

# Technical Information

## MICARES<sup>®</sup> 738 R6

Two-component casting resin

### TYPE

Micares<sup>®</sup> 738 R6 is a flexible casting resin system based on polyurethane, consisting of resin and hardener. This two component potting compound, designed for use in the electrical engineering and the electronics is cold and thermal-curing. Micares<sup>®</sup> 738 R6 is solvent-free and liquid at ambient temperature. The resin contains the filler and is already degassed.

### GENERAL PROPERTIES

Flexible, synthetic material. The resin adheres well to metals and other materials and resists tracking. It has low dielectric losses. Glass transition temperature 25 – 35°C, Hardness, Shore D: 65..70

### USE

This Potting compound is especially suitable for low and medium voltage in the electronic applications such as capacitors, transformers and converter. This material is suitable for high thermal, mechanical and chemical impact. It is easy to process under normal conditions, e.g. ambient temperature and atmospheric pressure and allows easy casting and excellent wet-out of sharp-edged parts.

### SUPPLY

Micares<sup>®</sup> 738 R6 consists of two components (resin and hardener):  
- Resin 738 R6 = filled PUR - resin system  
- Hardener P 978 = unfilled modified MDI - hardener

| Containers / Weights                         | Resin 738 R6 | Hardener P 978 |
|--|--------------|----------------|
| 200 l - steel drum                           | 250 kg       | 250 kg         |
| 25 l - bucket (resin); 10 l - can (hardener) | 37,5 kg      | 6 - 24 kg      |
| 630 / 1000 l - container                     | on request   |                |
| Mixing ratio (parts by weight)               | 4            | 1              |
| Minimum shelf life (months)                  | 9            | 9              |
| Storage temperature                          | <40 °C       | 15 – 35 °C     |
| Toxicity (Swiss classification) / BAG #      | 4 / 619004   | 3 / 614463     |



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**STORAGE**

Both components should be stored in an appropriate room in their originally sealed containers. Outside storage is not recommended and should be avoided. Both resin and hardener are chemically stable. However, before usage, the resin must be carefully stirred with a suitable equipment since all resins containing mineral filler tend to build deposits. Stirring with particular care is necessary, when the resin has been stored for a long period of time.

**Important:** The hardener must be kept away from any exposure to humidity. It should always be stored well sealed.

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**MIXING**

The resin and hardener are mixed according to the specified ratio at ambient temperature, preferably using automatic dosing and mixing equipment.

If the resin has been stored for a long period of time, it is recommended to stir well the complete content of the container and to check the viscosity before the processing is being started. Formation of lumps has to be prevented by applying appropriate stirring conditions.

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**CASTING**

The mixture is applied at ambient temperature (above 18°C). The moulds should be treated with a release agent (e.g. MICAFIL 8055) to facilitate subsequent mould removal. The moulds should be designed for bottom-filling. Such a design would allow the air in the mould to escape at the highest point. The moulds should preferably be slightly inclined for filling. For sophisticated components, or if optimal electrical properties are specified, casting under vacuum is required.

Cycle times could be significantly reduced by preheating the moulds to approx. 40 - 80°C depending on the shape and the size of the components. It is also possible to increase the reactive capacity of the casting resin compound by adding a catalyst (0,1 to 1%) without adverse effects on the final properties of the resin.

The catalyst can be delivered separately.

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**HARDENING  
CONDITIONS**

This resin is especially designed for hardening at ambient temperature. The final hardness will be achieved after 24h at temperature of 25°C. Hardening at higher temperature makes this process a lot quicker. To achieve fast hardening and obtain optimal final properties, a post-hardening at T=80°C, for 7h is necessary.

Under ideal conditions, e.g. optimal material mass distribution, well-designed moulds, etc. and if the moulds are preheated, the resin will often generate sufficient heat by exothermal reaction. Hence, there is no post-hardening (in oven) required.

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**SAFETY  
PRECAUTIONS**

Many synthetic resin components are found to be liable for causing skin irritation, or otherwise affect health, if placed into a direct contact with the skin, or if their vapours have been inhaled. Adequate ventilation, use of protective clothing, goggles, gloves and chem. resistant shoes, clean working conditions and careful personal hygiene are usually sufficient as accident prevention measures. Medical advice is essential in all severe cases. MICARES resins are not considered a health hazard.

MICARES hardener is a toxic substance, but has a low vapour pressure at ambient temperature and it may be applied without special equipment, providing that care is taken to avoid possible skin, mucous membranes, or eye contact. For further details regarding safety, please refer to the safety datasheet.

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# MICARES<sup>â</sup> 738 R6

|   | Properties   |            | Standards  | Units                            | Values               |
|---|--|------------|------------|----------------------------------|----------------------|
| <b>Resin 738 R6</b>                     | Colour   |            | RAL        |                                  | 9005- black          |
|   | Density  |            | DIN 51757  | g/cm <sup>3</sup>                | 1,5...1,6            |
|   | Viscosity as supplied  | 25°C       | Brookfield | Pa s                             | 2.5 – 5              |
| <b>Hardener P 978</b>                   | Density  |            | DIN 51757  | g/cm <sup>3</sup>                | 1,22 - 1,24          |
|   | Viscosity as supplied  | 25°C       | Brookfield | mPa s                            | 150 – 250            |
|   | Vapour pressure  | 25°C       |            | mbar                             | < 10 <sup>-5</sup>   |
| <b>Casting resin compound</b>           | Mixing ratio (resin / hardener)                                  |            |            | parts by weight                  | 4 : 1                |
|   | Initial viscosity  | 25°C       | Brookfield | mPa s                            | 1000...1500          |
|   | Gel time   | 23°C       | DIN 16945  | min                              | 45 – 100             |
|   | Pot-life   | 23°C       |            | Min                              | 15...25              |
|   | Hardening conditions   | 100°C      |            | h                                | 7                    |
|   | Density  |            | ISO 1183   | g/cm <sup>3</sup>                | 1,50                 |
| <b>Electrical properties</b>            | Dielectric strength<br>50 Hz, h = 2mm                            | 20 s       | IEC 243    | kV/mm                            | 22                   |
|   | Spec. surface resistance   | 20°C       | IEC 93     | Ω                                | 1,1 10 <sup>14</sup> |
|   | Spec. volume resistance  | 20°C       | IEC 93     | Ω cm                             | 1,5 10 <sup>15</sup> |
|   | Dissipation factor tan δ<br>50 Hz                                | 23°C       | IEC 250    |                                  | 0,03                 |
|   | Relative permittivity ε <sub>r</sub> 50 Hz                       | 23°C       | IEC 250    |                                  | 5                    |
|   | Arc resistance   | ASTM D 495 |            | s                                | 135 - 145            |
|   | Comparative tracking index                                       |            | IEC 112    |                                  | CTI 600              |
| <b>Mechanical properties</b>            | Tensile strength   |            | ISO 527    | N/mm <sup>2</sup>                | 19                   |
|   | Elongation at break  |            | ISO 527    | %                                | 17                   |
|   | Flexural strength  |            | ISO 178    | N/mm <sup>2</sup>                | -                    |
|   | Impact strength  |            | ISO 179    | KJ/m <sup>2</sup>                | -                    |
|   | Ball indentation hardness  |            | DIN 53456  | N/mm <sup>2</sup>                | -                    |
|   | Tensil modulus of elasticity                                     |            | ISO178     | N/mm <sup>2</sup>                | 900..1000            |
| <b>Thermal properties</b>               | Glass transition temperature                                     |            | IEC 1006   | °C                               | 25 - 35              |
|   | Linear thermal expansion   | 20 - 100°C | VSM 77110  | 10 <sup>-6</sup> K <sup>-1</sup> | 120 - 150            |
|   | Flammability   |            | UL94       | HB                               | 1mm                  |
|   | Oxygen Index   |            | ASTM D2863 | LOI                              | 24 – 26              |
|   | Thermal class  |            | IEC 85     |                                  | B                    |
| <b>Physical and chemical properties</b> | Cold water absorption<br>24h / H <sub>2</sub> O (method 1)       |            | ISO 62     | wt - %                           | 0,32                 |
|   | Boiling water absorption<br>30 min / H <sub>2</sub> O (method 3) |            | ISO 62     | wt - %                           | 0,57                 |
|   | Hardness, Shore D  | 25°C       | DIN 53505  |                                  | 65...75              |

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These properties have been determined by the above shown methods. The data given are valid for standard test specimen only. Unless otherwise specified, all data were measured at ambient temperature on specimen as manufactured and without particular treatment.

The contents of this publication are based on our present experience. They are an indication for application of our products without any liability for ourselves. Notice of legal requirements and existing patent rights has to be taken.

Due to the many application and manufacturing process possibilities, we cannot give any warranty for the technical results in individual cases.

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