



ASM Aerospace Specification Metals Inc.



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AISI Type 321 Stainless Steel, annealed sheet

Subcategory: Ferrous Metal; Metal; Stainless Steel; T 300 Series Stainless Steel

Component	Wt. %	Component	Wt. %	Component	Wt. %
C	0.08	Mn	2	S	0.03
Cr	18	Ni	11	Si	1
Fe	68	P	0.045	Ti	0.15

Material Notes:

Titanium-bearing, austenitic, chromium-nickel steel. Stabilized against carbide precipitation and designed to work within the temperature range where carbide precipitation develops. Similar to Type 304 except Ti content helps prevent chromium carbide precipitation resulting from welding or elevated temperatures. Stabilized at annealing temperatures between 950-1010°C (1750-1850°F). Resists scaling and vibration fatigue. Applications include aircraft exhaust stacks and manifolds, chemical processing equipment, weld equipment, jet engine parts.

Physical Properties	Metric	English	Comments
Density	<u>8 g/cc</u>	0.289 lb/in ³	
Mechanical Properties			
Hardness, Rockwell B	80	80	
Tensile Strength, Ultimate	<u>620 MPa</u>	89900 psi	
Tensile Strength, Yield	<u>240 MPa</u>	34800 psi	
Elongation at Break	<u>45 %</u>	45 %	in 50 mm
Modulus of Elasticity	193 - 200 GPa	28000 - 29000 ksi	
Charpy Impact	<u>165 J</u>	122 ft-lb	V-notch
Izod Impact	<u>135 J</u>	99.6 ft-lb	
Electrical Properties			
Electrical Resistivity	<u>7.2e-005 ohm-cm</u>	7.2e-005 ohm-cm	at 20°C
Magnetic Permeability	1.008	1.008	at RT

Thermal Properties

CTE, linear 20°C	<u>16.7 μm/m-°C</u>	9.28 μin/in-°F	0 - 100°C
CTE, linear 250°C	<u>17.1 μm/m-°C</u>	9.5 μin/in-°F	at 0-315°C (32-600°F)
CTE, linear 500°C	<u>18.5 μm/m-°C</u>	10.3 μin/in-°F	0 - 540°C
CTE, linear 1000°C	<u>20.5 μm/m-°C</u>	11.4 μin/in-°F	20 - 925°C
Specific Heat Capacity	<u>0.5 J/g-°C</u>	0.12 BTU/lb-°F	from 0-100°C (32-212°F)
Thermal Conductivity at Elevated Temperature	<u>16.1 W/m-K</u>	112 BTU-in/hr-ft ² -°F	100°C
Melting Point	1400 - 1425 °C	2550 - 2600 °F	
Solidus	<u>1400 °C</u>	2550 °F	
Liquidus	<u>1425 °C</u>	2600 °F	
Maximum Service Temperature, Air	<u>870 °C</u>	1600 °F	Intermittent Service
Maximum Service Temperature, Air	<u>925 °C</u>	1700 °F	Continuous 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.