Technical Information
MICARES â 730 R11

Two-component casting resin

TYPE

Micares® 730 R11 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® 730 R11 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 30 – 40°C Hardness, Shore D: 70 - 80

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® 730 R11 consists of two components (resin and hardener):
- Resin 730 R11 = filled PUR - resin system
- Hardener P 978 = unfilled modified MDI - hardener

Containers / Weights	**Resin 730 R11**	**Hardener P 978**
200 l - steel drum	300 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)	5	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 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 stirrer since all resins containing filling material 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.
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.
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.
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 atT=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.
SAFETY PRECAUTIONS	Many synthetic resin components 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.

MICARES â 730 R11

	Properties		Standards	Units	Values
Resin 730 R11	Colour		RAL		~9011 black
	Density		DIN 51757	g/cm^3	1,6 - 1,7
	Viscosity as supplied	25°C	Brookfield	Pa s	2 – 5
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		mbar	$< 10^{-5}$
Casting resin compound	Mixing ratio (resin / hardener)			parts by weight	5 : 1
	Initial viscosity	25°C	Brookfield	Pa s	1,5 – 2,5
	Gel time	23°C	DIN 16945	min	40 – 65
	Hardening conditions				7h / 80°C
	Density		ISO 1183	g/cm^3	1,6 – 1,7
Electrical properties	Dielectric strength 50 Hz, h = 2mm	20 s	IEC 243	kV/mm	18 – 20
	Spec. surface resistance	20°C	IEC 93	Ω	10^{14}
	Spec. volume resistance	20°C	IEC 93	Ω cm	10^{14}
	Dissipation factor tan δ 50 Hz	23°C	IEC 250 23°C		< 0,06
			70°C		< 0,07
	Relative permittivity ε_r 50 Hz	23°C	IEC 250 23°C		5 – 6
			70°C		8,5 – 9,2
	Arc resistance	ASTM D 495		s	135 - 145
	Comparative tracking index		IEC 112		CTI 600
Mechanical properties	Tensile strength		ISO 527	N/mm²	15 – 25
	Elongation at break		ISO 527	%	10 – 20
	Flexural strength		ISO 178	N/mm²	28 - 30
	Impact strength		ISO 179	KJ/m²	10 – 15
	Ball intendation hardness		DIN 53456	N/mm²	40 – 45
	Flexural modulus of elasticity		ISO178	N/mm²	1300 - 1600

	Properties		Standards	Units	Values
Thermal properties	Glass transition temperature		IEC 1006	°C	30 – 40
	Linear thermal expansion	20 - 100°C	VSM 77110	10^{-6} K^{-1}	100 – 120
	Flammability		UL94	HB	1 mm
	Oxygen Index		ASTM D2863	LOI	24 – 26
	Thermal class		IEC 85		B
Physical and chemical properties	Cold water absorption 24h / H_2O (method 1)		ISO 62	wt - %	0,2 – 0,3
	Boiling water absorption 30 min / H_2O (method 3)		ISO 62	wt - %	0,7 – 0,9
	Hardness, Shore D	25°C	DIN 53505		70 – 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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