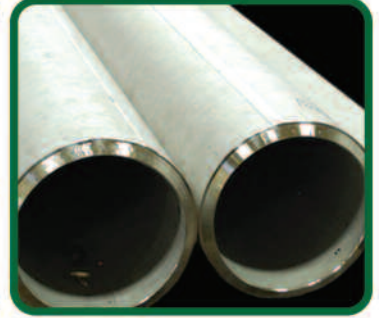
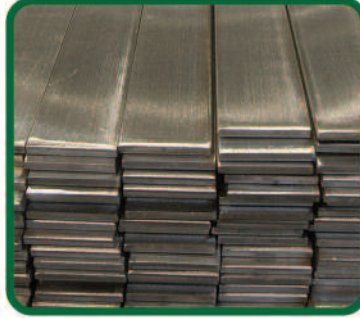
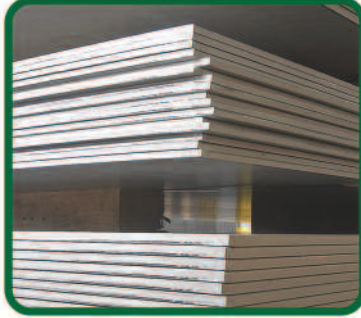
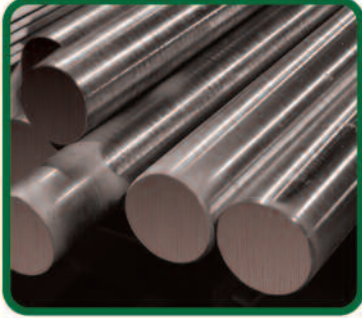




ALLOY 347/347H SPECIFICATIONS: UNS S34700/S34709



ALLOY 347/347H (UNS S34700/S34709)

Penn Stainless inventory now includes Alloy 347/347H (UNS S34700/S34709) in sheet, sheet coil, plate, round bar, processed flat bar and tubular products.

GENERAL PROPERTIES

Alloy 347 is a stabilized, austenitic, chromium steel containing columbium which allows for the elimination of carbide precipitation, and, consequently, intergranular corrosion. Alloy 347 is stabilized by the additions of chromium and tantalum and offers higher creep and stress rupture properties than alloy 304 and 304L which may also be used for exposures where sensitization and intergranular corrosion are of concern. The addition of columbium also allows Alloy 347 to have excellent corrosion resistance, even superior to that of alloy 321. 347H is the higher carbon composition form of Alloy 347 and demonstrates improved high temperature and creep properties.

APPLICATIONS

Alloy 347 is frequently used for the fabrication of equipment, which must be placed in service under severe corrosive conditions, and is also common to the petroleum refining industries. Applications that consistently used Alloy 347 include:

- High temperature chemical processes
- Heat exchanger tubes
- High temperature steam service
- High pressure steam pipes
- Radiant superheaters
- Boiler tubes
- Heavy duty exhaust systems
- General refinery piping

STANDARDS ALLOY 347/347H

ASTM/ASMEUNS S34700/S34709
EURONORMFeMi35Cr20Cu4Mo2
DIN2.4660

ALLOY 347/347H (UNS S34700/S34709) CAN BE PROCESSED BY PENN STAINLESS UTILIZING THE FOLLOWING METHODS:

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



PRODUCT OFFERING:

- SHEET
- PLATE
- PERFORATED
- FLATE & EXPANDED
- ROUND BAR
- S/E PROCESSED BAR
- TUBULAR PRODUCTS
- STRUCTURALS

CORROSION RESISTANCE

- Offers similar resistance to general, overall corrosion as Alloy 304
- Used for applications where alloys such as Alloy 304 are vulnerable to intergranular corrosion
- Generally used for heavy welded equipment which cannot be annealed and for equipment which is operated between 800 to 150°F (427 TO 816°C)
- Alloy 347 is preferred over Alloy 321 for aqueous and other low temperature environments
- Primarily used in high temperature environments where resistance to sensitization is necessary, in turn preventing intergranular corrosion at lower levels
- Susceptible to stress corrosion cracking
- Exhibits oxidation resistance similar to all other 18-8 austenitic stainless steels

WELDABILITY

- Austenitic stainless steels are considered to be the most weldable out of all high alloy steels
- Can be welded by all fusion and resistance welding processes

HEAT TREATMENT

- Annealing temperature range is 1800 to 2000°F
- May be stress relief annealed within the carbide precipitation range of 800 to 1500°F without any danger of subsequent intergranular corrosion
- Cannot be hardened by heat treatment

CHEMICAL PROPERTIES

Type	C	Cr	Mn	Ni	P	S	Si	Cb/Ta
347	0.08 max	min: 17.0 max: 20.0	2.00 max	min: 9.0 max: 13.0	0.04 max	0.30 max	0.75 max	min:10x C max: 1.0
347H	min: 0.04 max: 0.10	min: 17.0 max: 20.0	2.00 max	min: 9.0 max: 13.0	0.03 max	0.30 max	0.75 max	min:10x C max: 1.0

MECHANICAL PROPERTIES

Grade	Tensile Strength ksi (MPa) min	Yield Strength 0.2% offset ksi (MPa) min	Elongation (% in 50mm) min	Hardness (Brinell) MAX	Hardness (Rockwell B) MAX
347/347H	75 (515)	30 (205)	40	201	95

PHYSICAL PROPERTIES

	Alloy 347/347H	
Density	lb _m /in ³	g/cm ³
at 68°F (20°C)	0.288	7.96
Modulus of Elasticity in Tension	psi	GPa
at 68 - 212°F (20 - 100°C)	28 x 10 ⁶	193
Mean Coefficient of Linear Thermal Expansion	cm/cm °C	in/in °F
at 68 - 212°F (20 - 100°C)	16.6 x 10 ⁻⁶	9.2 x 10 ⁻⁶
at 68 - 1112°F (20 - 600°C)	18.9 x 10 ⁻⁶	10.5 x 10 ⁻⁶
at 68 - 1832°F (20 - 1000°C)	20.5 x 10 ⁻⁶	11.4 x 10 ⁻⁶
Thermal Conductivity	W/m·K	Btu·in/hr·ft ² ·°F
at 68 - 212°F (20 - 100°C)	16.3	112.5
at 68 - 932°F (20 - 500°C)	21.4	14.7
Specific Heat	J/kg K	Btu/lb·°F
at 32 - 212°F (0 - 100°C)	500	0.12
Electrical Resistivity	microhm·cm	
at 68°F (20°C)	72	
at 752°F (400°C)	100	
at 1652°F (900°C)	126	
Melting Range	°F	°C
	2550 - 2635	1398 - 1446

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