ELANTAS
Electrical Insulation

Product Information

Electrical Insulation System

Impregnating resin

Dobeckan® MF 8001 NV

single component, monomer- and VOC-free, medium viscosity, UL-recognized, thermal class 180 (H)

Product description

Dobeckan® MF 8001 NV is a single component, monomer- and VOC-free impregnating resin of medium viscosity, based on an especially modified, unsaturated polyester. The formulation of this resin abstains from reactive thinners like styrene or vinyltoluene, which are normally used for polyesters or polyesterimides. This is offering numerous advantages with regard to storage stability, processing reliability and impregnating quality. Of decisive importance is the fact that by using Dobeckan® MF 8001 NV the emission will be reduced to practically insignificant values, making an elaborate exhaust ststem unnecessary.

Dobeckan® MF 8001 NV is a non hazardous material with the advantages of simplyfied internal/external transport and storage.

This type of resin offers an extraordinary storage stability of 12 months at 23 °C. The raw materials of the product are pre-registered acc. to the directive No. 1907/2006/EC (REACH). The product does not contain by recipe substances listed in Art. 57/Anex XIV 1907/2006/EC from 9th of October 2008 (SVHC).

The product fulfils the directives 2011/65/EU, 2003/11/EC and 2006/121/EC.

Areas of application

Dobeckan® MF 8001 NV is suitable for all conventional rotating and stationary windings. The impregnation results in

- high filling content of the windings
- decreased partial discharges, when frequency converters in operation
- excellent heat dissipation

Properties of cured resin

The tough-hard cured material shows very good mechanical and electrical insulating properties, even at higher temperatures.

Owing to the high temperature index of 180 Dobeckan MF 8001 NV can be used for thermal class 180 acc. DIN EN 60085 (former: H). The resin has been recognized by UL (Underwriters Laboratories, USA) under file no. E 73 288.

Viscosity / Gel time

When delivered, the viscosity of the resin compound comes to 7000 ± 500 mPa.s. On account of the fact, that actually there is no thinner available, best results of the impregnation will be achieved by the process with preheating.

When produced, the gel time of the resin compound will be adjusted to 19 ± 2,5 minutes at 120 °C. This value will drop down just a little during storage and application, dependent on time and temperature, but the gel time shows good stability.

Processing methods

The product can be used by the conventional impregnating processes with the possibility for preheating of the objects and/or the resin compound, in particular by the dip-roll method.

It is recommended to choose high preheating temperatures of the objects between 80 and 100 °C, because it is not necessary to take consideration for boiling points of reactive thinners.

When using the dip-roll method the stability of the resin compound will be guaranteed by permanent circulation, the addition of fresh material and cooling, if necessary. The rotation of the objects has to be continued until the resin compound has gelled, to avoid imbalances.

Some modifications of existing plants regarding dosage and circulation (length and diameter of the pipes) will allow processes also with this resin type.

Curing of the resin compound should be carried out with current or by a preheated convection oven, fast heating up to curing temperature will reduce drain losses and allows shorter cycle times with higher productivity.

The resin compound should be kept out of direct sunlight during storage and processing. It is recommended, that the temperature will not exceed 25 °C for a longer period.

It will be necessary to follow the instructions of the Material Safety Data Sheet (MSDS) of this product.

Properties of component as supplied

Property	Value	Unit
Shelf life at 23 °C	12	months
Flow time at 23°C, Beck-test V 22 following ISO 2431	-	s
Viscosity at 23°C, Beck-test V 18 following DIN 53019	7500 ± 1500	mPa.s
Density at 23 °C, Beck-test S 11 following ISO 2811-2	1,12 ± 0,03	g/cm^3

Gel time and curing conditions

Temperature	100	120	130	140	150	160	°C
Gel time, Beck-test H 17b-1 initial value when produced		17,5 ± 2,5					min
Curing time, selectable					2	1	h

Mechanical properties in cured condition

Test criterion	Condition	Value	Unit
Condition in thick layer, Beck-test M1 following IEC 60464 part 2	Upper side Under side Interior	S 1 U 1 I 2.1	-
Bond strength, Beck-test M2 following IEC 61033, method A (Twisted Coil)	23 °C 155 °C 180 °C	300 70 77	N

Temperature index

Test criterion	Condition	Value
Proof voltage, Beck-test M 15 following IEC 60172 (Twisted Pair)	1000 V	177
Bond strength, Beck-test M 16 following IEC 60290 (Helical Coil)	22 N	201

Dielectrical properties in cured condition

Test criterion	Condition	Value	Unit
Volume resistivity after water immersion, Beck-test M 5 following IEC 60464 part 2	Initial value 7 d storing	10^{15} 10^{13}	Ω·cm
Volume resistivity at elevated temperatures, Beck-test M 13 following IEC 60464 part 2	155 °C 180 °C	- -	Ω·cm
Electrical strength after water immersion, Beck-test 6b following IEC 60464 part 2	Initial value 24 h storing	- -	kV/mm
Electrical strength at elevated temperatures, Beck test M 6a following IEC 60464 part 2	155 °C 180 °C	151 -	kV/mm
Temperature at relative permittivity tangδ=0,1 Beck-test M 3b following IEC 60250	50 Hz, 1 V 1 kHz, 1 V 10 kHz, 1 V	75 > 78 > 78	°C

Effect of liquid chemicals, including water

Test criterion	Condition	Value	Unit
Water absorption, Beck-test M9 following ISO 62	24 h at 23 °C 0,5 h at 100 °C	6,3 6,5	mg
Effect of liquid chemicals after 7 days storing, Beck-test M 10 following ISO 175	Ammonia solution 10 % Acetic acid 5 % Sodium hydroxide 1 % Hydrochloric acid 10 % Sulforic acid 30 % Iso-octane Toluol Transformer oil BecFluid® 9902 Solution of detergent	- 5 - 13 37 1,1 11,3 3 - 113	mg

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