



ASM Aerospace Specification Metals Inc.



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AISI Type 410S Stainless Steel, tempered at 540°C, tested at 21°C (70°F)

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

Close Analogs: AISI Type 410

Key Words: ASME SA240, ASTM A176, ASTM A240, ASTM A473, DIN 1.4001, JIS SUS 410 S, B.S. 403 S 17, martensitic

Component	Wt. %
C	Max 0.08
Cr	12.5
Fe	85
Mn	Max 1
P	Max 0.04
S	Max 0.03
Si	Max 1

Material Notes:

16 mm diameter bar, heated to 980°C for 30 min., oil quenched, 540°C temper for 2 hours, air cooled

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

Mechanical Properties

Hardness, Brinell	330	330	Converted from Rockwell C hardness.
Hardness, Knoop	357	357	Converted from Rockwell C hardness.
Hardness, Rockwell C	35.5	35.5	before testing
Hardness, Vickers	344	344	Converted from Rockwell C hardness.
Tensile Strength, Ultimate	<u>1085 MPa</u>	157000 psi	
Tensile Strength, Yield	<u>1005 MPa</u>	146000 psi	at 0.2% offset
Elongation at Break	<u>13 %</u>	13 %	in 50 mm

Modulus of Elasticity	<u>200 GPa</u>	29000 ksi	Estimated based on comparison with similar stainless steel
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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 ² -°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.