

MAZAK 27

ZnAl27Cu2

A high strength alloy which can be successfully cast by a variety of methods but best suited to sand casting and cold chamber pressure diecasting. Apart from the very high tensile strength and yield the alloy possesses good hardness, bearing properties and machinability. It can be heat treated if required to raise the ductility.

The combination of high strength with the ability to be pressure diecast with long die life means that many parts conventionally made by more expensive methods can now be produced from ZA27.

MECHANICAL PROPERTIES	AS-CAST	AGED	SAND	HEAT TREATED
Tensile Strength (MPa)	426	360	400 - 441	310 - 325
Yield Strength (MPa)	371	317	372	255
Shear Strength (MPa)	325	257	290	228
Elongation (% in 51mm)	2.5	3.0	3 - 6	8 - 11
Hardness (Brinell - 500Kg)	116 - 122	100	110 - 120	90 - 100
Impact Strength (Energy, Joules)	5	2.2	47	58
Fatigue Strength 5 x 10 ⁸ cycles (MPa)	145		172	103

PHYSICAL PROPERTIES	
Density	5.0 Kg/dm ³ at 21°C
Solidification shrinkage	1.25%
Casting shrinkage	0.75% (pressure diecast)
Freezing range	376 - 484°C
Casting temperature	550 - 580°C
Specific heat capacity	534.4 J/Kg/°C at 20 - 100°C
Thermal expansion	26.0 x 10 ⁻⁶ linear per °C at 20 - 100°C
Thermal conductivity	125.5 W/m/hr/m ² /°C at 70 - 140°C
Electrical conductivity	29.7% IACS
Electrical resistance	5.8 μ ohm cm at 20°C

TYPICAL ANALYSIS

ALLOYING ELEMENTS	
Aluminum	26.9%
Copper	2.2%
Magnesium	0.017%

IMPURITIES	
Iron	< 0.07%
Lead	< 0.003%
Cadmium	< 0.003%
Tin	< 0.001%
Nickel	< 0.005%
Thallium	< 0.001%
Indium	< 0.0005%
Manganese	< 0.01%