303 Stainless Steel, annealed

Categories: Metal; Ferrous Metal; Heat Resisting; Stainless Steel; T 300 Series Stainless Steel

Material Notes:	Short time tensile test
Key Words:	T303, T 303, 303SS, 303 SS, AFNOR Z 10 CNF 18.09 (Fr), UNI X 10 CrNiS 18 09, SUS 303, SS14 2346 (Sweden), B.S. 303 S 21, UNS S30300, AMS 5640 (1), ASME SA194, ASME SA320, ASTM A194, ASTM A314, ASTM A320, ASTM A320, ASTM A473, ASTM A581, ASTM A582, MIL SPEC MIL-S-862, SAE J405 (30303), DIN 1.4305, X12CrNiS188, EN 58M, austenitic, ISO 683/13 17, 18-8
Vendors:	No vendors are listed for this material. Please click here if you are a supplier and would like information on how to add your listing to this material.

Physical Properties	Metric	English	Comments
Density	8.00 g/cc	0.289 lb/in³	

Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	620 MPa	89900 psi	
	140 MPa @Temperature 870 °C	20300 psi @Temperature 1600 °F	
	205 MPa @Temperature 760 °C	29700 psi @Temperature 1400 °F	
	310 MPa @Temperature 650 °C	45000 psi @Temperature 1200 °F	
	380 MPa @Temperature 540 °C	55100 psi @Temperature 1000 °F	
	420 MPa @Temperature 425 °C	60900 psi @Temperature 797 °F	
Tensile Strength, Yield	240 MPa @Strain 0.200 %	34800 psi @Strain 0.200 %	
	70.0 MPa @Strain 0.200 %, Temperature 870 °C	10200 psi @Strain 0.200 %, Temperature 1600 °F	
	145 MPa @Strain 0.200 %, Temperature 760 °C	21000 psi @Strain 0.200 %, Temperature 1400 °F	
	205 MPa @Strain 0.200 %, Temperature 650 °C	29700 psi @Strain 0.200 %, Temperature 1200 °F	
	235 MPa @Strain 0.200 %, Temperature 540 °C	34100 psi @Strain 0.200 %, Temperature 1000 °F	
	240 MPa @Strain 0.200 %, Temperature 425 °C	34800 psi @Strain 0.200 %, Temperature 797 °F	
Elongation at Break	50 %	50 %	in 50 mm
	30 % @Temperature 650 °C	30 % @Temperature 1200 °F	in 50 mm
	31 % @Temperature 760 °C	31 % @Temperature 1400 °F	in 50 mm
	34 % @Temperature 870 °C	34 % @Temperature 1600 °F	in 50 mm
	34 % @Temperature 540 °C	34 % @Temperature 1000 °F	in 50 mm
	35 % @Temperature 425 °C	35 % @Temperature 797 °F	in 50 mm
Tensile Modulus	193 GPa	28000 ksi	
Poissons Ratio	0.25	0.25	Calculated
Fatigue Strength	240 MPa	34800 psi	annealed
	330 MPa	47900 psi	25% hardened

Shear Modulus	77.2 GPa	11200 ksi

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.0000720 ohm-cm	0.0000720 ohm-cm	
Magnetic Permeability	1.008	1.008	at RT

Thermal Properties	Metric	English	Comments
CTE, linear 	17.2 µm/m-°C @Temperature 0.000 - 100 °C	9.56 µin/in-°F @Temperature 32.0 - 212 °F	
	17.8 µm/m-°C @Temperature 0.000 - 315 °C	9.89 µin/in-°F @Temperature 32.0 - 599 °F	
	18.4 µm/m-°C @Temperature 0.000 - 540 °C	10.2 µin/in-°F @Temperature 32.0 - 1000 °F	
	18.7 µm/m-°C @Temperature 0.000 - 650 °C	10.4 µin/in-°F @Temperature 32.0 - 1200 °F	
Specific Heat Capacity	0.500 J/g-°C @Temperature 0.000 - 100 °C	0.120 BTU/lb-°F @Temperature 32.0 - 212 °F	
Thermal Conductivity 	16.2 W/m-K @Temperature 100 °C	112 BTU-in/hr-ft²-°F @Temperature 212 °F	
	21.5 W/m-K @Temperature 500 °C	149 BTU-in/hr-ft²-°F @Temperature 932 °F	
Melting Point	1400 - 1420 °C	2550 - 2590 °F	
Solidus	1400 °C	2550 °F	
Liquidus	1420 °C	2590 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.15 %	<= 0.15 %	
Chromium, Cr	18 %	18 %	
Iron, Fe	69 %	69 %	
Manganese, Mn	<= 2.0 %	<= 2.0 %	
Molybdenum, Mo	<= 0.60 %	<= 0.60 %	
Nickel, Ni	9.0 %	9.0 %	
Phosphorus, P	<= 0.20 %	<= 0.20 %	
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	>= 0.15 %	>= 0.15 %	

References for this datasheet.