



ASM Aerospace Specification Metals Inc.

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AISI Type S13800 Stainless Steel (PH 13-8 Mo) longitudinal properties, condition H1150M

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

Key Words: UNS S13800, 13-8Mo, 13-8PH, 13-8 PH, 13/8 Mo, 13/8Mo, 13/8PH, 13/8 PH, AMS 5629, AMS 5840, ASME SA705 (XM-13), ASTM A564 (XM-13), ASTM A693 (XM-13), ASTM A705 (XM-13); PH 13-8 Mo; Precipitation Hardening

| Component | Wt. % | Component | Wt. % | Component | Wt. % |
|-----------|---------------|-----------|-----------|-----------|-----------|
| Al | 0.9 - 1.35 | Mn | Max 0.1 | P | Max 0.01 |
| C | Max 0.05 | Mo | 2 - 2.5 | S | Max 0.008 |
| Cr | 12.25 - 13.25 | N | Max 0.01 | Si | Max 0.1 |
| Fe | 76 | Ni | 7.5 - 8.5 | | |

Material Notes:

Center or intermediate test location.

Martensitic, precipitation hardening (maraging) stainless steel.

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

Mechanical Properties

| | | | |
|----------------------------|------------------|---------------|---------------------------------------------------------------------|
| Tensile Strength, Ultimate | <u>895 MPa</u> | 130000 psi | |
| Tensile Strength, Yield | <u>585 MPa</u> | 84800 psi | at 0.2% offset |
| Elongation at Break | <u>22 %</u> | 22 % | in 50 mm |
| Modulus of Elasticity | <u>172 GPa</u> | 24900 ksi | |
| Charpy Impact | <u>Min 163 J</u> | Min 120 ft-lb | at room temperature, 119 J at -73°C, 96 J at -115°C, 41 J at -195°C |
| Machinability | 35 - 40 % | 35 - 40 % | 35-40% average, Based on 100% machinability for AISI 1212 steel. |

Electrical Properties

| | | | |
|------------------------|-------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------|
| Electrical Resistivity | 0.0001 ohm-cm | 0.0001 ohm-cm | at 25°C, 0.0001 at 100°C, 0.0001 at 200°C, 0.00011 at 315°C, 0.00011 at 425°C, 0.00011 at 540°C, 0.00011 at 595°C, in Condition A. |
|------------------------|-------------------------------|---------------|------------------------------------------------------------------------------------------------------------------------------------|

Thermal Properties

| | | | |
|------------------------|------------------------------|------------------------------------|------------------------------------------------------------------------------------------------------|
| CTE, linear 20°C | 10.6 μm/m-°C | 5.89 μin/in-°F | at 21-95°C, 10.8 at 21-205°C |
| CTE, linear 250°C | 11.2 μm/m-°C | 6.22 μin/in-°F | at 21-315°C, 11.3 at 21-425°C |
| CTE, linear 500°C | 11.9 μm/m-°C | 6.61 μin/in-°F | at 21-540°C |
| Specific Heat Capacity | 0.46 J/g-°C | 0.11 BTU/lb-°F | from 0-100°C (32-212°F) |
| Thermal Conductivity | 14 W/m-K | 97.2 BTU-in/hr-ft ² -°F | at 100°C, 15.7 at 200°C, 17.8 at 315°C, 20.4 at 425°C, 22.3 at 540°C, 22.5 at 595°C; in Condition A. |
| Melting Point | 1405 - 1440 °C | 2560 - 2620 °F | |
| Solidus | 1405 °C | 2560 °F | |
| Liquidus | 1440 °C | 2620 °F | |

References for this datasheet.

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.