Technical Data Sheet

Electronic & Engineering Materials

CONATHANE® EN-1556

Two-Component Polyurethane Potting Compound & Encapsulant

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CONATHANE® EN-1556

Product Description

CONATHANE® EN-1556 is an unfilled, two-component, room temperature curing, 100%-solids polyurethane system.

It consists of CONATHANE® EN-1556 Part A Urethane Prepolymer and CONATHANE® EN-1556 Curative.

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
- Non-MbOCA curing system
- 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 20 - 30°C / 68 - 86°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. Cartridge packaging may adjust shelf life of product.

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-1556 Part A and EN-1556 Part B 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-1556 Part A Urethane Prepolymer	**CONATHANE® EN-1556 Part B Curative**	
Viscosity	25°C / 77°F	18,000	3,000	cP
Specific Gravity	25°C / 77°F	1.05	1.03	
Appearance		Amber	Amber, Black	
Mix Ratio	Parts by weight Parts by volume	100 100	33 33	

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Typical Properties of Mixed Materials

Property	Conditions	Value	Units
Viscosity (initial)	25°C / 77°F	10,040	cP
Work Life (250,000 cP)	2 lbs. @ 25°C / 77°F 2 lbs. @ 60°C / 140°F	60 – 70 15 – 20	minutes minutes

Application / Curing Schedule

Mix the EN-1556 Part A and EN-1556 Part B in the ratio specified above until homogeneous. Components may be preheated up to 60°C if reduced viscosity is required. If hand mixing, degas at >27 in. Hg vacuum before use.

EN-1556 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 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 10–14 days at 25°C / 77°F **– or –** 16 hours at 82°C / 180°F **– or –** 8-10 hours at 100°C / 212°F

Demold after 24 hours at 25°C / 77°F **– or –** 60 minutes at 80°C / 176°F **– or –** 30 minutes 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 their application.

To improve adhesion, three primers have been developed for use with the EN-1556. 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.

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Typical Mechanical Properties

Property	Test Method	Conditions	Value	Units
Appearance	Visual	25°C / 77°F	amber or black	
Specific Gravity	ASTM D792	25°C / 77°F	1.05	
Shore Hardness	ASTM D2240	25°C / 77°F After 24 h @ 135°C / 275°F	A 80 A 74	
Compression Set	ASTM D395	Method B	35	%
Tensile Strength	ASTM D412	25°C / 77°F 300% modulus	5,000 1,400	psi psi
Ultimate Elongation	ASTM D412	25°C / 77°F	400	%
Tear Strength	ASTM D624	25°C / 77°F	200	pli
Volumetric Shrinkage	MIL-M-24041C		3.6	%
Moisture Absorption	MIL-M-24041C	24 h @ 93°C / 200°F	2.1	%
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	
Property degradation	Tensile strength after 2 weeks immersion in water @ 70°C / 158°F		28.6	% loss
Peel Strength	Type 316 CRES primed with CONAP® AD-1146 Monel primed with CONAP® AD-1146 Neoprene primed with CONAP® PR-11167 PVC Primed with CONAP® AD-1161		> 150 > 145 > 30 > 200	piw piw piw piw

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Typical Electrical Properties

Property	Test Method	Conditions	Value	Units
Dielectric Strength	ASTM D149	1/8" @ 25°C / 77°F	350	volts / mil
Dielectric Constant	ASTM D150	1 kHz @ 25°C / 77°F 1 MHz @ 25°C / 77°F	6.1 5.1	
Dissipation Factor	ASTM D150	1 kHz @ 25°C / 77°F 1 MHz @ 25°C / 77°F	0.03 0.06	
Volume Resistivity	ASTM D257	25°C / 77°F 121°C / 250°F	2.4×10^{12} 9.6×10^{10}	ohm-cm ohm-cm
Surface Resistivity	ASTM D257	25°C / 77°F 121°C / 250°F	5.2×10^{13} 3.5×10^{10}	ohms / sq. ohms / sq.
Insulation Resistance	MIL-M-24041C	25°C / 77°F 121°C / 250°F 10 d @ 95% RH	900,000 4,200 35,000	megohms megohms megohms
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.

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 an article and no such representation should be relied upon.

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