



ASM Aerospace Specification Metals Inc.



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## AISI Type 410 Stainless Steel, tempered at 650°C, tested at 650°C (1200°F)

**Subcategory:** Ferrous Metal; Heat Resisting; Metal; Stainless Steel; T 400 Series Stainless Steel

**Close Analogs:** AISI Type 410S

**Key Words:** AFNOR Z 12 C 13, UNI X 12 Cr 13, JIS SUS 410, SS14 2302 (Sweden), B.S. 410 S 21, UNS S41000, AMS 5504, AMS 5505, AMS 5591, AMS 5613, AMS 5776, AMS 5821, ASME SA194 (6), ASME SA240, ASME SA268, ASME SA479, ASTM A176, ASTM A193, ASTM A194, ASTM A240, ASTM A276, ASTM A314, ASTM A473, ASTM A479, ASTM A493, ASTM A511, martensitic, ASTM A580, FED QQ-S-763, FED QQ-W-423, MIL SPEC MIL-S-862, SAE J405 (51410), B.S. En. 56 A, B.S. ANC 1 Grade A (U.K), SAE J412 (51410), DIN 1.4006, AFNOR Z 10 C 13, AFNOR Z 10 C 14 (France), ISO 683/13 3

Component	Wt. %
C	Max 0.15
Cr	12.5
Fe	86
Mn	Max 1
P	Max 0.04
S	Max 0.03
Si	Max 0

### Material Notes:

16 mm diameter bar, heated to 980°C for 30 min., oil quenched, 650°C temper for 2 hours, air cooled

Physical Properties	Metric	English	Comments
Density	<u>7.8 g/cc</u>	0.282 lb/in <sup>3</sup>	
<b>Mechanical Properties</b>			
Hardness, Knoop	274	274	Converted from Rockwell C hardness
Hardness, Rockwell C	24.5	24.5	before testing
Hardness, Vickers	266	266	Converted from Rockwell C hardness
Tensile Strength, Ultimate	<u>305 MPa</u>	44200 psi	

Tensile Strength, Yield	<u>280 MPa</u>	40600 psi	at 0.2% offset
Elongation at Break	<u>29 %</u>	29 %	in 50 mm
Reduction of Area	<u>90 %</u>	90 %	

### Electrical Properties

Electrical Resistivity	<u>5.7e-005 ohm-cm</u>	5.7e-005 ohm-cm	at 20°C, 0.000108 Ohm-cm at 650°C
Magnetic Permeability	700 - 1000	700 - 1000	annealed condition at RT

### Thermal Properties

CTE, linear 20°C	<u>9.9 μm/m-°C</u>	5.5 μin/in-°F	from 0-100°C (32-212°F)
CTE, linear 250°C	<u>11 μm/m-°C</u>	6.11 μin/in-°F	at 0-315°C (32-600°F)
CTE, linear 500°C	<u>11.5 μm/m-°C</u>	6.39 μin/in-°F	at 0-540°C, 11.7 μm/m-C at 0-650°C
Specific Heat Capacity	<u>0.46 J/g-°C</u>	0.11 BTU/lb-°F	from 0-100°C (32-212°F)
Thermal Conductivity	<u>24.9 W/m-K</u>	173 BTU-in/hr-ft <sup>2</sup> -°F	at 100°C; 28.7 W/m-K at 500°C
Melting Point	1480 - 1530 °C	2700 - 2790 °F	
Solidus	<u>1480 °C</u>	2700 °F	
Liquidus	<u>1530 °C</u>	2790 °F	
Maximum Service Temperature, Air	<u>705 °C</u>	1300 °F	Continuous Service
Maximum Service Temperature, Air	<u>815 °C</u>	1500 °F	Intermittent Service

### 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. We also ask that you refer to MatWeb's [disclaimer and terms of use](#) regarding this information. MatWeb data and tools provided by [MatWeb, LLC](#).