

# Alloy Steel Grade 4142 Fact Sheet

## AISI 4142 Steel, Annealed and Cold Drawn

**Subcategories:** Alloy Steel; AISI 4000 Series Steel; Low Alloy Steel; Carbon Steel; Medium Carbon Steel

**Close Analogs:**

**Key Words:** UNS G41420, ASTM A322, ASTM A331, ASTM A505, ASTM A519, ASTM A547, SAE J404, SAE J412, SAE J770

Component	Weight %					
C	Max 0.45					
Cr	0.80-1.1					
Fe	Min 96.725					
Mn	0.75-1.1					
Mo	0.15-0.25					
P	Max 0.035					
Si	0.15-0.30					
S	Max 0.040					
Physical Properties	Metric	English	Comments	Cold Head	Hot Forge	Wire Form
Density	7.85 g/cc	0.284 lb/in <sup>3</sup>				
Mechanical Properties	Metric	English	Comments	Cold Head	Hot Forge	Wire Form
Hardness, Brinell	187 - 229	187 - 229				
Hardness, Knoop	230	230	Converted from Brinell hardness.			
Hardness, Rockwell B	94	94	Converted from Brinell hardness.			
Hardness, Rockwell C	15	15	Converted from Brinell hardness. Value below normal HRC range, for comparison purposes only.			

Hardness, Vickers	218	218	Converted from Brinell hardness.			
Modulus of Elasticity	206 GPa	29900 ksi				
Bulk Modulus	163 GPa	23600 ksi	Estimated from elastic modulus			
Poissons Ratio	0.29	0.29	Typical for steel			
Machinability	65.00%	65.00%	annealed and cold drawn. Based on 100% machinability for AISI 1212 steel.			
Shear Modulus	80.0 GPa	11600 ksi	Estimated from elastic modulus			
<b>Electrical Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>	<b>Cold Head</b>	<b>Hot Forge</b>	<b>Wire Form</b>
Electrical Resistivity	0.0000263 ohm-cm	0.0000263 ohm-cm				
<b>Thermal Properties</b>	<b>Metric</b>	<b>English</b>	<b>Comments</b>	<b>Cold Head</b>	<b>Hot Forge</b>	<b>Wire Form</b>
Specific Heat Capacity	0.473 J/g-°C	0.113 BTU/lb-°F				
Thermal Conductivity	42.6 W/m-K	296 BTU-in/hr-ft <sup>2</sup> -°F				