



Combined Metals Material Datasheet

Alloy 17-7PH Stainless Steel

UNS: S17700
EN DIN: 1.4568

Description: 17-7 PH (also *Type 631*) 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. It is easily formed in the annealed condition, then hardened to high strength levels by simple heat treatments to Conditions RH 950 and TH 1050. The exceptionally high strength of Condition CH 900 offers many advantages where limited ductility and workability are permissible. Corrosion resistance in Conditions TH 1050 and RH 950 is generally superior to that of standard hardenable chromium stainless steels such as Types 410, 420 and 431. Corrosion resistance in Condition CH 900 approaches that of Type 304 in most environments.

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	7.75	1.50	-

Physical Properties

	Annealed At 70°F (At 20°C)	Condition TH 1050 At 70°F (At 20°C)	Condition RH 950 At 70°F (At 20°C)	Condition CH 900 At 70°F (At 20°C)
Density	0.282 lb/in ³ (7.8 g/cm ³)	0.276 lb/in ³ (7.65 g/cm ³)	0.276 lb/in ³ (7.65 g/cm ³)	0.277 lb/in ³ (7.67 g/cm ³)
Modulus of Elasticity (E)	-	29 x 10 ³ ksi (200 GPa)	29 x 10 ³ ksi (200 GPa)	-
Coefficient of Expansion	9.6 μin/in-°F (70-800°F) 17.3 μm/m-°C (21-427°C)	6.6 μin/in-°F (70-800°F) 11.9 μm/m-°C (21-427°C)	6.9 μin/in-°F (70-800°F) 12.4 μm/m-°C (21-427°C)	6.6 μin/in-°F (70-800°F) 11.9 μm/m-°C (21-427°C)
Electrical Resistivity	31.5 μohm-in (80 μohm-cm)	32.3 μohm-in (82 μohm-cm)	32.7 μohm-in (83 μohm-cm)	33 μohm-in (83.8 μohm-cm)
Thermal Conductivity	-	117 Btu-in/ft ² -hr- °F (300°F) 16.87 W/m-K (149°C)	117 Btu-in/ft ² -hr- °F (300°F) 16.87 W/m-K (149°C)	114 Btu-in/ft ² -hr- °F (300°F) 16.43 W/m-K (149°C)

Applicable Specifications

Strip & Sheet AMS 5528, AMS 5529, ASTM A693 (Type 631)

Typical Mechanical Properties Typical Room Temperature Mechanical Properties

Condition	Tensile Strength (UTS)	0.2% Offset Yield	Elongation in 2" (50.8 mm)	Hardness Rockwell
Annealed	130 ksi (896 MPa)	40 ksi (276 MPa)	35%	85 HRBW
TH 1050	200 ksi (1379 MPa)	185 ksi (1276 MPa)	9%	43 HRC
RH 950	235 ksi (1620 MPa)	220 ksi (1517 MPa)	6%	48 HRC
C	220 ksi (1517 MPa)	190 ksi (1310 MPa)	5%	43 HRC



CH 900	265 ksi (1827 MPa)	260 ksi (1793 MPa)	2%	49 HRC
Typical mechanical properties are based on ASTM A240				
For further information: combmet.com/contact-us/ call: (800) 323-0758		Combined Metals Company, LLC One Hawk Drive Hampshire, IL 60140		WWW.COMBMET.COM

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