Type 347 stainless steel has slightly improved corrosion resistance over type 321 stainless steel in strongly oxidizing environments. Type 347 is stabilized with columbium, it is preferable for aqueous and low temperature environments due to its good resistance to intergranular attack. Both 347 and 321 offer good resistance to polythionic acid stress corrosion cracking, encountered in oil refineries. The high temperature oxidation resistance of 347 is similar to that of 304 stainless steel. Useful to 1500°F.

Often in many product forms, the grain size and carbon content can meet both the 347S and 347H requirements. Appropriate weld fillers are AWS ER347 bare wire and E347 covered electrodes.

Specifications

UNS: S34700, S34709 **AMS:** 5512 **ASTM:** A 240, A 262 Practice E **ASME:** SA-240
PWA: F17 LCS, PWA 300 **MSRR:** 5632

Chemical Composition, %

	Cr	Ni	Cb+Ta	C	Si	Mn	P	S	Fe
MIN	17.0	9.0	Cb 10xc (Cb 8xC)	0.04	-	-	-	-	-
MAX	19.0	13.0	1.0	0.08	0.75	2.0	.045	0.03	*bal

Physical Properties

Density: 0.282 lb/in^3 **Melting Range:** 2550 - 2635°F

Temperature, ° F	70	212	932
Coefficient* of Thermal Expansion, in/in°F x 10^{-6}	-	9.2	-
Thermal Conductivity Btu • ft/ft2 • hr • °F	-	112.5	147.7
Electrical Conductivity, 68°F (20°C), %IACS	28	-	-

**70°F to indicated temperature.*

Mechanical Properties

Minimum Specified Properties, ASTM A 240

Ultimate Tensile Strength, ksi	75
0.2% Yield Strength, ksi	30
Elongation, %	40
Hardness Max, Brinell	201

Typical Tensile and Impact Properties

Temperature, ° F	68	400	800	1000	1200	1350	1500
Ultimate Tensile Strength, ksi	93.3	73.6	69.5	63.5	52.3	39.3	26.4
0.2% Yield Strength, ksi	36.5	36.6	29.7	27.4	24.5	22.8	18.6

Features

- Good creep strength up to 1500°F
- Maintains good corrosion resistance in applications where the temperature is between 800°F and 1500°F
- Good resistance to intergranular corrosion in the as welded condition

Applications

- Oil Refineries
- Fluid catalytic cracking units (FCC)
- Hanger rods
- Recuperator tube sheetsm shell, supports
- Especially where temperatures exceed 550°F and resistance to sulfidation is needed
- Fired heater tubes
- Distributor trays and thermowells
- Equipment in and around reactors (good resistance to polythionic acid)