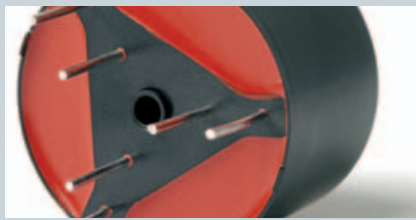
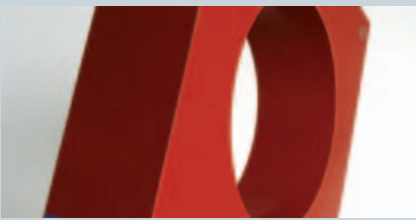


# MICARES® – Polyurethane Casting Compounds

Just the Formulation You Need for Solid Electrical Insulations



**ABB**

# MICARES®

## Typical Technical Characteristics

System	Standard	Unit	Resin Hardener	MICARES 700 P978	MICARES 720 P978	MICARES 730 P978	MICARES 730FR P978	MICARES 738 P978	MICARES 740 P977	MICARES 751 P978	MICARES 850 P978	MICARES 730-9051 P983	MICARES X1080R14 P978	MICARES X1087 P978	MICARES L56 R4 L56 R5
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### Characteristics of the components

Mix ratio		[wt-%]		2:1	2.5:1	6:1	4.5:1	4:1	2.5:1	5:1	4:1	9:1	3.5:1	5:1	6:1
Resin viscosity	Brookfield	[Pa], 25 °C		4–8	3–6	3–7	2.5–5	2.5–5	3.8–5.0	9–18	10–15	6–9	10–20	2.5–4.5	2.5–5.0
Hardener viscosity	Brookfield	[mPa], 25 °C		150–250	150–250	150–250	150–250	150–250	60–80	150–250	150–250	80–140	150–250	150–250	350–700
Initial viscosity	Brookfield	[Pa], 25 °C		2.5–3	1.2–2.2	2.5–3.0	1.0–1.5	1.0–1.5	1.5–2.0	3.0–3.5	1.0–2.0	2.8–4.2	2.5–3.0	1.5–2.5	2.0–3.5
Gel point (*)	DIN 16945	[min]		30–80	60–100	240–360	120–180	45–100	15–30	180–300	240–360	45–90	10–20	90–130	90–160
Curing time	Reference	[h/°C]		–	–	40/25 or 7/80	24/25 or 4/80	24/25 or 4/80	24/25 or 4/100	48/25 or 7/80	24/100 or 8/120	72/25 or 7/100	24/25 or 4/80	24/25 or 7/80	72/25 or 6/70
	200g			7/120	7/120	7/80	4/80	4/80	4/100	7/80	8/120	7/100	4/80	7/80	6/70

### Characteristics of the molded materials

Glass transition temperature	IEC 1006	[°C]		120–135	95–105	25–35	5–15	25–35	70–75	55–65	70–90	<(-50 °C)	20–30	5–15	<(-40 °C)
Density	ISO 1183	[g/cm³]		1.50–1.55	1.50–1.60	1.70–1.80	1.35–1.40	1.50	1.15–1.20	1.7–1.8	1.60–1.65	1.35–1.40	0.30–0.50	1.37	1.0–1.2
Dielectric strength	IEC 243 (20 s., 50Hz) [kV/mm]			24	24	18	18	22	22	18	20	23	8	17	15
Volume resistivity	IEC 93	[Ω cm]		1.0 x 10 <sup>14</sup>	1.0 x 10 <sup>14</sup>	1.0 x 10 <sup>14</sup>	1.0 x 10 <sup>14</sup>	1.5 x 10 <sup>15</sup>	6.0 x 10 <sup>14</sup>	1.0 x 10 <sup>15</sup>	1.0 x 10 <sup>15</sup>	1.0 x 10 <sup>15</sup>	1.2 x 10 <sup>13</sup>	1.7 x 10 <sup>14</sup>	6 x 10 <sup>14</sup>
Dissipation factor	IEC 250	tan δ		0.01	0.04	0.03	0.03	0.03	0.02	0.01	0.01	0.01	0.02	0.08	0.02
Coefficient of thermal Expansion	VSM 77110	[10 <sup>-6</sup> /K] 20–100 °C [W/mk]		35–45	35–45	100–120	150–170	120–150	50–100	90–110	40–50	120–180	100–165	120–150	150–200
Thermal conductivity	VDE 0304T1	20–100 °C		0.60–0.70	0.40–0.50	0.50–0.70	0.45–0.50	0.5–0.55	0.30–0.35	0.60–0.70	0.45–0.48	0.40–0.45	0.20–0.25	0.45	0.15–0.20
Shore hardness	DIN 53505	[A/D] 25 °C		D-90	D-88	D-75	A-85	D-65-75	D-80	D-80	D-80	A-50	D-60	D-45	A-40
Tensile strength	ISO 527	[N/mm²]		50–60	50–60	15–25	10–15	15–20	40–45	40–45	50–60	1.0–1.5	8–10	5.5	1.3–1.5
Elongation at break	ISO 527	[%]		1.5–2.0	1.5–3.0	20	45–55	17	1.7–1.9	2.0–3.0	1.5–2.5	90–100	1.5–2.5	45	100–150
Thermal class	IEC 85	–		B	B	B	B(**)	B	B	B	F	B	E(**)	B(**)	E
Applications				□	□	■	■□	■□	■	□	□	■	■	■	■□

(\*) The indicated gel points apply to the standard versions. Customer-specific versions can be adjusted based on cost

(\*\*) Self-extinguishing; listed according to UL94-VO

□ Electrical engineering applications

■ Electronic applications

All the information in this publication corresponds to our current state of knowledge and gives an unbinding indication of possible applications for our products. We cannot guarantee the technical outcome in individual cases owing to the diversity of possible application processes and processing methods.

# Innovative Solution for Protecting Your Products

## Micafil Combines Electronics with Chemistry

A wealth of creative ideas and expertise has made Micafil the preferred partner of the electrical industry for more than 85 years. Customer satisfaction is our foremost goal. We forge long-term, trusting partnerships and respond to customers' specific needs. This is a solid foundation for optimum total solutions.



*Control unit for automotive electronics*



*Instrument transformer 12 kV*

## High-Tech Versatility

Enclosures and insulation for electronic components have tough demands to meet in terms of moisture and other environmental conditions as well as mechanical protection.

Micafil casting compounds made of polyurethane have an excellent track record and are well-established as indispensable and easy-to-process materials. With their versatility and high tech adaptability, they are used in virtually all segments of the solid electrical insulation industry worldwide.

## Vast Expertise for Delivering Optimum Solutions

Even the most demanding customer requests rarely throw us off. Thanks to our optimized encapsulation processes, our customers can benefit from our years of technological experience in insulation casting resins. The product undergoes a battery of different tests at the customer's and at Micafil to assure full compliance with all stipulated requirements.

## A Comprehensive Range

Components with MICARES® are used in industrial applications by renowned component manufacturers in the energy technology and electronics such as Bosch, Schaffner, Alstom, Pfiffner, etc.

- We offer a broad range of high-quality 2-component casting compounds (including expanding encapsulating compounds).
- You can choose between standard products and customized system solutions.
- You benefit from our long-term experience in formulation as well as our processing expertise and infrastructure (from the test stage to series production).



# MICARES®

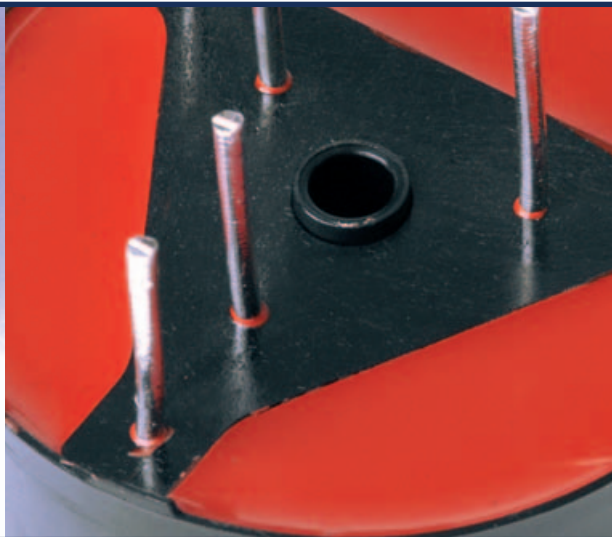
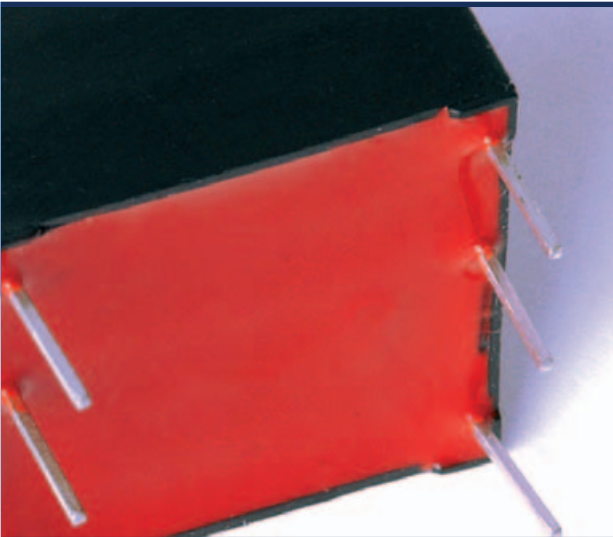
## The Right Formulation for Electronic Applications

### Possibilities of Use

- Main filters
- Capacitors
- HF reactors
- Sensors, proximity switches
- Relays
- Small transformers
- Control electronics, modules
- Solenoids, etc.

### Optimum Product Characteristics

- Ease of processing
- Low viscosity
- Cold or hot curing
- Fast curing
- Minimal exothermia
- Molding compound ranging from soft to tough and resilient
- Minimal shrinkage pressure
- Very good crack resistance (even under changing thermal loads)
- Flame retardant/self-extinguishing systems and expanding insulation foams



# MICARES®

## The Right Formulation for Electrical Engineering Applications



### Possibilities of Use

- Current and voltage transformers
- Power capacitors
- Compressible (expanded) compound for insulated bushings
- Switch parts
- Transformers
- Cable couplers, etc.

### Optimum Product Characteristics

- Low processing viscosity
- Processing with short mold occupation times
- Minimal exothermia
- Good dimensional stability on component
- Excellent adhesion to nearly all base materials
- Very good electrical insulation properties
- Compressible molded material with minimal density





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