

Technical Information

MICARES[®] 850 R1

Two-component casting resin

TYPE Micares[®] 850 R1 is a 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 defined warm to thermo-curing. Micares[®] 850 R1 is hardly combustible, resists burning, it is solvent free and liquid at ambient temperature (RT). The resin component contains the filler and is already degassed.

GENERAL PROPERTIES It resists very well to heat-ageing (thermal class F), has good electrical and dielectric properties, low water absorption, and resists cracking.
 Glass transition temperature: 75 - 90°C
 Hardness Shore D: 75 - 80°C

USE Electro casting resin, especially used for electronics at applications with high operating temperature. It is designed for the manufacturing of valuable electronic devices, such as distribution, current and voltage transformers. It is easy to process under normal conditions, e.g. ambient temperature and atmospheric pressure.

SUPPLY Micares[®] 850 R1 consists of two components (resin and hardener):
 - Resin 850 R1 = filled PUR - resin system
 - Hardener P 978 = unfilled modified MDI - hardener

Containers / Weights	Resin 850 R1	Hardener P 978
200 l - steel drum	300 kg	250 kg
25 l - bucket (resin); 10 l - can (hardener)	36 kg	4 - 24 kg
630 / 1000 l - container	on request	
Mixing ratio (parts by weight)	4	1
Shelf life (months)	6	9
Storage temperature	<40 °C	15 – 35 °C
Toxicity (Swiss classification) / BAG #	4 / 619004	3 / 614463



STORAGE

Both components should be stored in appropriate room in their originally sealed containers. **Avoid storage outside!**

The resin is chemically stable. However, before use, the resin must be carefully stirred with a suitable stirrer 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. The resin contains the catalyst, therefore it is recommended to be stored at temperature below 30°C.

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

MIXING

The resin contains the catalyst. In case the system needs preparation in advance, as degassing for example, it is of high importance for 3 hours maximal, not to go above 70 °C. 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.

CASTING

The mixture is applied at ambient temperature (18-23°C). The moulds should be treated with a release agent (e.g. MICAFIL 8055) to facilitate subsequent mould removal. The moulds, heated to 50°C, 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. 60 - 80°C depending on the shape and the size of the components.

HARDENING CONDITIONS

To achieve a fast hardening and obtain optimal final properties, a post-hardening at T >100°C, for 15 - 20h 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.

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 to be 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.

MICARES^â 850 R1

	Properties		Standards	Units	Values
Resin 850 R1	Colour		RAL		~3016 red
	Density		DIN 51757	g/cm ³	1,70 - 1,8
	Viscosity as supplied	25°C	Brookfield	Pa s	9 – 13
Hardener P 978	Density		DIN 51757	g/cm ³	1,22 - 1,24
	Viscosity as supplied	25°C	Brookfield	mPa s	150 – 250
	Vapour pressure	25°C		10 ⁻⁵ mbar	1,33
Casting resin compound	Mixing ratio (resin : hardener)			parts by weight	4 : 1
	Initial viscosity	25°C	Brookfield	Pa s	1 – 2
	Gel time	23°C	DIN 16945	Hours	4 - 6
	Hardening (conditions)			24 h 8 h	100°C 120°C
	Density		ISO 1183	g/cm ³	1,60 - 1,63
Electrical properties	Dielectric strength 50 Hz, h = 2mm	20 s	IEC 243	kV/mm	18 - 22
	Spec. volume resistivity	20°C	IEC 93	Ω cm	10 ¹⁵
	Dissipation factor tan δ 50 Hz	23°C	IEC 250		0,007
	Relative permittivity ε _r 50 Hz	23°C	IEC 250		4,5
	Comparative tracking index		IEC 112		CTI 600
Mechanical properties	Tensile strength		ISO 527	N / mm ²	50 - 60
	Flexural strength		ISO 178	N / mm ²	80 - 100
	Impact strength		ISO 179	KJ / m ²	6 - 8
	Flexural modulus of elasticity		ISO 178	N / mm ²	5000 - 7000
Thermal properties	Glass transition temperature T _g		IEC 1006	°C	75 - 90
	Linear thermal expansion	20 - 100°C	VSM 77110	10 ⁻⁶ K ⁻¹	40 - 50
	Flammability		UL 94		V - 1
	Thermal class		IEC 85		F
	Thermal conductivity 80° - 140°C		VDE 0304 T1	W/mK	0,45-0,58

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	Properties		Standards	Units	Values
Physical and chemical properties	Cold water absorption 24 h / H ₂ O (method 1)		ISO 62	weight %	0,1 - 0,15
	Hot water absorption 30 min / H ₂ O (method 3)		ISO 62	weight %	0,5
	Hardness, Shore D	25°C	DIN 53505		75 - 80

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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