EN

Preliminary Technical Data Sheet

# Bectron®

## MR 3406 FR

Electronic Protection System - UL 94 V-0 listed

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


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## Description

Bectron® MR 3406 FR is a one-component, halogen-, phosphate- and silicone-free melting resin, designed for thick film coating in electronic applications.

As a thermoplastic there is no curing reaction, only a rapid solidification of the resin on cooling.

## Areas of application

Bectron® MR 3406 FR 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 3406 FR is recommended for serial production, where fast solidification gives a short process time and requires no curing oven.

## Processing methods

Bectron® MR 3406 FR can be applied easily with commercially available hot melt guns, or heated dis-pensers containing a stirrer. 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 under stirring. After appli-cation the Bectron® MR 3406 FR solidifies during cooling. The substrate should be dry in order to avoid bubble formation with moisture. No equipment for mixing or curing is needed.

If a very thin layer is applied, special coating equipment e.g. swirl 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 3406 FR has a maximum operating temperature of 125°C. It has excellent dielectric properties and shows very good adhesive strength on many different substrates over the temperature range from -40°C to +125°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
- No shrinking on vertical PCB's @ 120°C

## Storage and stability

Bectron® MR 3406 FR 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

Bectron® MR 3406 FR 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 - PP 25 | DIN 53019 (Internal Test V18/b/c) | 800 ÷ 1250 | mPa·s |
| Shelf life | 23 °C | Internal Test | 12 | months |
| Density | 23 °C | DIN 16945 (Internal Test M27) | 0,84 ÷ 0,86 | g/cm³ |

## Typical mechanical properties of the cured product

| Properties | Conditions | Test Method | Value | M/U |
|---|---|---|---|---|
| Hardness Shore A/1 | 23 °C | ISO 868 (Internal Test M30b) | 15 ÷ 25 | Shore A |

## Typical thermal properties of the cured product

| Properties | Conditions | Test Method | Value | M/U |
|---|---|---|---|---|
| Temperature range | | Internal Test | - 40 ÷ 125 | °C |
| Flammability UL 94 classification | Min. Thk. 3,0-3,3 mm | File No. E140720 | V-0 | |
| Max operation temperature - Internal Test - °C | 168 h | Internal Test | 125 | °C |

## Typical dielectric properties of the cured product

| Properties | Conditions | Test Method | Value | M/U |
|---|---|---|---|---|
| Tracking Index | | IEC 60112 | > 600 M | CTI |
| Dielectric Strength | 23 °C | IEC 60455-2 (Internal Test M31) | > 9 | kV/mm |
| Dielectric constant at 10.000 Hz | 22 °C | IEC 60250 (Internal Test M03b) | 2,7 | |
| | 110 °C | | 3,1 | |
| Dielectric dissipation at 10.000 Hz | 22 °C | IEC 60250 (Internal Test M03b) | 0,0001 | |
| | 110 °C | | 0,0001 | |
| Surface Isolation Resistance (SIR) | 500 h, 85 % RH, 85 °C | according IPC TM 650 2.6.3.7 | > $10^{10}$ | Ω |
| Volume resistivity | Initial Value, 23 °C | IEC 60455 Part 2 | > $10^{14}$ | Ω·cm |
| | After 7 days water storage, 23°C | | > $10^{15}$ | Ω·cm |

## 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) | < 0,1 | % |

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