



Penncoat™ 221 Lining System

SELECTION & SPECIFICATION DATA

Type	Flake trowel applied novolac epoxy lining
Description	Penncoat 221 is a 2-component high functional novolac epoxy lining system. It is trowel-applied in 2 coats at a nominal 40 mils per coat (1 mm) thickness to achieve a full 80 mil (2 mm) build thickness. It is flake filled. It is ideal to rete and steel substrates from corrosion.
Uses	<ul style="list-style-type: none">• Chemical immersion linings• Flooring and containment areas• FGD ductwork stacks and absorber bodies
Features	<ul style="list-style-type: none">• Trowel-applied high build• Flake glass filled to reduce permeation• Sag-resistant WFT• Two-component• Shelf stable• Achieves 40 mil (1 mm) film in one pass• Very good abrasion resistance• Suitable for acids, alkalis, and salt solutions• Excellent water vapor barrier
Limitations	Not for use beyond its chemical resistance capabilities. Not suitable for oxidizing acids. Resists hydrofluoric acid, fluorosilicic acid, and hydrofluorosilicic acid. May discolor in certain chemical environments. Discoloration does not affect products performance. Consult Armor with specific questions.

INSTALLATION GUIDANCE

Reference Specification	CES-342 Penncoat Linings Installation specification
Installation Conditions	Penncoat 221 is formulated for ideal handling at 70°F (21°C). Materials and substrate should be acclimated to the air temperature prior to installation, and the air temperature should be between 50°F (10°C) and 90°F (32°C) during installation and cure.
Mixing & Application	<p>Mix Part A Base for 1 minute to loosen. Continue mixing while slowly emptying the can of hardener into the center vortex, and mix thoroughly for 3 minutes, moving the mix blade up, down and around the pail to catch all the edges. Mixed material is heavy-bodied.</p> <p>Use Penntrowel™ Epoxy Primer or Novocoat™ SC1100 Primer/Sealer on concrete under lining to minimize outgassing and pinholes. Use Pengguard™ HP Epoxy Primer on steel to hold blast profile prior to applying membrane.</p> <p>Apply in two equal-thickness passes to insure a pinhole free lining.</p>
Work Life	50°F (10°C) 55-75 minutes 70°F (23°C) 35-45 minutes 90°F (32°C) 20-30 minutes
Cleanup	Mek or xylene

CURE TIME

Temperature	Tack Free	Full Cure
50°F (10°C)	10-12 hours	72 hours
70°F (23°C)	6-7 hours	48 hours
90°F (32°C)	4-5 hours	24 hours

SAFETY

Safety	Mixes and applications of this product present a number of hazards. Read and follow the hazard information, precautions and first aid directions on the individual product labels and safety data sheets before using.
Ventilation	Provide thorough air circulation during and after application until the material has cured when used in enclosed areas.



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PACKAGING, ESTIMATING & HANDLING

Product	Code	Packaging
Penncoat 221 Basecoat Resin white	19587	1.8-gallon (6.8 l) pail
Penncoat 221 Basecoat gray	19585	1.8-gallon (6.8 l) pail
Penncoat 221 Hardener	19586	0.7-gallon (2.65 l) pail
Theoretical Coverage	1 x 2.5-gallon (9.45 l) unit of either basecoat or topcoat consists of 1 x 1.8-gal pail resin, and 1 x 0.7-gal pail hardener and will cover 100 sf (9.3 sm) per unit at 40 mils (1 mm) WFT.	
Storage & Shelf Life	<p>Maintain products in original packaging and sealed until ready for use. Estimated shelf life of components is 18-24 months when stored in a dry area at 70°F (21°C). Actual shelf life may vary with storage conditions.</p> <p>If there is any question with respect to the quality of the components check reactivity prior to use. For assistance consult with Armor.</p>	

TYPICAL PHYSICAL PROPERTIES

Property	Typical Value
Color	Basecoat white Topcoat gray
Barcol hardness, shore D	>85
Flexural strength, ASTM C580	>5000 psi (34.4 MPa)
Tensile strength, ASTM C307, 7-day	>2,500 psi (1.7 MPa)
Mix ratio resin:hardener	3.0:1 by weight 2.5:1 by volume
Maximum service temperature	180°F (82°C) splash and spill 250°F (120°C) in flue gas service
Abrasion resistance, Taber CS-17 wheel, 1000-gram load, 1000 cycles	59

Rev 11/2025

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