

AISI 4130 Steel, normalized at 870°C (1600°F)

Categories: [Metal](#); [Ferrous Metal](#); [Alloy Steel](#); [AISI 4000 Series Steel](#); [Low Alloy Steel](#); [Carbon Steel](#); [Medium Carbon Steel](#)


Material Notes: A very common general purpose grade of medium carbon, Cr-Mo steel. Flexibility afforded by heat treatment options allows it to attain a range of toughness and strength values. Good hardenability, strength, wear resistance, toughness, and ductility.



Key Words: alloy steels, UNS G41300, AMS 6350, AMS 6356, AMS 6360, AMS 6361, AMS 6372, AMS 6370, AMS 6371, AMS 6373, ASTM A322, ASTM A331, ASTM A505, ASTM A513, ASTM A519, ASTM A646, JIS SCM 2, JIS SCCrM 1, SS14 2225 (Sweden), B.S. CDS 110 (UK), medium carbon steels, chromium-molybdenum, chrome-moly, MIL SPEC MIL-S-16974, SAE J404, SAE J412, SAE J770, DIN 1.7218, AFNOR 25 CD 4 (France), MIL-S-6758 (flat and round bar), MIS-S-18729 ANN and NORM (sheet and plate), QQS-624 (round bar)

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	7.85 g/cc	0.284 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	197	197	
Hardness, Knoop	219	219	Converted from Brinell
Hardness, Rockwell B	92	92	Converted from Brinell
Hardness, Rockwell C	13	13	Converted from Brinell hardness. Value below normal HRC range, for comparison purposes only.
Hardness, Vickers	207	207	Converted from Brinell
Tensile Strength, Ultimate	670 MPa	97200 psi	
Tensile Strength, Yield	435 MPa	63100 psi	
Elongation at Break	25.5 %	25.5 %	in 50 mm
Reduction of Area	60 %	60 %	
Modulus of Elasticity	205 GPa	29700 ksi	Typical for steel
Bulk Modulus	160 GPa	23200 ksi	Typical for steel
Poissons Ratio	0.29	0.29	Calculated
Machinability	70 %	70 %	annealed and cold drawn. Based on 100% machinability for AISI 1212 steel.
Shear Modulus	80.0 GPa	11600 ksi	Typical for steel
Izod Impact	87.0 J	64.2 ft-lb	

Electrical Properties	Metric	English	Comments
Electrical Resistivity 	0.0000223 ohm-cm @Temperature 20.0 °C	0.0000223 ohm-cm @Temperature 68.0 °F	specimen hardened and tempered
	0.0000271 ohm-cm @Temperature 100 °C	0.0000271 ohm-cm @Temperature 212 °F	specimen hardened and tempered
	0.0000342 ohm-cm @Temperature 200 °C	0.0000342 ohm-cm @Temperature 392 °F	specimen hardened and tempered
	0.0000529 ohm-cm @Temperature 400 °C	0.0000529 ohm-cm @Temperature 752 °F	specimen hardened and tempered
	0.0000786 ohm-cm @Temperature 600 °C	0.0000786 ohm-cm @Temperature 1110 °F	specimen hardened and tempered
	0.0001103 ohm-cm @Temperature 800 °C	0.0001103 ohm-cm @Temperature 1470 °F	specimen hardened and tempered
	0.0001171 ohm-cm @Temperature 1000 °C	0.0001171 ohm-cm @Temperature 1830 °F	specimen hardened and tempered
	0.0001222 ohm-cm @Temperature 1200 °C	0.0001222 ohm-cm @Temperature 2190 °F	specimen hardened and tempered

Thermal Properties	Metric	English	Comments
Specific Heat Capacity 	0.477 J/g-°C @Temperature >=100 °C	0.114 BTU/lb-°F @Temperature >=212 °F	
	0.523 J/g-°C @Temperature 150 - 200 °C	0.125 BTU/lb-°F @Temperature 302 - 392 °F	
	0.837 J/g-°C @Temperature 750 - 800 °C	0.200 BTU/lb-°F @Temperature 1380 - 1470 °F	
Thermal Conductivity 	30.1 W/m-K @Temperature 1200 °C	209 BTU-in/hr-ft ² -°F @Temperature 2190 °F	
	40.7 W/m-K @Temperature 300 °C	282 BTU-in/hr-ft ² -°F @Temperature 572 °F	
	42.7 W/m-K @Temperature 100 °C	296 BTU-in/hr-ft ² -°F @Temperature 212 °F	

Component Elements Properties	Metric	English	Comments
Carbon, C	0.28 - 0.33 %	0.28 - 0.33 %	
Chromium, Cr	0.80 - 1.1 %	0.80 - 1.1 %	
Iron, Fe	97.03 - 98.22 %	97.03 - 98.22 %	As remainder
Manganese, Mn	0.40 - 0.60 %	0.40 - 0.60 %	
Molybdenum, Mo	0.15 - 0.25 %	0.15 - 0.25 %	
Phosphorus, P	<= 0.035 %	<= 0.035 %	
Silicon, Si	0.15 - 0.30 %	0.15 - 0.30 %	
Sulfur, S	<= 0.040 %	<= 0.040 %	

[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.