

Product Information

Electronic Protection System

Melting Resin

Bectron[®] MR 3404

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Product description

Bectron[®] MR 3404 is a one-component hot melt resin thick film coating developed for electronic applications

As a thermoplastic there is no curing reaction 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 application of a thick film coating on PCBs 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 PCBs or hybrids. Bectron MR 3404 is recommended for serial production where fast solidification gives a short process time requiring no curing oven.

Properties of the cured material

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 from -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

Bectron[®] MR 3404 storage should be cool and dry and bricks kept separated as packed to prevent them sticking together and maintain the good properties of the material. Minimum shelf-life is 6 months.

Processing suggestions

Bectron[®] MR 3404 can be applied easily with commercially available hot melt guns or heated dispensers. 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.

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.

Bectron® MR 3404

Table 1 - Properties of component as supplied

| Property | Condition | Value | Unit |
|-----------------------|-----------|-------------|-------------------|
| Viscosity (DIN 53018) | 180°C | 1,100 ± 400 | mPas |
| Density (DIN 53217) | 23°C | 0.86 ± 0.02 | g/cm ³ |
| Shelf life | 23°C | 6 | months |

Table 2 - Thermal properties in cured condition

| Property | Condition | Value | Unit |
|----------------------------|--------------|-------------|------|
| Melting Range; DCS 20K/min | 168h @ 105°C | 110 - 150 | °C |
| Max. Operation temperature | 168h @ 105°C | 105 | °C |
| Temperature Range | | -40 to +105 | °C |

Table 3 - Mechanical properties in cured condition

| Property | Condition | Value | Unit |
|-------------------|-----------|--------------|---------|
| Hardness, ISO 868 | 23°C | 20 ± 6 | Shore A |
| | 105 °C | undetectable | Shore A |

Table 4 - Dielectric properties in cured condition

| Property | Condition | Value | Unit |
|---|---------------------|----------------------|--------|
| Volume resistivity after water immersion | Initial Value 7d | 3 x 10 ¹⁵ | Ω • cm |
| | | 5 x 10 ¹⁵ | |
| Surface Resistance | | 5 x 10 ¹⁴ | Ω |
| Dielectric strength (VDE 0303 Part 2) | 23°C | >30 | kV/mm |
| Dielectric Constant (VDE 0303 Part 4) | 23°C | 2.1 | - |
| Dielectric dissipation tanδ (VDE 0303 Part 4) | 23°C | < 0.001 | - |

Table 5 - Chemical properties in cured condition

| Property | Condition | Value | Unit |
|------------------------------------|------------|-------|------|
| Water absorption (ISO 62 Method 1) | 24h / 23°C | 0.06 | % |

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