

## 304 Stainless Steel

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

**Material Notes:** This MatWeb entry has typical values for specimens of unknown form/heat treatment but appear to be annealed samples. We are creating other entries for more specific heat treatments and forms. Austenitic Cr-Ni stainless steel. Better corrosion resistance than Type 302. High ductility, excellent drawing, forming, and spinning properties. Essentially non-magnetic, becomes slightly magnetic when cold worked. Low carbon content means less carbide precipitation in the heat-affected zone during welding and a lower susceptibility to intergranular corrosion.

**Applications:** beer kegs, bellows, chemical equipment, coal hopper linings, cooking equipment, cooling coils, cryogenic vessels, dairy equipment, evaporators, flatware utensils, feedwater tubing, flexible metal hose, food processing equipment, hospital surgical equipment, hypodermic needles, kitchen sinks, marine equipment and fasteners, nuclear vessels, oil well filter screens, refrigeration equipment, paper industry, pots and pans, pressure vessels, sanitary fittings, valves, shipping drums, spinning, still tubes, textile dyeing equipment, tubing.


**Corrosion Resistance:** resists most oxidizing acids and salt spray.


UNS S30400; AMS 5501, 5513, 5560, 5565; ASME SA182, SA194 (8), SA213, SA240; ASTM A167, A182, A193, A194



**Key Words:** aisi304, AISI 304, T304, T 304, SUS304, SS304, 304SS, 304 SS, UNS S30400, AMS 5501, AMS 5513, AMS 5560, AMS 5565, AMS 5566, AMS 5567, AMS 5639, AMS 5697, ASME SA182, ASME SA194 (8), ASME SA213, ASME SA240, ASME SA249, ASME SA312, ASME SA320 (B8), ASME SA358, ASME SA376, ASME SA403, ASME SA409, ASME SA430, ASME SA479, ASME SA688, ASTM A167, ASTM A182, ASTM A193, ASTM A194, ASTM A666, FED QQ-S-763, MILSPEC MIL-S-5059, SAE 30304, DIN 1.4301, X5CrNi189, B.S. 304 S 15, EN 58E, PN 86020 (Poland), OH18N9, ISO 4954 X5CrNi189E, ISO 683/13 11, 18-8

**Vendors:** [Click here to view all available suppliers 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/in <sup>3</sup>	
Mechanical Properties	Metric	English	Comments
Hardness, Brinell	123	123	Converted from Rockwell B hardness.
Hardness, Knoop	138	138	Converted from Rockwell B hardness.
Hardness, Rockwell B	70	70	
Hardness, Vickers	129	129	Converted from Rockwell B hardness.
Tensile Strength, Ultimate	505 MPa	73200 psi	
Tensile Strength, Yield	215 MPa @Strain 0.200 %	31200 psi @Strain 0.200 %	
Elongation at Break	70 %	70 %	in 50 mm
Modulus of Elasticity	193 GPa	28000 ksi	
Poissons Ratio	0.29	0.29	
Shear Modulus	77.0 GPa	11200 ksi	
Izod Impact 	150 J @Temperature -195 °C	111 ft-lb @Temperature -319 °F	V-Notch
	150 J @Temperature 21.0 °C	111 ft-lb @Temperature 69.8 °F	V-Notch
Charpy Impact	325 J	240 ft-lb	
Electrical Properties	Metric	English	Comments

Electrical Resistivity 	0.0000720 ohm-cm @Temperature 20.0 °C	0.0000720 ohm-cm @Temperature 68.0 °F	
	0.000116 ohm-cm @Temperature 650 °C	0.000116 ohm-cm @Temperature 1200 °F	
Magnetic Permeability	1.020	1.020	at RT

Thermal Properties	Metric	English	Comments
CTE, linear 	17.3 $\mu\text{m}/\text{m}\cdot\text{°C}$ @Temperature 0.000 - 100 °C	9.61 $\mu\text{in}/\text{in}\cdot\text{°F}$ @Temperature 32.0 - 212 °F	
	17.8 $\mu\text{m}/\text{m}\cdot\text{°C}$ @Temperature 0.000 - 315 °C	9.89 $\mu\text{in}/\text{in}\cdot\text{°F}$ @Temperature 32.0 - 599 °F	
	18.7 $\mu\text{m}/\text{m}\cdot\text{°C}$ @Temperature 0.000 - 650 °C	10.4 $\mu\text{in}/\text{in}\cdot\text{°F}$ @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 0.000 - 100 °C	112 BTU-in/hr-ft <sup>2</sup> -°F @Temperature 32.0 - 212 °F	
	21.5 W/m-K @Temperature 500 °C	149 BTU-in/hr-ft <sup>2</sup> -°F @Temperature 932 °F	
Melting Point	1400 - 1455 °C	2550 - 2651 °F	
Solidus	1400 °C	2550 °F	
Liquidus	1455 °C	2651 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	<= 0.080 %	<= 0.080 %	
Chromium, Cr	18 - 20 %	18 - 20 %	
Iron, Fe	66.345 - 74 %	66.345 - 74 %	as balance
Manganese, Mn	<= 2.0 %	<= 2.0 %	
Nickel, Ni	8.0 - 10.5 %	8.0 - 10.5 %	
Phosphorus, P	<= 0.045 %	<= 0.045 %	
Silicon, Si	<= 1.0 %	<= 1.0 %	
Sulfur, S	<= 0.030 %	<= 0.030 %	

### [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 [terms of use](#) regarding this information. [Click here](#) to view all the property values for this datasheet as they were originally entered into MatWeb.