



ASM Aerospace Specification Metals Inc.

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17-7 PH Stainless Steel, RH950, bar and forgings

Subcategory: Ferrous Metal; Metal; Precipitation Hardening Stainless; Stainless Steel; T S10000 Series Stainless Steel

Key Words: UNS S17700, double treatment alloy, RH950, bar and forgings, 17-7PH, 17-7 PH, 17/7PH, 17/7 PH, Precipitation Hardening

Component	Wt. %
Al	0.75 - 1.5
C	Max 0.09
Cr	16 - 18
Mn	Max 1
Ni	6.5 - 7.75
P	Max 0.04
S	Max 0.04
Si	Max 1

Material Notes:

Properties are measured in the longitudinal direction.

Processing: RH950 - heated to austenitic range, 1040°C (1900°F), and water quenched. Reheated to 925°C (1700°F) to precipitate carbides. The austenite is transformed to martensite after cooling to room temperature and refrigerating at -75°C (-100°F). Tempered at 510°C (950°)

Applications: high strength high temperature applications, chemical processing equipment, heat exchangers, power boilers, superheater tubes

Corrosion Resistance: 17-7 PH is suitable for use in fresh water, industrial and marine atmospheres, and mild chemical and oxidizing environments. 17-7 PH should not be used in salt water or reducing environments.

Physical Properties	Metric	English	Comments
Density	<u>7.8 g/cc</u>	0.282 lb/in ³	

Mechanical Properties

Hardness, Rockwell C	41	41	
Tensile Strength, Ultimate	1275 MPa	185000 psi	
Tensile Strength, Yield	1030 MPa	149000 psi	
Elongation at Break	6 %	6 %	
Reduction of Area	10 %	10 %	
Modulus of Elasticity	204 GPa	29600 ksi	
Fracture Toughness	76 MPa-m^{1/2}	69.2 ksi-in ^{1/2}	Longitudinal, 44 HRC.

Electrical Properties

Electrical Resistivity	8.3e-005 ohm-cm	8.3e-005 ohm-cm	
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Thermal Properties

CTE, linear 20°C	11 μm/m-°C	6.11 μin/in-°F	from 0-100°C (32-212°F)
CTE, linear 250°C	11.6 μm/m-°C	6.44 μin/in-°F	from 0-315°C (32-600°F)
Specific Heat Capacity	0.46 J/g-°C	0.11 BTU/lb-°F	from 0-100°C (32-212°F)
Thermal Conductivity	16.4 W/m-K	114 BTU-in/hr-ft ² -°F	at 100°C(212°F); 21.8 W/m-K at 500°C (930°F)
Melting Point	1400 - 1450 °C	2550 - 2640 °F	
Solidus	1400 °C	2550 °F	
Liquidus	1450 °C	2640 °F	

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error.