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TECHNICAL BULLETIN

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PRODUCT INFORMATION

ULTIMEG 2002T
SINGLE COMPONENT
HEAT CURE EPOXY
V.P.I APPLICATION
MEDIUM BUILD
SOLVENTLESS
"0" V.O.C
CLASS H (180°C)
UL FILE NUMBER E220579, E321249

ULTIMEG 2002T SOLVENTLESS IMPREGNATING EPOXY RESIN

GENERAL DESCRIPTION

ULTIMEG 2002T is a solventless, single component, epoxy impregnating resin, which gives 100% filled windings with exceptional high bond strengths at all operating temperatures up to Class H (180°C). The system is designed to give excellent penetration and retention in taped windings. The cured product exhibits exceptional mechanical and electrical properties throughout its working temperature range together with a high level of performance in its resistance to chemicals and moisture. Other benefits featured are good heat transfer characteristics, no flash point, and excellent tank stability.

APPLICATION

A high performance, zero VOC resin designed for vacuum pressure impregnation of random machines with windings rated up to 7 kV. The resin achieves film builds of 50-100µM, which gives excellent chemical resistance for its use on equipment in chemical plants, offshore and marine locations, and other difficult environments.

SPECIFICATION

VISCOSITY	Brookfield viscometer @ 25°C	30 - 45 poise
GEL TIME	8 grms @ 165°C	5 - 10 mins
SPECIFIC GRAVITY	@ 25°C	1.13 - 1.17
SHELF LIFE	@ 20°C	12 months

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WORKSHOP PRACTICE

TYPICAL VPI PROCESSES FOR ULTIMEG 2002T

		LV	Field coils, armatures & 3.3kV	6.6kV
Viscosity		As supplied		
Resin temperature for storage - ideal	°C	16-18	16-18	16-18
Resin temperature for processing	°C	>16	>18	>20
Component preheat temperature if drying is required	°C	-	70-80	>90
Preheat time	h	-	6-8	8-12
Dry vacuum level	mbar	1	<0.5	<0.5
Dry vacuum time	h	0.5	1.5	2
Component temperature before impregnation	°C	-	35-50	40-50
Wet vacuum time	h	0.25	0.25	0.25
pressure level	bar	>3.0	5-6	5-6
pressure time	h	0.5	2.0	3.0
Drain time	h	0.5	0.5	0.5
oven temperature	°C	180	180	180
Component temperature above 150°C	h	3-4	3-4	3-4

Notes

When the resin is introduced or topped up into the tank it is advisable to run a process prior to impregnation to ensure air is removed. It might be necessary to run this process more than once until foaming is minimised.

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The above processes are typical only and it is possible to adjust parameters depending on component design or if the VPI equipment does not allow sufficiently low vacuum or high pressure processing.

It is possible to achieve satisfactory impregnation by increasing the resin temperature and the component temperature before impregnation.

When warming the resin, only minimal quantities of material, sufficient to impregnate, should be gently warmed to a maximum of 40°C. At temperatures above 40°C the system is less thermally stable.

After processing with preheated components, ideally the resin should be cooled to 16 - 18°C.

On long term storage if the temperature drops below 10°C there is a minimal risk of crystallization. The material thickens and has a granular nature. If suspected gently warm with stirring to 40°C. TAKE CARE AS ABOVE.

If good tank practices are observed tank stability will be satisfactorily maintained by replenishing the volume of resin in the tank every 12-18months.

AEV offer a tank monitoring service to ensure the material is kept in the requisite condition.

CURE SCHEDULE

Cure times are dependant on component size and design, together with the oven efficiency. The figures given are typical.

TIME (hours)	12-16	6-8	3-4	1-2
TEMPERATURE (°C)	130	140	150	165

Shorter cure schedules are possible using infrared or current heating.

To maximise properties a cure of 24 hours @ 150°C or an additional post cure of 8 hours at 180°C is recommended.

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PROPERTIES OF CURED RESIN

BOND STRENGTH	ASTM D2519	20°C	37kg
		150°C	8.3kg
THERMAL ENDURANCE	UL1446	File No.E220579 20,000 hours	180°C
UL SYSTEMS	UL1446	File No.E321249	AEV155-1 AEV180-1 AEV180-2
DIELECTRIC STRENGTH	IEC243	At 50Hz & 20°C	120 kV/mm
	50µM film	At 50Hz & 150°C	55 kV/mm
		24hr water immersion	65 kV/mm
TAN θ	IEC 455-2	At 50Hz & 20°C	<0.01
VOLUME RESISTIVITY	IEC 93	20°C.	>14log Ohm Cm
DIELECTRIC CONSTANT	IEC250	At 50Hz	4.1
COMPARITIVE TRACKING INDEX	IEC112	Proof test	>550V
THERMAL CONDUCTIVITY	VDE0304		0.22W/MK
SHORE D-HARDNESS	DIN53505		87

ASSOCIATED PRODUCTS

ULTIMEG 2000/720 MASKING GREASE
ULTIMEG 2220GP SOLVENTLESS IN-FILL PUTTY
ULTIMEG 2002HVR SOLVENTLESS IMPREGNATING EPOXY RESIN
ULTIMEG 2002XT SOLVENTLESS IMPREGNATING EPOXY RESIN

HEALTH AND SAFETY
Refer to Material Safety Data Sheet available.

PACKAGING
5kg, 25kg, 230kg

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