

# Derakane® 411-45

Vinyl Ester

Ashland Performance Materials

## Message:

DERAKANE 411-45 epoxy vinyl ester resin is based on bisphenol-A epoxy resin and has become an "industry standard" due to its wide range of end-use applications and ability to be used in a wide range of fabrication techniques. The raw materials used in the manufacture of this resin are listed as acceptable in FDA regulation Title 21 CFR 177.2420 for repeated use in contact with food, subject to user's compliance with the prescribed limitations of that regulation.

### APPLICATIONS AND USE

DERAKANE 411-45 resin is designed for use in fabricating FRP storage tanks, vessels, ducts and on-site maintenance projects, paticularly in chemical processing and pulp and paper operations. DERAKANE 411-45 resin is designed for ease of fabrication using hand lay-up, spray-up, filament winding, compression molding and resin transfer molding techniques, pultrusion and molded grating applications. DERAKANE 411-45 resin exhibits excellent mechanical properties over an entire service temperature range, very high damage resistance, down to -50°C (-58°F).

General Information			
Features	Good corrosion resistance		
	alkali resistance		
	acid resistance		
	Good toughness		
	Compliance of Food Exposure		
Uses	Container		
	Water tank		
Agency Ratings	FDA 21 CFR 177.2420		
Forms	Liquid		
Processing Method	Filament power winding		
	pultrusion		
	Hand coating		
	Resin transfer molding		
	Compression molding		
Physical	Nominal Value	Unit	Test Method
Density	1.12	g/cm <sup>3</sup>	ISO 1183
Solution Viscosity	495	mPa · s	
Styrene Content	45	%	
Volume Shrinkage	8.3	%	
Hardness	Nominal Value	Unit	Test Method
Barcol Hardness	35		ASTM D2583
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			
--	3310	MPa	ASTM D638
--	3300	MPa	ISO 527-2

Tensile Strength			
--	82.0	MPa	ASTM D638
--	81.0	MPa	ISO 527-2
Tensile Elongation (Yield)	5.0 - 6.0	%	ASTM D638, ISO 527-2
Flexural Modulus	3100	MPa	ASTM D790, ISO 178
Flexural Strength	124	MPa	ASTM D790, ISO 178
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load (1.8 MPa, Unannealed)	102	°C	ASTM D648, ISO 75-2/A
Additional Information	Nominal Value	Unit	

Properties of clear casting at 25°C.

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#### Recommended distributors for this material

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