DIE-CASTING ALLOYS

KAYEM - MAZAK 2

ZnAl4Cu3

EN1774 ZL0430, ASTM B86 (AC43 A)

Kayem (also known as Mazac 2) is a zinc based alloy which can be gravity cast or pressure diecast by the hot chamber process.

One of the major uses of Kayem is for gravity casting of press and moulding tools. The alloy is easy to cast close to finished form and redundant tooling can be remelted and re-used providing it is not contaminated with other materials, particularly lead or solder.

Kayem is also pressure diecast where it's high as cast strength and hardness are advantageous or where it's excelent fluidity is needed for complex decorative items. However dimensional stability and retention of mechanical properties over a period of years or when subjected to higher service temperatures are not as good as Mazak 3, Mazak 5 or Mazak 8.

MECHANICAL PROPERTIES	AS-CAST	AGED	SAND
Tensile Strength (MPa)	359	331	252
Shear Strength (MPa)	317	214	227
Elongation (% in 51mm)	7	2	3
Hardness (Brinell - 500Kg)	100	98	100
Impact Strength (Energy, Joules)	47.5	6.8	7.4
Fatigue Strength 5 x 10^8 cycles (MPa)	58.6		0

PHYSICAL PROPERTIES	
Density	6.8 Kg/dm^3 at 21°C
Solidification shrinkage	1.25%
Casting shrinkage	0.6% (pressure diecast)
Freezing range	379 - 390°C
Casting temperature pressure	400 - 425°C
Casting temperature gravity	420 - 430°C
Specific heat capacity	418.7 J/Kg/°C at 20 - 100°C
Thermal expansion	27.8 x 10^{-6} linear per °C at 20 - 100°C
Thermal conductivity	104.7 W/m/hr/m^2/°C at 70 - 140°C
Electrical conductivity	25% IACS
Electrical resistance	6.3694 µ ohm cm at 20°C

TYPICAL ANALYSIS

ALLOYING ELEMENTS	
Aluminum	4.0%
Copper	2.9%
Magnesium	0.05%

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