

Product Information

Electrical Insulation System

Impregnating and Trickle Resin

Dobeckan[®] MF 8005

single component, monomer- and VOC-free, low viscosity, thermal class 180 (H)

Product description

Dobeckan® MF 8005 is a single component impregnating and trickle resin, monomer- and VOC-free, based on especially modified, unsaturated polyester resins.

The formulation of this resin system contains no styrene or vinyltoluene as a reactive thinner. This offers varied advantages regarding storage stability, reliability of processing and quality of the impregnation.

Of decisive importance is the fact that by using Dobeckan® MF 8005 the emissions will be reduced to practically insignificant values, making an elaborate after burning system unnecessary.

Dobeckan® MF 8005 is not classified as dangerous goods and therefore

- the transport internal/external will be simplified
- separate storage is unnecessary

The product fulfils the directives 2011/65/EU, 2003/11/EC and 2006/121/EC. The raw materials of the product are registered and 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).

Areas of application

Dobeckan® MF 8005 is designated for the impregnation of all conventional rotating and stationary windings, in particular when processed by the preferred trickle or dip-roll method.

Properties of cured resin

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

Owing to the high temperature index of >180 according UL Dobeckan® MF 8005 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 number E 73 288.

Viscosity / Gel time

When delivered, the viscosity of the resin compound comes to 1000 ± 150 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.

The value of the gel time will drop just a little during storage and application, dependent on time and temperature, the gel time shows good stability.

Processing methods

Dobeckan® MF 8005 can be used by the conventional impregnating processes, preferred by trickling or dip-rolling, but also by dipping or flood-rolling. Due to the low viscosity and the excellent penetration ability of the resin compound a preheating of the objects or the resin compound is not necessary in all cases.

According to the principle of trickle impregnation the resin compound is applied in a thin stream to the rotating winding. The resin compound adapts the temperature of the winding immediately, becomes considerably more thinfluid and is distributed uniformly throughout the winding as a result of rotation and capillary force. When using the dip-roll method it is recommended to preheat the objects (80 to 110 °C), this enables full penetration of the windings by the very low viscosity of the resin compound. Its stability will be guaranteed by permanent circulation and the addition of fresh material. Existing plants can be adapted by minor changes of the dosage and resin circulation (length and diameter of tubes) to use this resin system.

Curing of the resin compound should be carried out with current or by a preheated convection oven, fast heating up to cure temperature will reduce drainage losses and allows shorter cycle times with higher productivity. When the dip-roll process is used, the rotation of the objects has to be continued until the resin compound has been gelled, to avoid imbalances.

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, then the material shows an excellent shelf life.

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
Appearance	brownish, clear	-
Flow time of resin at 23 °C, Beck-test V 22 following ISO 2431	-	s
Viscosity at 23 °C, Beck test V 18 following DIN 53019	1.000 ± 150	mPa·s
Density at 23 °C, Beck test S 11 following ISO 2811-2	1,03 ± 0,03	g/cm ³

Gel time and curing conditions

Temperature	100	120	130	140	150	160	°C
Gel time, Beck-test H17B-1		5,0 ± 2					min
Curing time					30	15	min

Mechanical properties in cured condition

Test criterion	Condition	Value	Unit
Condition in thick layer, Beck-test M1 following IEC 60464 part 2	Upper side	S 1	-
	Under side	U 1	
	Interior	I 2.2	
Bond strength, Beck-test M 2 following IEC 61033, method A (Twisted Coil)	23 °C	> 180	N
	155 °C	> 40	
	180 °C	> 40	

Temperature index

Test criterion	Limiting value	TI
Proof voltage, Beck-test M 15 following IEC 60172 (Twisted Pair)	1000 V	186
Bond strength, Beck-test M 16 following IEC 61033, method B (Helical Coil)	22 N	196

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	$> 10^{15}$	$\Omega \cdot \text{cm}$
	7 d storing	$> 10^{15}$	
Volume resistivity at elevated temperatures, Beck-test M 13 following IEC 60464 part 2	155 °C	$> 10^{11}$	$\Omega \cdot \text{cm}$
	180 °C	-	
Electrical strength after water immersion, Beck-test M 6b following IEC 60464 part 2	Initial value	251	kV/mm
	24 h storing	136	
Electrical strength at elevated temperatures, Beck-test M 6a following IEC 60464 part 2	155 °C	223	kV/mm
	180 °C	180	
Temperature at relative permittivity $\tan\delta=0,1$ Beck-test M 3b following IEC 60250	50 Hz, 1 V	65	°C
	1 kHz, 1 V	96	
	10 kHz, 1 V	121	

Effect of liquid chemicals, including water

Test criterion	Condition	Result, Value	Unit
Resistance to vapour of solvents, Beck-test M 7 following IEC 60464 part 2	Acetone	resistant	-
	Xylene	resistant	
	Methanol	resistant	
	Hexane	resistant	
Water absorption, Beck-test M 9 following ISO 62	24 h at 23 °C	1,3 ±0,3	mg
	0,5 h at 100 °C	-0,2 ±0,6	
Effect of liquid chemicals after 7 d storing, Beck-test M 10 following ISO 175	Ammonia solution 10 %	-60 ±5	mg
	Acetic acid 5 %	2 ±0,5	
	Sodium hydroxide 1 %	-50 ±8	
	Hydrochloric acid 10 %	-18 ±0,7	
	Sulfuric acid 30 %	35 ±1,5	
	Iso-octane	10 ±14,7	
	Toluol	7 ±1,5	
	Transformer oil, mineral	2 ±0,5	
	Solution of detergent	5 ±0,6	

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