17-7 PH Stainless Steel, RH950, plate, sheet, and strip

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

Key Words: UNS S17700, double treatment alloy, RH950, plate, sheet, and strip, 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:

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	7.8 g/cc	0.282 lb/in^3	
Mechanical Properties			
Hardness, Rockwell C	Max 43	Max 43	
Tensile Strength, Ultimate	1450 MPa	210000 psi	Strength varies with thickness.

Tensile Strength, Yield	1310 MPa	190000 psi	Strength varies with thickness.
Elongation at Break	1 - 6 %	1 - 6 %	
Modulus of Elasticity	204 GPa	29600 ksi	
Fracture Toughness	76 MPa-m½	69.2 ksi-in½	Longitudinal, 44 HRC.

Electrical Properties

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

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-ft²-°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 consistant 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.