EN

Technical Data Sheet

Bectron®

MR 3404

Electronic Protection System

Hydrocarbon - One Component - Melting Resin
Thick Film Conformal Coating - Flexible

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Description

Bectron® MR 3404 is a one-component hot melt resin designed for thick film coating in electronic applications.

Bectron® MR 3404 is halogen-free, phosphate-free and silicone-free. As a thermoplastic there is no curingreaction, only a rapid solidification of the resin on cooling.

Areas of application

Bectron® MR 3404 dielectric properties are ideal for electronic applications as well as protection against humidity, corrosion, vibration and migration. It is based on polyolefin resin chemistry, which is better suited to electronics than conventional polyamide based hot-melt thermoplastic. It is suitable for thick film application on PCB's and components to provide chemical protection and/or mechanical support, to secure them against shock and vibration. It can be placed selectively to secure and protect single components, or for whole PCB's or hybrids.
Bectron® MR 3404 is recommended for serial production, where fast solidification gives a short process time and requires no curing oven.

Processing methods

Bectron® MR 3404 can be applied easily with commercially available hot melt guns or heated dispensers. On heating, Bectron® MR 3404 starts to soften at +150 °C. During application the temperature should reach 190-200°C at the nozzle. Material in an equipment reservoir should be held at 170°C for 1 day maximum.

After application the Bectron® MR 3404 solidifies during cooling and is normally hard below +100°C, but complete solidification may be slow. The substrate should be dry in order to avoid bubbles of moisture. No equipment for mixing or curing is needed. If a very thin layer is applied, special coating equipment e.g. spray nozzle, is necessary.
Preheating of the substrate up to 90°C may be needed for thin layers to be uniform and free of defects. To ensure satisfactory adhesion on the PCB surface the following should be checked:

- Use of residue-free flux
- Ensure dry surfaces
- Check compatibility of the coating resin with the solder resist and solder paste

Properties of cured product

The tough plastic resin Bectron® MR 3404 has a maximum operating temperature of 105°C. It has excellent dielectric properties and shows very good adhesive strength on many different substrates over the temperature range -40 °C to +105°C. It has low humidity absorption providing stable dielectric properties even after water immersion.

- Resistant to acids and bleach, polar solvents and fungal growth
- Not resistant to aliphatic aromatic and chlorinated solvents
- Very easy re-work as it can be melted and hardened reversibly
- Satisfies the requirements of ROHS
- Inspection of coated area is possible under UV light

Storage and stability

The product storage should be cool and dry, bricks kept separated as packed to prevent them sticking together and maintain the good properties of the material. Minimum shelf-life at 5°C to 35 °C is 12 months.

Handling precautions

The product is applied as a hot liquid. Therefore, take the necessary precautions for handling hot liquids. Refer to the safety data sheet and comply with regulations relating to industrial health & safety as well as waste disposal.

Sales specifications

Properties	Conditions	Test Method	Value	M/U
Viscosity	180 °C - PP25	DIN 53019 (Internal Test V18/b/c)	700 ÷ 1500	mPa·s
Shelf life	23 °C	Internal Test	12	months
Density	23 °C	DIN 53217	0,84 ÷ 0,88	g/cm³

Typical system properties

Properties	Conditions	Test Method	Value	M/U
Max. Operation temperature	168 h	Internal Test	105	°C

Typical mechanical properties of the product

Properties	Conditions	Test Method	Value	M/U
Hardness Shore A/1	23 °C	ISO 868 (Internal Test M30b)	< 10	Shore A

Typical thermal properties of the product

Properties	Conditions	Test Method	Value	M/U
Temperature range		Internal Test	- 40 ÷ 105	°C
Meltinge range	DSC - 20 K/min	Internal Test M52	110 ÷ 150	°C
Linear expansions coefficient		TMA (Internal Test M56)	220 ÷ 240	ppm/K
Glass transition temperature (Tg)	DSC - 20 K/min	DIN EN ISO 11357 (Internal Test M52)	-25 ÷ -20	°C

Chemical properties of compound

Properties	Conditions	Test Method	Value	M/U
Water Absorption	24 h / 23 °C	DIN EN ISO 62 (Internal Test M09a/b)	0,01 ÷ 0,03	%

Typical dielectric properties of the product

Properties	Conditions	Test Method	Value	M/U
Tracking Index		IEC 60112	> 600	CTI
Volume resistivity	23 °C	IEC 60464 -2 (Internal Test M5)	> 10^{14}	Ω·cm
Dielectric Strength	23 °C	IEC 60455-2 (Internal Test M31)	> 10	kV/mm
Dielectric constant at 10.000 Hz	21 °C	IEC 60250 (Internal Test M03b)	2,7	
	90 °C		3,2	
Dielectric dissipation at 10.000 Hz	21 °C	IEC 60250 (Internal Test M03b)	0,0005	
	90 °C		0,0002	
Volume ressistivity after 7 days water storage	23 °C	IEC 60464-2	> 10^{14}	Ω·cm
Surface Isolation Resistance (SIR)	500 h, 85 % RH, 85 °C	according IPC TM 650 2.6.3.7	> 10^{9}	Ω

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