

Zinc ZA-12 (Zn-11Al-1Cu-0.025Mg), Die Cast

Categories: [Metal](#); [Nonferrous Metal](#); [Zinc Alloy](#)

Material Notes: Used in bearing applications. ZA-12 has a higher bearing load capacity than bronze bearing alloys, although its environment (both temperature and corrosive) is more limited.

Key Words: UNS Z35630 (ingot); UNS Z35631 (Casting); ZA-12 Zinc Foundry Alloy; Previously ILZRO 12

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	6.04 g/cc	0.218 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	100	100	500 kg load; 10 mm hardened steel ball
Hardness, Knoop	125	125	Estimated from Brinell Value
Hardness, Rockwell A	41.5	41.5	Estimated from Brinell Value
Hardness, Rockwell B	63	63	Estimated from Brinell Value
Hardness, Vickers	112	112	Estimated from Brinell Value
Tensile Strength, Ultimate	404 MPa	58600 psi	
Tensile Strength, Yield	320 MPa @Strain 0.200 %	46400 psi @Strain 0.200 %	
Elongation at Break	5.0 %	5.0 %	in 5 cm
Modulus of Elasticity	83.0 GPa	12000 ksi	
Compressive Strength	269 MPa	39000 psi	
Fatigue Strength	117 MPa @# of Cycles 5.00e+8	17000 psi @# of Cycles 5.00e+8	Reverse Bend
Fracture Toughness	14.4 MPa-m ^{1/2}	13.1 ksi-in ^{1/2}	
Shear Strength	296 MPa	42900 psi	
Charpy Impact, Unnotched	12.0 J @Thickness 6.35 mm	8.85 ft-lb @Thickness 0.250 in	square bar

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000610 ohm-cm	0.00000610 ohm-cm	

Thermal Properties	Metric	English	Comments
Heat of Fusion	118 J/g	50.8 BTU/lb	
CTE, linear	24.1 µm/m-°C @Temperature 20.0 °C	13.4 µin/in-°F @Temperature 68.0 °F	
Specific Heat Capacity	0.450 J/g-°C @Temperature 20.0 - 100 °C	0.108 BTU/lb-°F @Temperature 68.0 - 212 °F	
Thermal Conductivity	116 W/m-K	805 BTU-in/hr-ft ² -°F	
Melting Point	377 - 432 °C	711 - 810 °F	
Solidus	377 °C	711 °F	
Liquidus	432 °C	810 °F	

Processing Properties	Metric	English	Comments
Casting Temperature	460 - 490 °C	860 - 914 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	10.5 - 11.5 %	10.5 - 11.5 %	Addition, Casting
	10.8 - 11.5 %	10.8 - 11.5 %	Addition, Ingot form
Cadmium, Cd	<= 0.0050 %	<= 0.0050 %	Impurity, Ingot form
	<= 0.0060 %	<= 0.0060 %	Impurity, Casting
Copper, Cu	0.50 - 1.2 %	0.50 - 1.2 %	Addition, Casting
	0.50 - 1.2 %	0.50 - 1.2 %	Addition, Ingot form
Iron, Fe	<= 0.065 %	<= 0.065 %	Impurity, Ingot form
	<= 0.075 %	<= 0.075 %	Impurity, Casting
Lead, Pb	<= 0.0050 %	<= 0.0050 %	Impurity, Ingot form
	<= 0.0060 %	<= 0.0060 %	Impurity, Casting
Magnesium, Mg	0.015 - 0.030 %	0.015 - 0.030 %	Addition, Casting
	0.020 - 0.030 %	0.020 - 0.030 %	Addition, Ingot form
Tin, Sn	<= 0.0020 %	<= 0.0020 %	Impurity, Ingot form
	<= 0.0030 %	<= 0.0030 %	Impurity, Casting
Zinc, Zn	87.193 - 88.68 %	87.193 - 88.68 %	As balance; Ingot per ASTM B 669
	87.18 - 88.985 %	87.18 - 88.985 %	As balance; Castings per ASTM B 791

Descriptive Properties

Damping	5.1 Q ⁻¹ x 10 ²	at 100 Hz, 20°C
	9.8 Q ⁻¹ x 10 ³	at 100 Hz, 100°C

[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.