

# DERAKANE™ RESINS FOR FRP

CORROSION RESISTANCE FOR HYDROMETALLURGY



**INEOS Composites**

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# INEOS Composites' Derakane™ epoxy vinyl ester resins for mineral recovery process equipment.

## Description

The process chemicals and the general environment found in mineral recovery operations are among the most corrosive of any industry.

Traditional materials of construction, such as carbon steel, stainless steel, other exotic alloys and masonry, are vulnerable in these harsh environments.

Today, more and more design and process engineers and material specifiers are calling for fiberglass-reinforced plastic (FRP) composites for both new and replacement equipment in their mineral recovery operations.

Derakane™ epoxy vinyl ester resins have been specified for FRP equipment since the early 1950's to combat the harsh metal extraction processes associated with copper, cobalt, nickel, lithium, uranium, and rare earth mineral extraction.

## FRP Equipment Using Derakane Corrosion-Resistant Resins Provides:

- Corrosion-resistant
- Flame retardant
- High strength-to-weight ratios
- Lower cost compared to metal alloys
- Good electrical insulation properties
- Smooth, one-piece-mold interior surfaces
- Practically maintenance free

## Applications

- Chemical storage tanks
- Cooling towers
- Counter current decanters (CCD)
- Duct, fans and scrubbers
- Electrostatic precipitators
- Electrowinning cells
- Extractors
- Flotation columns
- Fume stacks
- Launderers
- Piping
- Precipitators
- Process vessels
- Settling tanks
- Stack liners
- Troughs

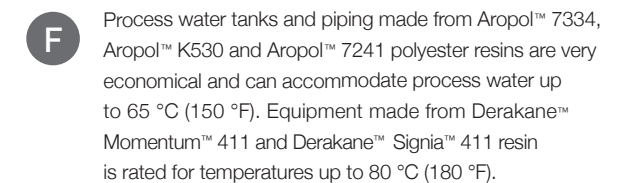
## Other Applications Include

- Beams
- Breechings
- Chutes and elevators
- Cell covers
- Dust control systems
- Floor grating
- Ladders
- Pumps and valves
- Stairs, railings and grating
- Structural supports
- Siding and roofing
- Tank covers





## EPOXY VINYL ESTER RESINS FOR MINERAL PROCESSING EQUIPMENT



Tanks and Vessels

Tanks and vessels specified with Derakane™ resins demonstrate:

- Outstanding resistance to caustics and acids
- The ability to handle a wide range of corrosive chemicals
- Excellent durability and toughness
- Chemically resistant interiors and exteriors
- Good abrasion resistance
- Easy installation – lightweight
- Low maintenance costs

Piping

Piping specified with Derakane™ resins delivers:

- Resistance to a wide range of corrosive chemicals
- Excellent durability and toughness
- Superior abrasion resistance
- Easy processing for filament wound or hand lay-up piping

Derakane™ 411 series resins have been specified for both subsurface and aboveground process piping. These resins offer excellent resistance to acid and caustic environments and can be specified for fittings, valves, pumps and pump bases.



Scrubbers, Ducts and Fume Handling Equipment

Equipment specified with Derakane™ resins provides:

- Excellent corrosion resistance
- Excellent heat resistance
- Excellent resistance to oxidizing acid environments

When corrosion resistance and flame retardancy are required for ducts, scrubbers or fume handling equipment, Derakane™ 510 series resins are recommended.

Solvent Extraction Equipment

Equipment specified with Derakane™ resins delivers:

- Excellent solvent extraction chemical resistance
- Excellent chloride resistance

Class I (ASTM E84) fire retardance capabilities with Derakane™ 510 series resins (some require antimony synergist for Class I performance).

Electrowinning Cells

Cells specified with Derakane™ resins provide:

- Superior corrosion resistance – inside and outside
- Outstanding impact resistance
- Low maintenance costs

Process Equipment, Covers, Building Panels and Grating

Equipment specified with Derakane™ resins demonstrates:

- Excellent weathering properties
- High strength-to-weight ratios
- Outstanding corrosion resistance
- Very good flame retardance
- Easy installation and low maintenance

Derakane™ Resins Include:

Epoxy Vinyl Ester Resin Series	Characteristics <sup>1</sup>	Suggested Application <sup>2</sup>
Derakane™ 411 Derakane™ Momentum™ 411 Derakane™ Signia™ 411	Corrosion-resistant to both strong acids and bases. Inherent toughness and high tensile elongation provide fabrication advantages and resistance to impact and thermal-shock damage.	Equipment where strong acids and bases are encountered and where toughness is needed.
Derakane™ 441	More heat and corrosion-resistant than Derakane™ 411.	Equipment where even more temperature and/or chemical resistance is needed versus Derakane™ 411.
Derakane™ 451	Outstanding thermal and chemical resistance to strong oxidizing acids.	Equipment where high temperature resistance and improved resistance to oxidizing environments are needed.
Derakane™ 470 Derakane™ Momentum™ 470	Exceptional thermal and chemical resistance. High retention of strength and toughness at elevated temperatures.	Equipment where high temperature resistance and improved resistance to oxidizing environments are needed. Best solvent resistance of the epoxy vinyl ester resins.
Derakane™ 510C	Flame-retardant version of the Derakane™ 411 series. Same corrosion resistance as the Derakane™ 411 series.  Class I or Class II flame retardance can be achieved.	Equipment requiring corrosion resistance and toughness, plus flame retardance.
Derakane™ 515	Class I flame retardance can be achieved without antimony synergist.	Equipment requiring higher heat resistance, corrosion resistance and toughness, in addition to flame retardance versus Derakane™ 411.

<sup>1</sup> Consult technical data sheets for each resin's flame spread rating.  
<sup>2</sup> Consult the INEOS Derakane™ Resin Selection Guide for temperature and concentration limits for specific environments.

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Derakane™ Resins

No single FRP resin can handle every kind of corrosion problem. That's why INEOS Composites has the largest variety of premium, corrosion-resistant resins in the industry.

INEOS is a leading, global supplier of corrosion resistant resins for fiber-reinforced plastics. We offer the most comprehensive line of heat resistant and flame retardant resins on the market today.

Reinforced plastic composites are used for mineral recovery operations in many types of chemical environments. Each environment requires a specific type of resin to handle the corrosive conditions.

Please email our hotline for general information, material selection guidance and resin recommendations for your specific chemical environments. More detailed application information is available from the Derakane™ Resin Selection Guide available at [ineos.com/composites](https://www.ineos.com/composites).

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