

**Technical Data Sheet**

**Electronic & Engineering Materials**

## **CONATHANE® EN-9 OZR**

**Two-Component Polyurethane Potting Compound & Encapsulant**

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# CONATHANE® EN-9 OZR

## Product Description

CONATHANE® EN-9 OZR is an unfilled, two-component, room temperature curing, 100%-solids polyurethane system.

It is a modified version of the CONATHANE® EN-1556 with improved ozone resistance.

## Areas of Application

Highly recommended for cable and connector potting and molding, both military and commercial, watertight electrical connectors, harness breakouts and cables.

Other applications include potting and encapsulation of modules, wire wound devices, and strain sensitive components, as well as 100% solids and solvent-based coatings for printed circuitry and components.

## Features and Benefits

- Superior hydrolytic stability
- Excellent ozone resistance
- Good handling properties
- Thermal shock resistant
- Non-MbOCA curing system
- High dielectric strength
- Low dielectric constant
- Low dissipation factor
- Non-nutrient for fungus

## Application Methods

- Hand-mix Bench 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.

CONATHANE® EN-9 OZR 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.

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## Typical Properties of Material as Supplied

Property	Conditions	Value		Units
		CONATHANE® EN-9 OZR Part A Urethane Prepolymer	CONATHANE® EN-9 OZR Part B Curative	
Viscosity	25°C / 77°F	10,500	850	cP
Specific Gravity	25°C / 77°F	0.97	1.00	
Appearance		translucent amber	amber or black	
Mix Ratio	Parts by weight	100	17.5	
	Parts by volume	100	17	

## CONATHANE® EN-9 OZR

### Typical Properties of Mixed Materials

Property	Conditions	Value	Units
Viscosity (initial)	25°C / 77°F	8,000	cP
Gel time (100,000 cP)	25°C / 77°F	42	minutes
Gel time (250,000 cP)	25°C / 77°F	60	minutes
Peak exotherm	2 lb. mass at 25°C / 77°F	55 / 130	°C / °F

### Application / Curing Schedule

Mix the CONATHANE® EN-9 OZR Part A and EN-9 OZR 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.

Cure 24 hours at 60°C / 140°F – **or** – 16 hours at 80°C / 176°F – **or** – 8 hours at 100°C / 212°F

Demold after 5 hours at 60°C / 140°F – **or** – 4 hours at 80°C / 176°F – **or** – 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.

### Typical Electrical Properties

Property	Test Method	Conditions	Value	Units
Dielectric Strength	ASTM D149	1/16" @ 25°C / 77°F	610	volts / mil
Dielectric Constant	ASTM D150	100 Hz @ 25°C / 77°F	3.0	
		1 kHz @ 25°C / 77°F	3.0	
		1 MHz @ 25°C / 77°F	2.8	
		100 Hz @ 130°C / 266°F	3.8	
		1 kHz @ 130°C / 266°F	3.8	
		1 MHz @ 130°C / 266°F	3.1	
Dissipation Factor	ASTM D150	100 Hz @ 25°C / 77°F	0.03	
		1 kHz @ 25°C / 77°F	0.03	
		1 MHz @ 25°C / 77°F	0.01	
		100 Hz @ 130°C / 266°F	0.02	
		1 kHz @ 130°C / 266°F	0.03	
		1 MHz @ 130°C / 266°F	0.06	
Volume Resistivity	ASTM D257	25°C / 77°F	3.4 x 10 <sup>15</sup>	ohm-cm
		130°C / 266°F	3.2 x 10 <sup>11</sup>	ohm-cm
Surface Resistivity	ASTM D257	25°C / 77°F	> 1.0 x 10 <sup>15</sup>	ohms / sq.
		130°C / 266°F	1.0 x 10 <sup>13</sup>	ohms / sq.

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### Typical Electrical Properties (cont.)

Property	Test Method	Conditions	Value	Units
Insulation Resistance	MIL-M-24041C	25°C / 77°F 130°C / 266°F	>2.5 x 10 <sup>13</sup> 1.7 x 10 <sup>10</sup>	ohms ohms
Arc Resistance	MIL-M-24041C	25°C / 77°F	>120	seconds
Flame Resistance	MIL-M-24041C	55 amps DC	no ignition	

### Typical Mechanical Properties

Property	Test Method	Conditions	Value	Units
Appearance	Visual	25°C / 77°F	translucent amber or black	
Specific Gravity	ASTM D792	25°C / 77°F	1.01	
Shore Hardness	ASTM D2240	25°C / 77°F	A 90	
Tensile Strength	ASTM D412	25°C / 77°F 100% modulus 300% modulus	>1,900 800 1,600	psi psi psi
Ultimate Elongation	ASTM D412	25°C / 77°F	380	%
Tear Strength	ASTM D624	25°C / 77°F	300	pli
Linear Shrinkage	MIL-M-24041C		1.0	%
Volumetric Shrinkage	MIL-M-24041C		2.0	%
Moisture Absorption	MIL-M-24041C	24 h @ 93°C / 200°F	0.57	%
Water Absorption	ASTM D570	24 h @ 25°C / 77°F	0.20	%
Fungus Resistance	MIL-E-5272C		non-nutrient	
Thermal Shock	MIL-I-16923E	-70°C to 130°C	pass 10	cycles
Compression Set	ASTM D395	Method B	50	%
Peel Strength	CRES primed with CONAP® AD-1146-C Monel primed with CONAP® AD-1147-C neoprene primed with CONAP® PR-11167 PVC Primed with CONAP® AD-1161		95 115 20 50	piw piw piw piw

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### Typical Hydrolytic Stability Properties (97°C / 95% RH)

Property	Test Method	Original	After 112 Days	Units
Shore Hardness	ASTM D2240	A 90	A 87	
Tensile Strength	ASTM D412 300% modulus	2,000 1,700	775 700	psi psi
Ultimate Elongation	ASTM D412	450	370	%
Tear Strength	Die C	280	190	pli

### Typical Heat Aging Stability Properties (100°C)

Property	Test Method	Original	After 28 Days	Units
Shore Hardness	ASTM D2240	A 90	A 89	
Tensile Strength	ASTM D412 100% modulus	2,000 825	1200 900	psi psi
Ultimate Elongation	ASTM D412	450	190	%
Tear Strength	Die C	280	250	pli

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

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