

17-7 PH Stainless Steel

UNS S17700
W. Nr 1.4568

Applicable Specifications

Wire & Bar ASTM A313, AMS 5678

Description: 17-7 PH is a precipitation-hardening stainless steel that provides high strength and hardness, excellent fatigue properties, good corrosion resistance, good formability, and minimum distortion upon heat treatment. The alloy provides valuable property combinations particularly well suited for aerospace applications. This special alloy also provides benefits for other applications requiring high strength and good corrosion resistance, as well as excellent properties for springs at temperatures up to 600°F (316°C).

Applications include: Springs, Rings, Washers, Heat Exchangers, Tubing

Industries supplied include: Chemical Processing, Aerospace, Automotive

Nominal Composition

	C	Mn	P	S	Si	Cr	Ni	Al	Fe
min	-	-	-	-	-	16.0	6.5	0.75	Bal
max	0.09	1.00	0.040	0.030	1.00	18.0	7.8	1.50	-

Physical Properties

Condition	A - Annealed	Aged - CH 900
Temperature	At 70°F (At 20°C)	At 70°F (At 20°C)
Density	0.282 lb/in ³ (7.81 g/cm ³)	0.277 lb/in ³ (7.67 g/cm ³)
Modulus of Elasticity (E)	-	29.5 x 10 ³ ksi (200 GPa)
Modulus of Rigidity (G)	-	10.5 x 10 ³ ksi (72 GPa)
Coefficient of Expansion	9.5 µin/in-°F at 70-600°F (17.1 µm/m-°C at 21-316°C)	6.4 µin/in-°F at 70-600°F (11.5 µm/m-°C at 21-316°C)
Electrical Resistivity	80.0 µohm-cm	83.8 µohm-cm
Thermal Conductivity	-	114 Btu-in/ft ² -hr-°F at 300°F (16.4 W/m-°C at 149°C)

Typical Mechanical Properties

Condition	Heat Treatment	Tensile Strength	Suggested Operating Conditions
Annealed	1900-2050°F (1038-1121°C)	150 ksi max (1034 MPa)	Up to 900°F (482°C)
Spring	None	≤.100" dia. 240-300 ksi (1655-2070 MPa) >.100" ≤.225" dia. 215-240 ksi (1480-1655 MPa) >.225" ≤.625" dia. 190-215 ksi (1310-1480 MPa)	Up to 650°F (343°C)
Spring + Aged (CH 900)	900°F (482°C) 60 mins/AC	≤.100" dia. 280-365 ksi (1930-2515 MPa) >.100" ≤.225" dia. 250-305 ksi (1720-2100 MPa) >.225" ≤.625" dia. 230-275 ksi (1585-1895 MPa)	Up to 650°F (343°C)

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