

Key Features

- Low melt at 138°C
- Low Volume Change
- Reusable once melted out
- Suitable for pre-preg processes
- Lead Free

Product Description

LM138 is a highly pure eutectic of the bismuth-tin alloy. It has a precise melting/solidification point of 138°C and exhibits very low liquid to solid volume change (+0.7%). These properties make it highly suitable as a castable, melt-out core for hollow composites moulding processes.

Being cadmium and lead-free, LM138 requires no special considerations in a regulated production environment.

When used in a typical lost-core process, LM138 can be reused indefinitely, making it both economical and environmentally friendly in repeated production.

Typical Uses

LM138 is most typically used for casting solid cores or mandrels for a ‘lost core’ moulding process, in particular prepregs but also resin infusion, RTM and injection moulding providing that the resin systems used in the process will not be damaged by being heated to the 138°C melting point of the alloy.

Due to its low melting point, very low liquid-to-solid volume change and good mechanical properties, LM138 also finds uses as press tools, and anchoring or support material.

- Fusible core / lost core / melt-out core in composites or injection moulding
- Work holding / anchoring and support
- Press tools

Mechanical Properties

The recommended casting temperature for LM138 is 165°C - 190°C.

LM138 has excellent ductility and good fluidity. In common with all bismuth alloys, it undergoes gradual equilibrium following solidification, exhibiting slow dimensions changes, the rate of which is dependent on post solidification treatment.

The table below shows the typical uncured properties:

Property	Units	Result
Density	g/cm ³	8.6
Brinell Hardness	-	22
Melting Point	°C	138
Solidification Point	°C	138
Specific Heat (solid)	J/g °C	0.167
Specific Heat (liquid)	J/g °C	0.155
Thermal Conductivity	W/cm °C	0.209
Electrical Resistivity	mΩ.cm	59.0
Latent Heat of Fusion	J/g	49.1
Compressive Strength	MPa	46.7
Tensile Strength	MPa	42.1
Coefficient of Thermal Expansion	mm/°C	0.0004
Volume Change (liquid to solid)	%	+0.7
Dimensional Change After Solidification	%	0.00% 30 mins 0.01% 1 hour 0.03% 5 hour 0.06% 24 hour

Material Composition

Bismuth	58%
Tin	42%

Disclaimer

This data is not to be used for specifications. Values listed are for typical properties and should not be considered minimum or maximum.

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Easy Composites Ltd

Unit 39, Park Hall Business Village, Longton, Stoke on Trent, Staffordshire, ST3 5XA, United Kingdom.