

**CE-301M**  
**11/12 Supersedes 05/07**

### **VEL LINING SYSTEMS**

#### **DESCRIPTION**

VEL Lining Systems are multi layer vinyl ester or novolac vinyl ester based laminate lining systems used for the protection of concrete and steel substrates. VEL Systems are offered in a range of thicknesses, glass and synthetic mat build up layers, and topcoats to accommodate a wide variety of thermal and mechanical exposures. VEL Systems offer excellent chemical resistance and crack bridging capabilities. The base VEL System is concrete gray in color.

The base system consists of the following layers: a) primer/scratchcoat, b&c) 2 layers of 300 gm cloth/saturant, d) tissue/saturant layer, e) topcoat.

For non-immersion and light mechanical stress applications where minimal protection is required a single layer mat reinforcement is sufficient.(layer b above). For heavier mechanical stresses, a 450 gm mat can be installed in place of the 300 gm layers.

For immersion service VEL Lining Systems can be top-coated with PENNCOAT 331 Novolac Vinyl Ester with glass flake technology. Consult CED data sheet CE-259M for more detail.

For applications where a static disseminating or spark proof floor is required such as semi conductor, electronics, pharmaceutical manufacturing, solvent/explosives storage or munitions manufacturing, use VEL Conductive Topcoat Resin.

#### **AREAS OF USE**

Used as a chemical resistant lining for secondary containment, splash and spill, or continuous immersion service on concrete and steel. VEL Lining Systems may be spark tested on steel or concrete substrates.

Used as a concrete floor lining both interior or exterior, which is exposed to foot traffic, fork truck traffic, chemical splash and spillage.

Suitable as a process vessel lining within its chemical and temperature limitations.

#### **OUTSTANDING FEATURES**

- PENNTROWEL VEL Lining Systems offer crack bridging capabilities over concrete substrates.
- Excellent chemical resistance - suitable for a broad range of common industrial chemicals including 37% HCl, H<sub>2</sub>SO<sub>4</sub> up to 80%, HNO<sub>3</sub> to 40%, NaOCl to 15%, and NaOH to 50%. In certain applications, higher exposures may be possible. Consult CED on a case-by-case basis.
- Easy installation by use of laminate saturating construction techniques.
- Rapid setting vinyl ester technology.
- To spark test on concrete, specify Penntrowel VEL Conductive Primer Resin.

**TYPICAL PHYSICAL PROPERTIES**

PROPERTY	VEL LINING SYSTEMS
Color of Cured Lining	Grey
Shore Hardness (Shore 'D')	70-75
Flexural Strength (Cured 3.2 mm laminate ASTM C-851)	131 MPa
Flexural Modulus	6.0 x 10 <sup>3</sup> MPa
Adhesion	Greater than tensile strength of concrete
Tensile Strength (Cured 6 mm laminate ASTM C-851)	97 MPa
Maximum Service Temp	99°C wet in splash and spill 160°C in flue gas environments
Work Life/Tack Free Time:	@ 10°C - 40 minutes/60 minutes @ 20°C - 20 minutes/30 minutes @ 30°C - 10 minutes/20 minutes

**ESTIMATING/PACKAGING THEORETICAL QUANTITIES – NO OVERAGE ALLOWANCE**

PRODUCT	CODE	SIZE	COVERAGE* (WFT)
PENNTROWEL VE Primer Resin or PENNTROWEL <i>Conductive</i> Primer Resin	50101 50116	29 Kg Pail 29 Kg Pail	Add 0.3-0.7 Kg Scratch Coat Filler to 1 Kg Penntrowel Primer Resin. Coverage of this mixture is 0.7 kg paste mixture/m <sup>2</sup> @ 0.5 mm thick.
VEL Scratch Coat Filler	50309	25 Kg bag	
VEL Laminating Resin Clear	50114	29 Kg Pail	
Topcoat: Pennrowel VE Resin Grey 29 Kg Pail  or VEL Conductive Topcoat Resin Black	50113  50115	29 Kg Pail  29 Kg Pail	300 Gram Cloth: Saturate the 1st layer of fiberglass mat with 0.8 ~ 1.0 kg catalyzed resin / m <sup>2</sup> . Second layer is a repeat of first layer.  450 Gram Cloth: Saturate the 1st layer of fiberglass mat with 1.0-1.2 kg catalyzed resin / m <sup>2</sup> .  Tissue: Saturate the tissue layer of with 0.3 kg catalyzed resin / m <sup>2</sup> .  Topcoat Resin: 0.25 kg/m <sup>2</sup> @ 0.15 mm thick per coat. 1 or 2 topcoats can be used depending on aesthetic requirement of client.  Conductive Topcoat: 0.25 kg/m <sup>2</sup> @ 0.15 mm
CHP Hardener	50109	400 Gm Btl	Add CHP Hardener at a rate of 1.5-2.25% to each of the above resins.

\* All coverages are theoretical and do not include pail loss, surface irregularities, curing reduction, and typical overage allowances.

**SAFETY PRECAUTIONS / DISCLAIMER**

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 material safety data sheets before using. While all statements, technical information, and recommendations contained herein are based on information our company believes to be reliable, nothing contained herein shall constitute any warranty, express or implied, with respect to the products and/or services described herein and any such warranties are expressly disclaimed. We recommend that the prospective purchaser or user independently determine the suitability of our product(s) for their intended use. No statement, information or recommendation with respect to our products, whether contained herein or otherwise communicated, shall be legally binding upon us unless expressly set forth in a written agreement between us and the purchaser/user.



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