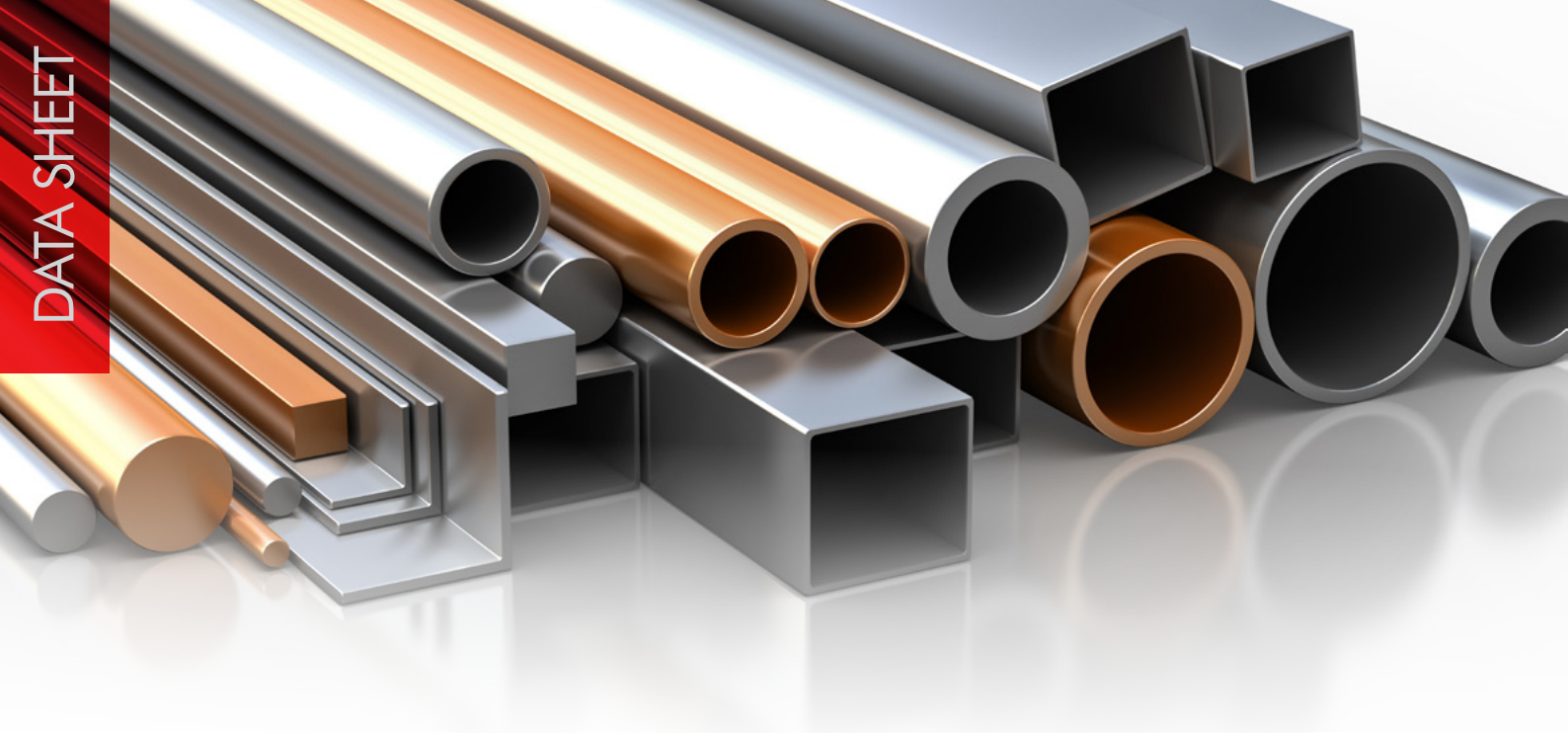
DATA SHEET



S. S. 347 / 347H

UNS No - S34700 / S34709

Alloy 347 is a balanced, austenitic, chromium steel containing columbium which takes into consideration the end of carbide precipitation, and thus intergranular corrosion. Alloy 347 is balanced out by the increases of chromium and tantalum and offers higher creep and stress rupture properties than alloy 304 and 304L, which may also be utilized for exposures where sensitization and intergranular corrosion are of concern. The expansion of columbium likewise permits Alloy 347 to have outstanding corrosion resistance, better than that of alloy 321. Alloy 347H is the higher carbon composition form of Alloy 347 and display enhanced high temperature and creep properties.

Applications

- Chemical Processing
- Food Processing equipment and storage
- Petroleum Refining fluid catalytic cracking units, polythionic acid service
- Pharmaceutical Production
- Waste Heat Recovery recuperators

Characteristics

- Higher creep stress and rupture properties when compared with 304
- Ideal for high temperature service
- Overcomes sensitization and intergranular corrosion concerns
- Can be used in elevated temperature applications
- Due to stabilization the material offers better overall corrosion resistance when compared to 304/304L

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S. S. 347 / 347H

Corrosion Resistance

Alloy 347 stainless steel plate displays good general corrosion resistance that is similar to 304. It was produced for use in the chromium carbide precipitation scope by 800 – 1500°F (427 – 816°C) where unbalanced alloys such as 304 are subject to intergranular attack. In this temperature scope, the overall corrosion resistance of Alloy 347 stainless steel plate is better than Alloy 321 stainless steel plate. Alloy 347 additionally performs somewhat superior to Alloy 321 in strongly oxidizing situations up to 1500°F (816°C). The alloy can be utilized as a part of nitric solutions; most diluted organic acids at moderate temperatures and in pure phosphoric acid at lower temperatures and up to 10% diluted solutions at high temperatures. Alloy 347 stainless steel plate resists polythionic acid stress corrosion cracking in hydrocarbon service. It can also be used in chloride or fluoride free caustic solutions at moderate temperatures. Alloy 347 stainless steel plate doesn't perform well in chloride solutions, even in small concentrations, or in sulfuric acid.

Machining

Stainless steel 304 are not tougher than stainless steel 347; this material will produce the same tough stringy chips. For work harden, slow speeds and heavy feeds will minimize this alloy's tendency.

Welding

With the help of fusion and resistance technique 347 may be welded. Oxyacetylene welding is not recommended. When compulsory, use AWS E/ER347 filler metal.

Hot Working

Working temperatures of 2100-2250 F (1149-1232 C) are suggested for forging, upsetting and other hot work process. Don't work this alloy at temperatures beneath 1700 F (927 C). Material must be water quenched or completely annealed after working to reattain maximum corrosion resistance.

Cold Working

In spite of the fact that this material requires higher initial forces than 304 stainless steels, it is slightly tough and ductile and can be easily stamped, blanked, spun and drawn.

Annealing

1850-2000 F (1010-1093 C), water quenches. This process will result in maximum ductility. For maximum corrosion resistance, see the note on settled anneal under corrosion.

Hardening

This alloy doesn't harden by heat treating. High properties may only be obtained through cold reduction.

Chemical Properties

Grades	C	Si	P	S	Cr	Mn	Ni	Fe	Cb (Nb+Ta)
347	0.08 max	0.75 max	0.045 max	0.03 max	17.0-19.0	2.0 max	9.0-13.0	Remainder	10 x (C+N)-1.0
347H	0.04-0.10	0.75 max	0.045 max	0.03 max	17.0-19.0	2.0 max	9.0-13.0	Remainder	8 x (C+N)-1.0

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Mechanical Properties

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

Physical Properties

Properties	Units	Temperature in °C
Density	7.97 g/cm^3	Room
Specific Heat	0.12 Kcal/kg.C	22°
Melting Range	1398-1446 °C	-
Modulus of Elasticity	193 KN/mm^2	20°
Electrical Resistivity	72 µΩ.cm	Room
Coefficient of Expansion	16.0 µm/m °C	20-100°
Thermal Conductivity	16.3 W/m-°K	20°

ASTM Specifications

Pipe / Tube (SMLS)	Sheet / Plate	Bar	Forging	Fittings
A 213	A 240, A 666	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
Wires
-
-
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