

Zinc ZA-27 (Zn-27Al-2Cu-0.015Mg), Sand Cast and Heat Treated

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

Material Notes: Used in bearing applications. ZA-27 has a higher bearing load capacity than bronze bearing alloys, although its environment (both temperature and corrosive) is more limited.

Key Words: Zinc Foundry Alloy; UNS Z35841 (Castings); UNS Z35840 (Ingot)

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	5.02 g/cc	0.181 lb/in ³	

Mechanical Properties	Metric	English	Comments
Hardness, Brinell	119	119	500 kg load; 10 mm hardened steel ball
Hardness, Knoop	149	149	Estimated from Brinell Value
Hardness, Rockwell A	46.5	46.5	Estimated from Brinell Value
Hardness, Rockwell B	74	74	Estimated from Brinell Value
Hardness, Vickers	135	135	Estimated from Brinell Value
Tensile Strength, Ultimate	426 MPa	61800 psi	
Tensile Strength, Yield	371 MPa	53800 psi	0.2% Offset
Elongation at Break	2.5 %	2.5 %	in 5 cm
Compressive Strength	359 MPa	52100 psi	
Fatigue Strength	117 MPa @# of Cycles 5.00e+8	17000 psi @# of Cycles 5.00e+8	Reverse Bend
Fracture Toughness	20.2 MPa-m ^{1/2}	18.4 ksi-in ^{1/2}	
Shear Strength	325 MPa	47100 psi	
Charpy Impact, Unnotched	12.0 J @Thickness 6.35 mm	8.85 ft-lb @Thickness 0.250 in	square bar
Coefficient of Friction	0.030 - 0.070	0.030 - 0.070	

Electrical Properties	Metric	English	Comments
Electrical Resistivity	0.00000580 ohm-cm	0.00000580 ohm-cm	

Thermal Properties	Metric	English	Comments
Heat of Fusion	128 J/g	55.1 BTU/lb	
CTE, linear	26.0 μm/m-°C @Temperature 20.0 - 200 °C	14.4 μin/in-°F @Temperature 68.0 - 392 °F	
Specific Heat Capacity	0.525 J/g-°C	0.125 BTU/lb-°F	
Thermal Conductivity	125 W/m-K	868 BTU-in/hr-ft ² -°F	
Melting Point	376 - 484 °C	709 - 903 °F	
Solidus	376 °C	709 °F	
Liquidus	484 °C	903 °F	

Processing Properties	Metric	English	Comments
Casting Temperature	515 - 545 °C	959 - 1010 °F	

Component Elements Properties	Metric	English	Comments
Aluminum, Al	25 - 28 %	25 - 28 %	Addition, Casting
	25.5 - 28 %	25.5 - 28 %	Addition, Ingot form
Cadmium, Cd	<= 0.0050 %	<= 0.0050 %	Impurity, Ingot form
	<= 0.0060 %	<= 0.0060 %	Impurity, Casting
Copper, Cu	2.0 - 2.5 %	2.0 - 2.5 %	Addition, Casting
	2.0 - 2.5 %	2.0 - 2.5 %	Addition, Ingot form
Iron, Fe	<= 0.072 %	<= 0.072 %	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	0.010 - 0.020 %	0.010 - 0.020 %	Addition, Casting
	0.012 - 0.020 %	0.012 - 0.020 %	Addition, Ingot form
Tin, Sn	<= 0.0020 %	<= 0.0020 %	Impurity, Ingot form
	<= 0.0030 %	<= 0.0030 %	Impurity, Casting
Zinc, Zn	69.396 - 72.488 %	69.396 - 72.488 %	As balance; Ingot per ASTM B 669
	69.39 - 72.99 %	69.39 - 72.99 %	As balance; Castings per ASTM B 791

[References](#) for this datasheet.

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