



AISI 12L14 Steel, cold drawn, 19-38 mm round

COMPONENT	WT. %
C	Max 0.15
Fe	97.91 - 98.7
Mn	0.85 - 1.15
P	0.04 - 0.09
Pb	0.15 - 0.35
S	0.26 - 0.35

PHYSICAL PROPERTIES	METRIC	ENGLISH	COMMENTS
Density	7.87 g/cc	0.284 lb/in ³	Typical for steel

MECHANICAL PROPERTIES	METRIC	ENGLISH	COMMENTS
Hardness, Brinell	163	163	
Hardness, Knoop	184	184	Converted from Brinell hardness
Hardness, Rockwell B	84	84	Converted from Brinell hardness
Hardness, Vickers	170	170	Converted from Brinell hardness
Tensile Strength, Ultimate	540 MPa	78300 psi	
Tensile Strength, Yield	415 MPa	60200 psi	
Elongation at Break	10%	10%	
Reduction of Area	35%	35%	
Modulus of Elasticity	200 GPa	29000 ksi	Typical for Steel
Bulk Modulus	140 GPa	20300 ksi	Typical for Steel
Poisson's Ratio	0.29	0.29	Typical for Steel
Machinability	160%	160%	Based on 100% machinability for AISI 1212 steel
Shear Modulus	80 GPa	11600 ksi	Typical for Steel

ELECTRICAL PROPERTIES	METRIC	ENGLISH	COMMENTS
Electrical Resistivity	1.74e-005 ohm-cm	1.74e-005 ohm-cm	Typical for steel

THERMAL PROPERTIES	METRIC	ENGLISH	COMMENTS
CTE, linear 20°C	11.5 µm/m-°C	6.39 µin/in-°F	
CTE, linear 250°C	12.2 µm/m-°C	6.78 µin/in-°F	Converted from Brinell hardness
CTE, linear 500°C	13.9 µm/m-°C	7.72 µin/in-°F	Converted from Brinell hardness
CTE, linear 1000°C	14.7 µm/m-°C	8.17 µin/in-°F	Converted from Brinell hardness
Specific Heat Capacity	0.472 J/g-°C	0.113 BTU/lb-°F	
Thermal Conductivity	51.9 W/m-K	360 BTU-in/hr-ft ² -°F	

AISI Type 303 Se Stainless Steel, cold drawn, bar, tested at RT

COMPONENT	WT. %
C	Max 0.15
Cr	18
Fe	69
Mn	Max 2
Ni	9
P	Max 0.2
S	Max 0.06
Se	Max 0.15
Si	Max 1

PHYSICAL PROPERTIES	METRIC	ENGLISH	COMMENTS
Density	8 g/cc	0.289 lb/in ³	

MECHANICAL PROPERTIES	METRIC	ENGLISH	COMMENTS
Hardness, Brinell	228	228	
Hardness, Knoop	251	251	Converted from Brinell hardness
Hardness, Rockwell B	96	96	Converted from Brinell hardness
Hardness, Rockwell C	19	19	Converted from Brinell hardness. Value below normal HRC range, for comparison only
Hardness, Vickers	240	240	Converted from Brinell hardness
Tensile Strength, Ultimate	690 MPa	100000 psi	
Tensile Strength, Yield	415 MPa	60200 psi	at 0.2% offset
Elongation at Break	40%	40%	in 50 mm
Modulus of Elasticity	193 GPa	28000 ksi	tension
Poisson's Ratio	0.25	0.25	Calculated
Shear Modulus	77.2 GPa	11200 ksi	

ELECTRICAL PROPERTIES	METRIC	ENGLISH	COMMENTS
Electrical Resistivity	7.2e-005 ohm-cm	7.2e-005 ohm-cm	

THERMAL PROPERTIES	METRIC	ENGLISH	COMMENTS
CTE, linear 20°C	17.2 μm/m-°C	9.56 μin/in-°F	from 0-100°C
CTE, linear 250°C	17.8 μm/m-°C	9.89 μin/in-°F	at 0-315°C (32-600°F)
CTE, linear 500°C	18.4 μm/m-°C	10.2 μin/in-°F	at 0-540°C, 18.7 μm/m-C at 0-650°C
Specific Heat Capacity	0.5 J/g-°C	0.12 BTU/lb-°F	from 0-100°C (32-212°F)
Thermal Conductivity	16.2 W/m-K	112 BTU-in /hr-ft ² -°F	at 100°C (212°F), 21.5 W/m-K at 500°C (930°F)
Melting Point	1400 - 1420 °C	2550 - 2590 °F	
Solidus	1400 °C	2550 °F	
Liquidus	1420 °C	2590 °F	



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