ELANTAS
Electrical Insulation

PRODUCT INFORMATION

Micares ®

X1087RD resin (R10)/ P 978 100:20

2-component flame retardant polyurethane sealant. Listed system UL 94 V-0, electrical RTI 130°C

Application:

Micares® X1087 RD 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 to thermal-curing. It is solvent free and liquid at ambient temperature (RT).
The resin component contains the filler and is degassed.

Processing:

It is easy to process at ambient temperature and atmospheric pressure.

Description:

Flexible, synthetic material. The resin adheres well to metallic and non-metallic materials and resists tracking. Dielectric losses are low. Hardness, Shore A: 40 - 50. The system is RoHS conform (European Directive 2002/95/EC).
Micares® X1087 RD consists of two components (resin and hardener):
- Resin X1087 RD= filled PUR - resin system
- Hardener P 978= unfilled modified MDI - hardener
The system is UL 94 V-0 listed.

Instructions:

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 of appropriate stirring conditions.
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. For complicated components, or if optimal electrical properties are specified, casting under vacuum is required.

Components and moulds generally do not need pre-heating for casting with Micares® X1087 RD. Reactivity of the casting compound however, can be changed on request, and or by pre-heating the mould to about 40°C to 80°C, e.g, to reduce cycle - time. Accelerator can be used without adverse effects on the final properties of the resin. We can supply a suitable product separately.

Curing / Post-curing:

This resin is especially designed for hardening at ambient temperature. The curing time depends on the resin quantity and temperature. Final curing therefore can be achieved after a few hours or days. Or considerably less at higher temperatures. The self-heating effect of a low exothermal reaction in the resin, depending on the resin quantity, is ussually sufficient to bring it to final hardness in 10-24 hours.

Storage:

Both components should be stored in appropriate room, at ambient temperature (resin component <40°C, hardener component 15-35°C) and in their originally sealed containers.

The resin is chemically stable. However, before use, 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.

Handling precautions:

Many synthetic resin components are found to be liable for causing skin irritation, or otherwise affect health, if placed into 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® X1087 resin is not to be considered as a health hazard. Micares® hardener P978 is a harmful substance, but has a low vapour pressure at ambient temperature and it may be applied without special equipment in well ventilated areas, providing that care is taken to avoid possible skin, mucous membranes, or eye contact. For further details regarding safety, please refer to the safety data sheet

SYSTEM SPECIFICATIONS

Property	Conditions	Method	Resin X1087RD resin (R10)	Hardener P 978	UM
Viscosity at:	25°C	IO-10-50 (EN13702-2)	3.000÷6.000	150÷250	mPas
Density at:	25°C	IO-10-51 (ASTM D 1475)	1,40÷1,45	-	g/ml

TYPICAL SYSTEM CHARACTERISTICS

Property	Conditions	Method	Value	UM
Mixing ratio by weight		for 100 g resin	100:20	g
Mixing ratio by volume		for 100 ml resin	100:25	ml
Resin Colour			Red	
Hardener Colour			Brown	
Density hardener	25°C	IO-10-51 (ASTM D 1475)	1,20÷1,24	g/ml
Initial mixture viscosity at:	25°C 40°C	IO-10-50 (EN13702-2) IO-10-50 (EN13702-2)	1.800÷2.800 900÷1.500	mPas mPas
Pot life (doubled initial viscosity)	25°C 40°C	IO-10-50 (EN13702-2) (*) IO-10-50 (EN13702-2) (*)	15÷25 8÷14	min min
Gelation time	25°C (15ml;6mm)	IO-10-73 (*)	2,0÷3,0	h
Gelation time	25°C 100ml	IO-10-52a (UNI 8701)	45÷60	min
Demoulding time	25°C (15ml;6mm)	(*)	7÷9	h

TYPICAL CURED SYSTEM PROPERTIES

Properties determined on specimens cured: 24 h TA + 15 h 60°C

Property	Conditions	Method	Value	UM
Density	25°C	IO-10-54 (ASTM D 792)	1,37÷1,41	g/ml
Hardness	25°C 25°C	IO-10-58 (ASTM D 2240) IO-10-58 (ASTM D 2240)	85÷90 55÷60	Shore A/15 Shore D/15
Glass transition (Tg)		IO-10-69 (ASTM D 3418)	-5÷5	°C
Water absorption (24h RT)		IO-10-70 (ASTM D 570)	0,20÷0,30	%
Water absorption (2h 100°C)		IO-10-70 (ASTM D 570)	0,80÷1,00	%
Linear thermal expansion (Tg -10°C)		IO-10-71 (ASTM E 831)	70÷80	10^-6/°C
Linear thermal expansion (Tg +10°C)		IO-10-71 (ASTM E 831)	160÷180	10^-6/°C
Thermal shock (n°10 cycles passed)		IO-10-67 (inserto metallico Olyphant)	-40÷+170	°C
Flammability		IO-10-68 (UL 94 V-0)	13	mm
Max recommended operating temperature		IEC 60085 (***)	130	°C
Thermal conductivity		IO-10-87 (ASTM C518)	0,50÷0,60	W/(m°K)
Dielectric constant at:	25°C	IO-10-59 (ASTM D 150)	4,5÷5,0	
Loss factor at:	25°C	IO-10-59 (ASTM D 150)	100÷130	x 10^-3
Volume resistivity at:	25°C	IO-10-60 (ASTM D 257)	3 x 10^14÷5 x 10^14	Ohm x cm
Dielectric strength	25°C	IO-10-61 (ASTM D 149)	21÷24	kV/mm
Flexural strength		IO-10-66 (ASTM D 790)	n.a.	MN/m²
Strain at break		IO-10-66 (ASTM D 790)	n.a.	%
Flexural elastic modulus		IO-10-66 (ASTM D 790)	n.a.	MN/m²
Tensile strength		IO-10-63 (ASTM D 638)	4÷6	MN/m²
Elongation at break		IO-10-63 (ASTM D 638)	50÷60	%

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Legenda:
IO-00-00 = Elantas Italia's test method. The correspondent international method is indicated whenever possible.
nd = not determined na = not applicable RT = TA = laboratory room temperature (23±2°C)
Conversion units: 1 mPas = 1 cPs 1MN/m2 = 10 kg/cm2 = 1 MPa

(*) for larger quantities pot life is shorter and exothermic peak increases
(**) the brackets mean optionality
(***) The maximum operating temperature is given on the basis of laboratory information available being it function of the curing conditions used and of the type of coupled materials. For further possible information see post-curing paragraph.

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