



ASM Aerospace Specification Metals Inc.



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17-7 PH Stainless Steel, cold rolled condition C, 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, cold rolled condition C, 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: Condition C - heated to austenitic range, 1040°C (1900°F), and water quenched. Severely cold worked (60-70%). The cold working induces a martensite transformation in the austenite.

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 | <u>1380 MPa</u> | 200000 psi | |

| | | |
|-------------------------|--------------------------|------------|
| Tensile Strength, Yield | 1210 MPa | 175000 psi |
| Elongation at Break | 1 % | 1 % |
| Modulus of Elasticity | 204 GPa | 29600 ksi |

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-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.