

Technical Data Sheet

Electronic & Engineering Materials

CONATHANE® EN-1554

Two-Component Polyurethane Potting Compound & Encapsulant

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CONATHANE® EN-1554

Product Description

CONATHANE® EN-1554 is an unfilled, two-component, room temperature curing, 100%-solids polyurethane system

Areas of Application

Polyether-based system primarily intended for use as a molding, encapsulating, and potting compound for harness breakouts, watertight electrical connectors, cables and cable end seals.

Other applications include casting and molding of mechanical parts and lining material for pumps, chutes and conveyors requiring outstanding abrasion resistance.

Features and Benefits

- Conforms to MIL-M-24041C
- Excellent hydrolytic stability
- Thermal shock resistant
- Excellent resistance to oils, gasoline, JP-4 fuel and seawater
- Non-nutrient for fungus
- Cartridge-friendly 3:1 volumetric ratio

Application Methods

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

Transportation / Storage

Store at or 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.

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.

CONATHANE® EN-1554 Part A may crystallize upon storage or during shipment. If this has occurred, heat to 60°C, mix thoroughly and cool to room temperature before processing.

Health / Safety

Refer to the Safety Data Sheet.

Typical Properties of Material as Supplied

Property	Conditions	Value		Units
		CONATHANE® EN-1554 Part A Urethane Prepolymer	CONATHANE® EN-1554 Part B Curative	
Viscosity	25°C / 77°F	20,000	15,000	cP
Specific Gravity	25°C / 77°F	1.1	1.1	
Appearance		amber	amber or black	
Mix Ratio	Parts by weight Parts by volume	100 100	33 33	
Flash Point	ASTM D93	> 94 > 201	> 94 > 201	°C °F

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Typical Properties of Mixed Materials

Property	Conditions	Value	Units
Viscosity (initial)	25°C / 77°F	18,000	cP
	60°C / 140°F	2,400	cP
	82°C / 180°F	1,800	cP
Application Life	25°C / 77°F	120	minutes
	60°C / 140°F	60	minutes
	82°C / 180°F	40	minutes

Application / Curing Schedule

Mix the CONATHANE® EN-1554 Part A and EN-1554 Part B in the ratio specified above until homogeneous. Components may be preheated up to 82°C if reduced viscosity is required. If hand mixing, degas at >27 in. Hg vacuum before use.

EN-1554 potting compound and encapsulant may be applied by ordinary casting techniques or by injection molding techniques. For most injection molding applications, injection pressures of 40 – 120 psi are generally used. If molding compound is injected at elevated temperatures (60°C / 140°F to 82°C / 180°F), lower injection pressures (10 – 30 psi) should be used to prevent air from being entrapped in the compound.

Best results are typically obtained when the part being molded and the mold itself are approximately 10 - 20°F (5 – 10°C) warmer than the compound being injected. It is recommended that injection holes be located in the bottom of the mold and air bleed holes located in the top of prevent air pockets in the mold.

Cure 3 weeks at 25°C / 77°F – **or** – 16 hours at 82°C / 180°F – **or** – 8 - 12 hours at 100°C / 212°F

Demold after 36 - 48 hours at 25°C / 77°F – **or** – 3 – 4 hours at 82°C / 180°F – **or** – 1 – 2 hours at 100°C / 212°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.

To approve adhesion three primers have been developed for use with the EN-1554. CONAP® AD-1146 is recommended for metals, CONAP® PR-1167 for neoprene, and CONAP® AD-1161 for polyvinyl chloride.

Molds may be coated with CONAP® MR-5002 mold release to ensure easy removal of cast parts.

Typical Mechanical Properties

Property	Test Method	Conditions	Value
Appearance	Visual	25°C / 77°F	amber or black
Specific Gravity	ASTM D792	25°C / 77°F	1.09
Shore Hardness	ASTM D2240	25°C / 77°F	A 87
		after 24 h @ 135°C / 275°F	A 84

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Typical Mechanical Properties (continued)

Property	Test Method	Conditions	Value	Units
Compression Set	ASTM D395	Method B	50	%
Tensile Strength	ASTM D412	25°C / 77°F 300% modulus	4,500 1,100	psi psi
Tensile Strength	ASTM D412	after 2 weeks in water @ 70°C / 158°F	11	% loss
Ultimate Elongation	ASTM D412	25°C / 77°F	550	%
Tear Strength	ASTM D624	25°C / 77°F	350	pli
Volumetric Shrinkage	MIL-M-24041C		4.5	%
Moisture Absorption	MIL-M-24041C	24 h @ 93°C / 200°F	0.33	%
Water Resistance	Weight loss	after 3 weeks in water @ 100°C / 212°F	0.22	%
Fungus Resistance	MIL-E-5272C		non-nutrient	
Low Temperature Flexibility	MIL-M-24041C	-54°C / -65°F	no blistering, cracking or loss of adhesion cycles	
Peel Strength	Monel® primed with CONAP® AD-1146		140	piw
	Neoprene primed with CONAP® PR-11167		30	piw
	PVC Primed with CONAP® AD-1161		45	piw

Typical Electrical Properties

Property	Test Method	Conditions	Value	Units
Dielectric Strength	ASTM D149	50 mil @ 25°C / 77°F	600	volts / mil
		125 mil @ 25°C / 77°F	310	volts / mil
Dielectric Constant	ASTM D150	1 kHz @ 25°C / 77°F	6.6	
		1 MHz @ 25°C / 77°F	5.2	
Dissipation Factor	ASTM D150	1 kHz @ 25°C / 77°F	0.04	
		1 MHz @ 25°C / 77°F	0.06	
Volume Resistivity	ASTM D257	25°C / 77°F	5.1 x 10 ¹²	ohm-cm
		121°C / 250°F	6.3 x 10 ¹⁰	ohm-cm
Surface Resistivity	ASTM D257	25°C / 77°F	2.5 x 10 ¹²	ohms / sq.
		121°C / 250°F	2.5 x 10 ¹⁰	ohms / sq.
Insulation Resistance	MIL-M-24041C	25°C / 77°F	580,000	megohms
		121°C / 250°F	2,400	megohms
		after 10 d @ 95% RH	15,000	megohms

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Typical Electrical Properties (continued)

Property	Test Method	Conditions	Value	Units
Arc Resistance	MIL-M-24041C	25°C / 77°F	120	seconds
High Potential Resistance	MIL-M-24041C	2,000 volts RMS @ 60 Hz	no breakdown	
Flame Resistance	MIL-M-24041C	55 amps DC	no ignition	

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

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