



Penntrowel™ Vinyl Ester 60/60MR Lining System

SELECTION & SPECIFICATION DATA

Type	60 mil vinyl ester lining
Description	<p>Penntrowel Vinyl Ester 60/60MR Lining System is a 60 mil (1.5 mm) trowel applied high functional novolac vinyl ester lining/flooring system suitable for severe chemical service conditions. The optional 60MR version incorporates a 1 oz. glass mat reinforcement into the primer layer of the lining system.</p> <p>The use of the Carbon Grade Filler is recommended for HF and strong caustic service. When using Carbon Grade Filler and the optional MR version is specified the use of the synthetic veil reinforcing mat is suggested.</p>
Uses	<ul style="list-style-type: none">• Trenches• Sumps and pits• Tanks and process vessels• Floors
Features	<ul style="list-style-type: none">• Novolac vinyl ester resin technology• Resistant to oxidizing chemicals• Resistant to bleaches such as chlorine and chlorine dioxide• Incorporate an optional 1-oz. mat reinforcement for additional crack bridging protection• Durable and resistant under repeated thermal stresses• Optional carbon grade for hydrofluoric acid and strong caustic service
Limitations	Not for use beyond its chemical resistance capabilities. Consult Armor with specific questions.

INSTALLATION GUIDANCE

Reference Specifications	CES-365 Penntrowel 60/60MR Lining System Installation specification
Installation Conditions	<p>Materials and substrate should be acclimated to an air temperature of between 50°F (10°C) and 90°F (32°C) during installation and cure. Installation temperature requirements can be lowered with optional cold room hardener.</p>
Mixing/Use	<p>1 gallon resin: 2-3 fl. oz. hardener by volume (1.5-2.25% by volume). 1-part catalyzed resin: 3.5 parts filler by weight. Mix ratio for carbon grade is 1-part catalyzed resin to 2.25 parts Filler.</p> <p>Consult packaging on page 2 for component package sizes. Empty Part A resin and measured Part B chp hardener into a clean mixing vessel. Mix thoroughly using a slow speed drill with suitable blade mixer such as a Jiffier. Mix for 2 minutes minimum to insure full blending. Slowly add Part C filler until fully wetted out. Apply mixed compound by flat trowel over properly primed substrate. Apply to a nominal 1/16" (1.6 mm) thickness. Use a short nap roller dampened with Finishing Solution to smooth basecoat. Allow to cure per information below before putting into service.</p> <p>When the 60MR version is specified, embed the 1-oz. mat into the wet primer layer. Apply additional neat catalyzed primer saturant onto the mat reinforcement. Spread evenly. Use a serrated roller to eliminate bubbles and wrinkles. Use smaller pieces of mat for corners and intricate work. Allow mat reinforcing layer to set hard. Once cured apply the Penntrowel 60 buildcoat layer following mixing and usage instructions as described above.</p>
Work Life	30-40 minutes at 70°F (21°C)
Cleanup	MEK

CURE TIME

Temperature	Initial Set	Full Cure
70°F (21°C)	1-2 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

Product	Code	Packaging
Penntrowel Vinyl Ester Resin Gray	19636	4 x 7.9 lb/3.6 kg (0.9 gal/3.4 l) cans/cs
CHP Hardener	19552	0.75 lb/0.34 kg (0.7 pint/11 oz/331 cc) bottle
L/F Filler Silica	19642	55 lb (25 kg) bag
L/F Filler Carbon	29446	36 lb (16.3 kg) bag
1-oz reinforcing mat	19639	50 in. x 375 ft (1500 sf/139 sm) roll
Synthetic veil reinforcing cloth	21925	48 in. x 500 yd (6000 sf/557 sm) roll
Finishing Solution	19512	1 gallon (3.8 l) can

Theoretical Coverage

Silica grade: A 142 lb/1.23 cu ft (64.4 kg/34.8 l) unit consists of 1 case of resin, 1 bottle of hardener and 2 x 55 lb bags of filler and will cover 236 sf (21.9 sm) at 1/16" (1.6 mm) thickness.

Carbon grade: A 104 lb/1.0 cu ft (47.1 kg/28.3 l) unit consists of 1 case of resin, 1 case of hardener and 2 x 36 lb bags of filler and will cover 192 sf (17.8 sm) at 1/16" (1.6 mm) thickness.

When neat resin and hardener is mixed and used as a saturant for the reinforcing mat allow 360 sf (33.4 sm) per 3.6-gallon (13.6 l) unit.

Finishing Solution coverage is 250 sf/gallon (6.2 sm/l)

Storage & Shelf Life

Maintain products in original packaging and sealed until ready for use. Estimated shelf life of resin is 6 months, and hardener is 1 year when stored in a dry area at 70°F (21°C). Warmer resin storage conditions will dramatically reduce shelf life. Store resin between 55°F (13°C) and 65°F (18°C) for maximum shelf life. Fillers do not degrade with age when stored in a dry area and packaging is intact. Actual shelf life may vary with storage conditions.

If there is any question with respect to the quality of the components, check reactivity prior to use. For assistance consult with Armor.

TYPICAL PHYSICAL PROPERTIES

Property	Typical Value
Color	Gray, special colors on request Carbon grade is black
Wet density, silica grade Wet density, carbon grade	115 lb/ft ³ (1,842 kg/m ³) 102 lb/ft ³ (1,634 kg/m ³)
Compressive strength, 7-day, ASTM C579	>13,000 psi (90 MPa)
Tensile strength, 7-day, ASTM C307	>1,700 psi (11.8 MPa)
Flexural strength, ASTM C580	>3,000 psi (20.7 MPa)
Bond to concrete, ASTM C321	Exceeds tensile strength of concrete
Shrinkage, ASTM C531	0.2%
Service temperature range, chemical dependent	180°F (82°C)

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