Technical Data Sheet

Electrical Insulation Materials

CONATHANE® EN-20

Two-Component Polyurethane Potting Compound

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CONATHANE® EN-20

Product Description

CONATHANE® EN-20 is an unfilled, two-component, room temperature curing, 100%-solids polyurethane system.

Areas of Application

Potting and encapsulation of electrical and electronic assemblies

Ideal for use in potting transformers, coils, reed and mercury switches, inductors, solid-state ignition systems, voltage regulators, ballasts, microcircuits, rectifiers and printed circuit assemblies

Features and Benefits

- Excellent electrical properties
- Low viscosity
- Low exotherm and low shrinkage
- Thermal shock resistant
- Room temperature or low temperature cure
- Low stress buildup on embedded components
- Excellent moisture resistance
- Convenient 1:2 volume mix ratio

Application Methods

- Hand-mix Bench Potting / Casting
- Cartridge-dispensed Potting / Casting
- Meter-mix Bench Potting / Casting
- Meter-mix Vacuum Potting / Casting

Transportation / Storage

Store at 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.

Failure to store the product as recommended above may lead to deterioration in product performance.

This product is sensitive to moisture and atmospheric humidity. Containers, once opened, should be used immediately or blanketed with dry air or nitrogen (CONAP® Dri-Purge) before resealing.

Mix individual components thoroughly before use.

Health / Safety

Refer to the Safety Data Sheet.

Typical Properties of Material as Supplied

Property	Conditions	Value		Units
		CONATHANE® EN-20 Part A Urethane Prepolymer	**CONATHANE® EN-20 Part B Curative**	
Viscosity	25°C / 77°F	16,000 – 28,000	460 – 600	cP
Appearance		Clear Amber	Clear Amber	
Weight per Gallon	25°C / 77°F	9.5	8.0	pounds
Flash Point	ASTM D93	> 94 > 201	> 94 > 201	°C °F
Mix Ratio	Parts by weight Parts by volume	100 100	170 200	

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Typical Properties of Mixed Materials

Property	Conditions	Value	Units
Viscosity (initial)	25°C / 77°F	1200	cP
Pot Life	250 g – 25°C / 77°F 250 g – 60°C / 140°F	120 15	minutes minutes

Regulatory Information

Property	
RoHS Compliance	CONATHANE® EN-20 Urethane Prepolymer and CONATHANE® EN-20 Curative comply with Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 (RoHS 2.0) as amended 31 March 2015.

Application / Curing Schedule

Mix Resin and Hardener in the ratio specified above until homogeneous. If hand mixing, degas at 1-5 mm Hg vacuum before use. The two components should be mixed thoroughly in metal or glass containers using metal or glass stirrers. Do not use paper or wooden containers or implements in mixing as they may introduce moisture into the system.

Cure 4 hour at 80°C and 7 days at 25°C / 77°F

– **OR** –

16 hours at 80°C / 176°F and 4 days at 25°C / 77°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 their application.

Typical Electrical Properties

Property	Test Method	Conditions	Value	Units
Dielectric Strength	ASTM D149	25°C / 77°C – 1/16”	650	volts / mil
Dielectric Constant	ASTM D150	1 kHz – 25°C / 77°F 1 kHz – 105°C / 157°F	4.9 4.6	
Dissipation Factor	ASTM D150	1 kHz – 25°C / 77°F 1 kHz – 105°C / 157°C	0.11 0.03	
Volume Resistivity	ASTM D257	25°C / 77°F 130°C / 266°F	9.9×10^{13} 4.1×10^{10}	ohm-cm ohm-cm
Surface Resistivity	ASTM D257	25°C / 77°F 130°C / 266°F	$> 6.0 \times 10^{17}$ 8.5×10^{11}	ohms / sq. ohms / sq.

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Typical Mechanical Properties

Property	Test Method	Conditions	Value	Units
Shore Hardness	ASTM D2240	25°C / 77°C	A 60	
Specific Gravity		25°C / 77°C	1.03	
Tensile Strength	ASTM D412	25°C / 77°C	400	psi
Elongation	ASTM D412	25°C / 77°C	150	%
Coefficient of Thermal Expansion	ASTM D696		240	ppm / °C
Compression Set	ASTM D395 Method B	25°C / 77°C	6	%
Tear Strength	ASTM D624	25°C / 77°C	28	pli
Thermal Conductivity	ASTM C177		0.2	W / m·K
Thermal Shock	MIL-I-16923E	-70°C to 130°C	pass 10	cycles
Water Absorption	ASTM D570	25°C / 77°F – 24 hours 25°C / 77°F – 7 days	0.2 0.3	% %

Heat Stability – After exposure at 130°C / 266°F

Property	Conditions	Before	After	Units
Weight Loss	500 hours 1000 hours	- -	0.4 0.6	% %
Shore Hardness	500 hours 1000 hours	A 60 A 60	A 57 A 61	

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