

## 302 Stainless Steel (Unverified Data\*\*)

**Categories:** [Metal](#); [Ferrous Metal](#); [Heat Resisting](#); [Stainless Steel](#); [T 300 Series Stainless Steel](#)



**Material Notes:** Austenitic Cr-Ni stainless steel. More corrosion resistant than Type 301 and because of higher Ni content does not work harden as quickly as Type 301. Essentially non-magnetic in annealed condition, slightly magnetic in cold worked condition. Can be stamped, blanked, formed, and lightly drawn. Applications include car and radar antennas, automobile trim, bottling machinery, dairy processing equipment, food processing equipment, home appliances, hospital equipment, industrial floor plate, jewelry, kitchen and restaurant equipment, spring clips, washers, retainers.


**Key Words:** T302, T 302, 302SS, 302 SS, UNS S30200, AMS 5515, AMS 5516, AMS 5636, AMS 5637, AMS 5688, ASME SA 240, ASME SA 479, ASTM A167, ASTM A240, ASTM A276, ASTM A313, ASTM A314, ASTM A368, ASTM A473, ASTM A478, ASTM A479, ASTM A492, ASTM A493, ASTM A511, ASTM A554, ASTM A666, FED QQ-S-763, FED QQ-S-766, FED QQ-W-423, MIL SPEC MIL-S-862, SAE J230, SAE J405 (30302), DIN 1.4300, X12CrNi188, B.S. 309S25, EN 58A, PN 86020 (Poland), 1H18N9, austenitic, ISO 4954 X10CrNi189E, ISO 683/13 12, ISO 6931 X9CrNi188, 18-8



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Physical Properties	Metric	English	Comments
Density	7.86 g/cc	0.284 lb/in <sup>3</sup>	
Mechanical Properties	Metric	English	Comments
Tensile Strength, Ultimate	585 MPa	84800 psi	
	110 MPa @Temperature 870 °C	16000 psi @Temperature 1600 °F	
	200 MPa @Temperature 760 °C	29000 psi @Temperature 1400 °F	
	305 MPa @Temperature 650 °C	44200 psi @Temperature 1200 °F	
	385 MPa @Temperature 540 °C	55800 psi @Temperature 1000 °F	
	440 MPa @Temperature 425 °C	63800 psi @Temperature 797 °F	
	470 MPa @Temperature 315 °C	68200 psi @Temperature 599 °F	
	495 MPa @Temperature 205 °C	71800 psi @Temperature 401 °F	
	840 MPa @Temperature 0.000 °C	122000 psi @Temperature 32.0 °F	
	1000 MPa @Temperature -40.0 °C	145000 psi @Temperature -40.0 °F	
	1110 MPa @Temperature -60.0 °C	161000 psi @Temperature -76.0 °F	
	1620 MPa @Temperature -195 °C	235000 psi @Temperature -319 °F	
Tensile Strength, Yield	255 MPa @Strain 0.200 %	37000 psi @Strain 0.200 %	
	76.0 MPa @Strain 0.200 %, Temperature 760 °C	11000 psi @Strain 0.200 %, Temperature 1400 °F	
	86.0 MPa @Strain 0.200 %, Temperature 650 °C	12500 psi @Strain 0.200 %, Temperature 1200 °F	

	97.0 MPa @Strain 0.200 %, Temperature 540 °C	14100 psi @Strain 0.200 %, Temperature 1000 °F	
	115 MPa @Strain 0.200 %, Temperature 425 °C	16700 psi @Strain 0.200 %, Temperature 797 °F	
	135 MPa @Strain 0.200 %, Temperature 315 °C	19600 psi @Strain 0.200 %, Temperature 599 °F	
	160 MPa @Strain 0.200 %, Temperature 205 °C	23200 psi @Strain 0.200 %, Temperature 401 °F	
	275 MPa @Strain 0.200 %, Temperature 0.000 °C	39900 psi @Strain 0.200 %, Temperature 32.0 °F	
	330 MPa @Strain 0.200 %, Temperature -40.0 °C	47900 psi @Strain 0.200 %, Temperature -40.0 °F	
	345 MPa @Strain 0.200 %, Temperature -60.0 °C	50000 psi @Strain 0.200 %, Temperature -76.0 °F	
	385 MPa @Strain 0.200 %, Temperature -195 °C	55800 psi @Strain 0.200 %, Temperature -319 °F	
Elongation at Break	57 %	57 %	in 50 mm
	34 % @Temperature 650 °C	34 % @Temperature 1200 °F	in 50 mm
	36 % @Temperature 760 °C	36 % @Temperature 1400 °F	in 50 mm
	36 % @Temperature 540 °C	36 % @Temperature 1000 °F	in 50 mm
	40 % @Temperature -195 °C	40 % @Temperature -319 °F	in 50 mm
	40 % @Temperature 870 °C	40 % @Temperature 1600 °F	in 50 mm
	40 % @Temperature 425 °C	40 % @Temperature 797 °F	in 50 mm
	45 % @Temperature 315 °C	45 % @Temperature 599 °F	in 50 mm
	51 % @Temperature 205 °C	51 % @Temperature 401 °F	in 50 mm
	57 % @Temperature -60.0 °C	57 % @Temperature -76.0 °F	in 50 mm
	60 % @Temperature -40.0 °C	60 % @Temperature -40.0 °F	in 50 mm
	65 % @Temperature 0.000 °C	65 % @Temperature 32.0 °F	in 50 mm
Modulus of Elasticity	193 GPa	28000 ksi	
Poissons Ratio	0.25	0.25	Calculated
Shear Modulus	77.2 GPa	11200 ksi	

Electrical Properties	Metric	English	Comments
Electrical Resistivity 	0.0000720 ohm-cm @Temperature 20.0 °C	0.0000720 ohm-cm @Temperature 68.0 °F	
	0.0000780 ohm-cm @Temperature 100 °C	0.0000780 ohm-cm @Temperature 212 °F	
	0.0000860 ohm-cm @Temperature 200 °C	0.0000860 ohm-cm @Temperature 392 °F	
	0.000100 ohm-cm @Temperature 400 °C	0.000100 ohm-cm @Temperature 752 °F	
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 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ @Temperature 0.000 - 315 $^\circ\text{C}$	9.89 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ @Temperature 32.0 - 599 $^\circ\text{F}$	
	18.4 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ @Temperature 0.000 - 540 $^\circ\text{C}$	10.2 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ @Temperature 32.0 - 1000 $^\circ\text{F}$	
	18.7 $\mu\text{m}/\text{m}\cdot^\circ\text{C}$ @Temperature 0.000 - 650 $^\circ\text{C}$	10.4 $\mu\text{in}/\text{in}\cdot^\circ\text{F}$ @Temperature 32.0 - 1200 $^\circ\text{F}$	
Specific Heat Capacity	0.500 J/g $\cdot^\circ\text{C}$ @Temperature 0.000 - 100 $^\circ\text{C}$	0.120 BTU/lb $\cdot^\circ\text{F}$ @Temperature 32.0 - 212 $^\circ\text{F}$	
Thermal Conductivity 	16.2 W/m-K @Temperature 100 $^\circ\text{C}$	112 BTU-in/hr-ft $^2\cdot^\circ\text{F}$ @Temperature 212 $^\circ\text{F}$	
	21.5 W/m-K @Temperature 500 $^\circ\text{C}$	149 BTU-in/hr-ft $^2\cdot^\circ\text{F}$ @Temperature 932 $^\circ\text{F}$	
Melting Point	1400 - 1420 $^\circ\text{C}$	2550 - 2590 $^\circ\text{F}$	
Solidus	1400 $^\circ\text{C}$	2550 $^\circ\text{F}$	
Liquidus	1420 $^\circ\text{C}$	2590 $^\circ\text{F}$	
Maximum Service Temperature, Air	870 $^\circ\text{C}$	1600 $^\circ\text{F}$	Intermittent
	925 $^\circ\text{C}$	1700 $^\circ\text{F}$	Continuous Service

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.15 %	<= 0.15 %	
Chromium, Cr	18 %	18 %	
Iron, Fe	70 %	70 %	
Manganese, Mn	<= 2.0 %	<= 2.0 %	
Nickel, Ni	9.0 %	9.0 %	
Phosphorus, P	<= 0.045 %	<= 0.045 %	
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	<= 0.030 %	<= 0.030 %	

[References](#) for this datasheet.

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