

Technical Data Sheet

Secondary Insulation

Epoxylite[®] E 478 LV

Single-Component Epoxy VPI Resin

EpoxyLite® E 478 LV

Product Description

EpoxyLite® E 478 LV is a single-component, heat-cured, 100% solids epoxy impregnating resin.

Areas of Application

Impregnation of medium voltage motors and generators (< 7 kV) using uncatalyzed tapes as well as random wound motors

Features and Benefits

- The industry standard for the medium voltage power generation industry and Navy and commercial rewinding operations
- Chemical resistant for operation in corrosive environments
- Refrigerant-resistant for hermetic service
- No separate catalyst required
- UL Recognized Insulation Systems up to Class 180

Application Methods

- Vacuum-Pressure Impregnation
- Vacuum Impregnation

Transportation / Storage

Store below 25°C / 77°F in a dry controlled environment out of direct sunlight. This material should be suitable for use stored under these conditions in the original sealed containers for twelve (12) months from the date of shipment.

Refrigeration at 5°C / 41°F is recommended for long term storage.

See ELANTAS PDG Technical Bulletin *TI-4002 - VPI Epoxy Resin Maintenance* for additional information.

Mix thoroughly before use.

Health / Safety

Refer to the Material Safety Data Sheet.

See ELANTAS PDG Technical Bulletin *TI-100 - Handling Precautions for Epoxy Resins* for additional information.

Typical Properties of Material as Supplied

Property	Conditions	Value	Units
Viscosity	25°C / 77°F	900 - 2,200	cP
Weight per Gallon	25°C / 77°F	9.3 – 9.7	pounds
Sunshine Gel Time	150°C / 302°F	4 - 6	minutes
Flash Point	ASTM D93	> 94 > 201	°C °F
Volatile Organic Content	ASTM D 6053	0.3 ^[1]	pounds/gallon

^[1] VOC test methods and limits vary widely by regulatory jurisdiction and product application. The value above was obtained by curing a thin film under specific laboratory conditions (2 grams - 1 hour - 150°C). Contact your ELANTAS PDG representative regarding alternate methods.

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Application / Curing Schedule

See ELANTAS PDG Processing Guides for Vacuum Pressure Impregnating (VPI) Epoxy Resins - PG-104 (Wet Vacuum), PG-105 (Dry Vacuum).

NOTE: While preheating may be used to set tapes, remove moisture and stress-relieve magnet wire, units should be allowed to cool to room temperature before immersion to minimize bodying of the resin.

Cure impregnated units for 6 hours at 149°C / 300°F - or - 4 hours at 163°C / 325°F

The cure schedules above are based on time after the unit reaches the specified temperature and are recommendations only. The user is responsible for determining the optimum cure conditions for his application.

Typical Mechanical Properties

Property	Test Method	Conditions	Value	Units
Shore Hardness	ASTM D2240	25°C / 77°F	D 85	
Helical Coil Bond Strength over MW 35	ASTM D2519	25°C / 77°F 150°C / 302°F	44 9	pounds pounds
Glass Transition Temp.	ASTM D3418	DSC	92	°C
Coefficient of Thermal Expansion	ASTM E831	Below Tg Above Tg	70 210	ppm / °C ppm / °C
Freon Extractable Material	NEMA RE-2	R-22	< 1.0	%

Typical Electrical Properties

Property	Test Method	Conditions	Value	Units
Dielectric Strength	ASTM D149	25°C / 77°F - 0.3 mils	4200	volts/mil
Dielectric Strength	ASTM D149	25°C / 77°F - 0.3 mils After 24 hours in water	3800	volts/mil
Volume Resistivity	ASTM D257	25°C / 77°F	> 1 x 10 ¹⁶	ohm-cm
Dissipation Factor	ASTM D150	1 kHz – 25°C / 77°F 1 kHz – 100°C / 212°F 1 kHz – 150°C / 302°F	0.004 0.01 0.16	
Dielectric Constant	ASTM D150	1 kHz – 25°C / 77°F 1 kHz – 100°C / 212°F 1 kHz – 150°C / 302°F	3.3 3.5 4.7	

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Underwriters Laboratories Recognition (ELANTAS File E75225)

Wire Construction	Helical Coil	Twisted Pair
NEMA MW16	Class 200	Class 220
NEMA MW35	-	Class 180

UL Recognized Insulation Systems (ELANTAS File E87039)

Thermal Class	System
Class 155	MV-3, Dash 2 F-5
Class 180	Dash 2 H-6, Dash 2 H-7

The above properties are typical values and are not intended for specification use.

ELANTAS PDG, Inc. warrants the chemical composition of its products within stated tolerances, but does not guarantee that a product will be appropriate for any particular application. Any recommendation, performance of tests or suggestion is offered merely as a guide and is not a substitute for a thorough evaluation by the user. No representative of ELANTAS PDG, Inc. has the authority to offer a warranty that a product will perform satisfactorily in manufacturing a product and no such representation should be relied upon.