

## Technical Data Sheet

# Resin

## MICA MAX 74050

- **New technology, epoxy formulation**
- **Outstanding electrical properties**
- **Excellent high temperature performance**
- **Very stable formulation**

### Description

MICA MAX 74050 is a new technology epoxy resin system utilizing a reactive monomer designed to achieve very high temperature performance as well as excellent long-term electrical properties for machine designs up to and beyond 14kV. It is a very stable formulation with low reactivity at room temperature, yet is very reactive at 160°C yielding excellent performance and low VOC emissions. Although cool storage is suggested for manufacturing consistency, MICA MAX® 74050 is very stable at room temperature. By utilizing a vinyl toluene monomer that fully reacts with the resin, unlike epoxy anhydride systems or other systems utilizing epoxy diluents, the viscosity is adjustable for different applications and for stability adjustment, if required.

### Application

MICA MAX 74050 is designed as the basic resin for a new family of high temperature and high voltage global VPI insulation systems. When utilized with the appropriate mica tape, the electrical performance of the insulation system surpasses industry standards for use in motor and generator designs in both electrical and thermal properties. It can be utilized in both OEM and aftermarket applications up to and above 14kV. Laboratory testing shows that the typical dissipation factor of the insulation system, when utilizing optimized companion mica tapes, is <5% at 200°C. Thermal weight loss studies indicate that, after 84 days at 200°C, MICA MAX 74050 retains >95% of its initial weight. The control resins, which were typical epoxy anhydride formulas, exhibited weight losses of up to 19%. Cure time is sensitive to the amount of moisture introduced to the resin. Storage and process tanks should be designed to minimize the amount of moisture introduced. If the moisture content in the resin is high, recommendations for reducing the moisture content can be given by Von Roll.

### Processing

MICA MAX 74050 can be used in conventional VPI processing equipment. For processing details, please contact Von Roll USA, Inc. General processing instructions are included below: A minimum cure time of 6 hours at 320°F (160°C) after the stator reaches temperature if the gel time is 10-50 minutes @ 171°C. A minimum cure time of 8 hours at 320°F (160°C) after the stator reaches temperature if the gel time @ 171°C exceeds 50 minutes due to moisture in the resin. Moisture in the resin increases the gel time but the moisture does not chemically change the resin. The longer gel time resin will cure and retain the excellent electrical properties with appropriate adjustments in the cure cycle.

### Availability

MICA MAX 74050 resin is available in totes or 55-gallon drums from Von Roll USA, Inc. or from authorized Von Roll distributors.

### Storage conditions – Shelf life

MICA MAX 74050 resin can be expected to stay within its specified limits for up to 6 months when stored at 68°F - 77°F (19°C - 25°C) and 12 months when stored at 40°F (7°C). In the VPI system, the suggested storage temperature is 68°F (19°C) for maximum stability and process control.

Physical Properties	Test norm	Unit	Value
Weight		lb/gal (kg/gal)	9.42 (4.27)
Viscosity (Brookfield) @ 77°F (25°C)		cps	300 – 700
Gel time (Sunshine) @ 171°C		minutes	16 +/- 4
Flash point	Pensky-Martens Closed Cup	°F (°C)	≥127 (53)
Film build on steel (avg.)		mils (mm)	1.0 (0.025)
Mechanical Properties	Test norm	Unit	Value
Bond Strength (Helical Coil) MW-35 @ 25°C	ASTM D-2519	lb (kg)	72 (33)
Bond Strength (Helical Coil) MW-35 @ 155°C	ASTM D-2519	lb (kg)	15 (6.8)
Bond Strength (Helical Coil) MW-35 @ 180°C	ASTM D-2519	lb (kg)	9 (4.1)
Electrical Properties	Test norm	Unit	Value
Dissipation Factor @ 25°C tan delta	ASTM D-150	%	0.55
Dissipation Factor @ 105°C tan delta	ASTM D-150	%	0.53
Dissipation Factor @ 130°C tan delta	ASTM D-150	%	0.81
Dissipation Factor @ 155°C tan delta	ASTM D-150	%	1.53
Dissipation Factor @ 180°C tan delta	ASTM D-150	%	1.05
Dissipation Factor @ 200°C tan delta	ASTM D-150	%	0.52
Dielectric Strength, Short Time	*Historical data	V/mil (kV/mm)	>3000 (118.1)*
Thermal Properties	Test norm	Unit	Value
Thermal Conductivity		W/m·K	0.2
Thermal Index, MW-35C	ASTM D3251, Twisted Pairs	°C	197
Thermal Index, MW-35C	ASTM D3145, Helical Coils	°C	205
Thermal Index, MW-16C	ASTM D3251, Twisted Pairs	°C	231

### Health and safety

Safety Data Sheets defining the known hazards and describing safety precautions appropriate for this product are available upon request from Von Roll USA, Inc., Schenectady, NY, (518) 344-7100 and/or [www.vonroll.com](http://www.vonroll.com). Similar information for solvents and other chemicals to be used with this product may be obtained from the appropriate supplier and used accordingly. We recommend following all hygiene and safety standards while processing material.

### Liability

The information on this data sheet is to be understood as a guideline and has general information. It is not binding for Von Roll and it justifies in no case any liability. Von Roll reserves the right to change the information at any time. The product properties set forth in this data sheet are based on the results of testing of typical material produced by the affiliated companies of Von Roll Holding Ltd. (underneath referred as Von Roll). Some variation in product properties is typical. Comments or suggestions relating to any subject other than product properties are offered only to call the end-user's or other person's attention to considerations which may be relevant in the independent determination of the use and/or manner of use of product. Von Roll does not claim or warrant that the use of its product will have the results described in this data sheet or that the information provided is complete, accurate or useful. The user should test the product to determine its properties and its suitability for the intended use. Von Roll expressly disclaims any liability for any damage, harm, injury, cost or expense to any person resulting directly or indirectly from that person's reliance on any information contained in this data sheet. Nothing contained in this data sheet constitutes representation or warranty as to any matter whatsoever. Von Roll makes no warranties whatsoever in this data sheet, expressed or implied, including any implied warranty of fitness for a particular use or purpose. Von Roll shall in no event be liable for incidental, exemplary, punitive or consequential damages