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 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 contaminates 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 squeegee the bore and external frame in additional to blowing the vents ducts out with air.

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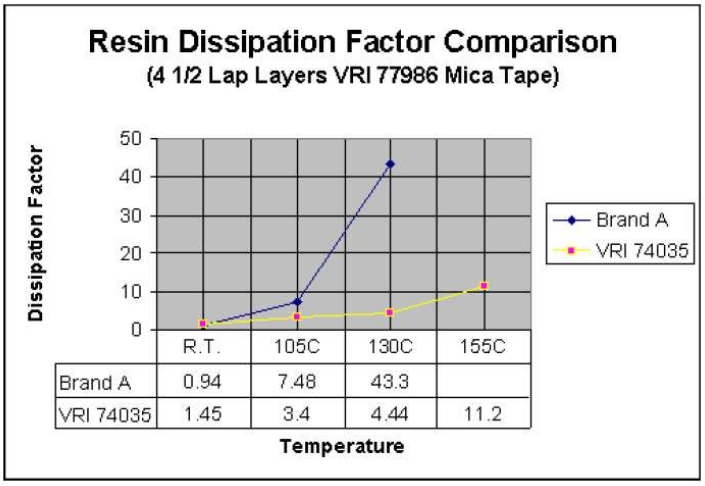
Physical Properties	Test norm	Unit	Value
Viscosity Brookfield, 25°C (77°F)*	2.5 rpm, in service resin	cps	4,000 – 8,000
Viscosity Brookfield, 25°C (77°F)*	20 rpm, in service resin	cps	2,000 – 3,000
Gel Time, 150°C	Sunshine	minutes	10 - 12
Thixotropic Index			3 - 4
Total weight		lb/gal (kg/gal)	9.2 (4.2)
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, 25ºC	Helical Coil, ASTM D2519	lb (N)	42 (186)
Bond Strength, MW-35, 130ºC	Helical Coil, ASTM D2519	lb (N)	10 (44)
Bond Strength, MW-35, 155ºC	Helical Coil, ASTM D2519	lb (N)	7 (31)
Bond Strength, MW-35, 180ºC	Helical Coil, ASTM D2519	lb (N)	5 (22)
Thermal Properties	**Test norm**	**Unit**	**Value**
Glass Transition Temperature, T_g	DMA	ºC (ºF)	86 (187)
Coefficient of Thermal Expansion, CTE	Above T_g	ppm/ ºC	>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.



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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 77ºF (25ºC). In normal use, shelf life is indefinite with adequate addition of fresh material. For process purposes in VPI equipment, the suggested storage temperature is 68ºF (20ºC).

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