

Technical Data Sheet

Resin

PERMAFIL® 74035

- High thixotropic index for good penetration and retention
- High film build achieved with single process
- Excellent chemical resistance; ideal for harsh environments
- Low extractables in NEMA RE-2 testing; useful in hermetic applications
- Low volatility/reduced odor; reduces OSHA and EPA concerns
- UL system recognition up to 180°C

Description

PERMAFIL® 74035 is an extremely versatile, single component catalyzed epoxy resin for use in global VPI of electric motor insulation systems up to 7.2 kV or as an over dip for environmental protection. This high-performance epoxy resin has improved long term electrical performance compared to similar formulations. The high flash point allows for use in either VPI or dip tank applications. Its stable nature, good film formation, and ease of use, along with its good electrical properties, make it an excellent choice for many different applications.

Application

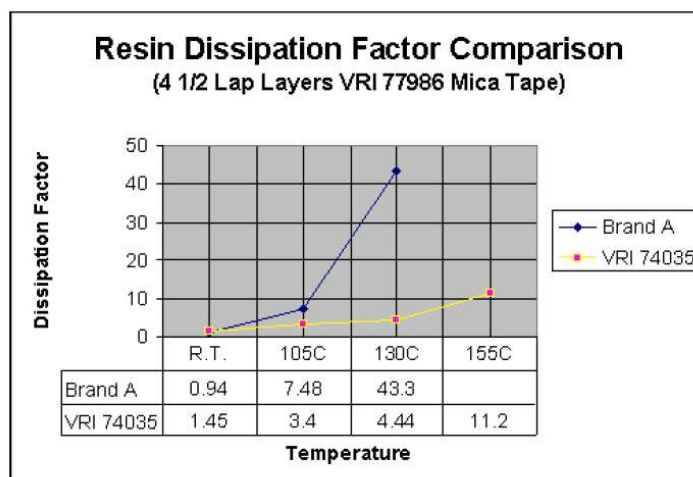
PERMAFIL® 74035 is very resistant to most chemicals and has very low moisture absorption. It is widely used in both OEM and motor repair facilities where its properties make it ideal for marine, chemical, paper mill and hermetic applications. Its thixotropic nature results in an excellent retention in the coil as well as an average 0.003" to 0.004" build on the surface of the unit. Although normally used in VPI process equipment, it is stable under normal conditions at room temperature and can be used in standard dip tank equipment. 74035 epoxy resin is often used in conjunction with our MICA MAT® mica tapes in systems for medium voltage motors up to 7.2kV design. It is also an excellent secondary VPI treatment of high voltage machines up to 15kv when using a resin rich insulation system. It has been successfully used in that application for many years. PERMAFIL® 74035 offers good bond strength to secure wedges and blocking materials and is compatible with corona protection systems. In addition, its excellent resistance to moisture, chemicals and other contaminants assures extended insulation performance in harsh environments.

Processing

PERMAFIL® 74035 resin can be used in conventional or automated dip and bake process and in VI or VPI equipment. For suggested cycle times and process specifics, please contact Von Roll USA, Inc. Suggested Cure Cycle: 4 - 6 hours at 150°C -165°C (302°F-329°F). Chemical resistance can be improved by longer cure times. These times apply to small units. For larger equipment, the time for the part to reach the desired curing temperature should be added to these suggested cure times. When using thixotropic and/or high build resins, it is important to clear air/vent ducts prior to placing the treated unit into the oven for curing. In the case of small diameter vent ducts, you may need to squeeze the bore and external frame in addition to blowing the vents ducts out with air.

Physical Properties	Test norm	Unit	Value
Viscosity Brookfield, 25°C (77°F)*	2.5 rpm, in service resin	cps	4,000 – 8,000
Viscosity Brookfield, 25°C (77°F)*	20 rpm, in service resin	cps	2,000 – 3,000
Gel Time, 150°C	Sunshine	minutes	10 - 12
Thixotropic Index			3 - 4
Total weight		lb/gal (kg/gal)	9.2 (4.2)
Volatile Content	ASTM D6053	lb/gal (kg/gal)	1.1 (0.50)
Flash Point	Pensky Martins Closed Cup	°C (°F)	> 99 (210)
Specific Gravity, 25°C (77°F)			1.11
Film Build on steel (average)		mils (mm)	3.5 (0.09)
Mechanical Properties	Test norm	Unit	Value
Bond Strength, MW-35, 25°C	Helical Coil, ASTM D2519	lb (N)	42 (186)
Bond Strength, MW-35, 130°C	Helical Coil, ASTM D2519	lb (N)	10 (44)
Bond Strength, MW-35, 155°C	Helical Coil, ASTM D2519	lb (N)	7 (31)
Bond Strength, MW-35, 180°C	Helical Coil, ASTM D2519	lb (N)	5 (22)
Thermal Properties	Test norm	Unit	Value
Glass Transition Temperature, T _g	DMA	°C (°F)	86 (187)
Coefficient of Thermal Expansion, CTE	Above T _g	ppm/°C	>190
Electrical Properties	Test norm	Unit	Value
Dissipation Factor, tan delta, 25°C	ASTM D150	%	0.15
Dielectric Strength, short time	ASTM D115	volts/mil (kV/mm)	>3,000 (121)

* Viscosity of newly manufactured resin is higher and will settle out once in service. Typical ranges shown.



Average helical coil bond strength after 168 hour immersion

R.T.	155°C	R.T.	155°C	R.T.	155°C	R.T.	155°C
Control		20% Sodium Sulfate		30% Hydrochloric Acid		20% Potassium Chloride	
68.7	7.6	29.7	7.6	55	8.5	35.9	9.1
Stock Acidic		White Liquor		Black Liquor		Green Liquor	
30.6	6.8	31.7	6.8	43.3	7.8	29.3	6
30% Sulfuric Acid		20% Ammonium Nitrate		20% Ammonium Sulfate		10% Sodium Chloride	
37.3	7.4	69.8	7.3	62.6	7.5	52.3	6.3
20% Muriate of Potash		6% Boric Acid		15% Potassium Sulfate			
34.7	8	42.9	7.4	46.1	7.6		

Packaging

PERMAFIL® 74035 is available in 5-gallon pails, 55-gallon drums, 275-gallon tote containers.

Storage conditions – Shelf life

The shelf life for PERMAFIL® 74035 resin can be expected to stay within its specified gel time limits when stored for up to 12 months at 77°F (25°C). In normal use, shelf life is indefinite with adequate addition of fresh material. For process purposes in VPI equipment, the suggested storage temperature is 68°F (20°C).

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. 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 and the chart above is to be understood as a guideline and has general information. It is not binding for VR and it justifies in no case any liability. VR 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 or fitness for a particular use or purpose. Von Roll shall in no event be liable for incidental, exemplary, punitive or consequential damages.