



POLYMERICA INCORPORATED

POLYMERICA PRODUCT DATA

MasterShield VNL Vinyl Ester Novolac Lining System

PRODUCT PRESENTATION

MasterShield VNL is a chemically resistant, liquid applied lining system designed to protect concrete or steel against a broad range of harsh exposures including strong acids, alkalies, and many solvents.

VNL systems are fabric reinforced to reduce permeability, improve resistance to hot spills and thermal shock, and to upgrade mechanical properties.

MasterShield VNL is applied at 1/8" thickness consisting of:

- ➔ a 100% reactive primer
- ➔ a silica or carbon filled vinyl ester novolac base coat
- ➔ a woven fiberglass or synthetic fabric reinforcement
- ➔ a vinyl ester novolac saturant
- ➔ a silica or carbon filled vinyl ester novolac top coat

PRODUCT FEATURES

- ➔ best overall performance for chemical containment
- ➔ high temperature performance, in many cases up to 350°F (spills) or 450°F (dry heat)
- ➔ reinforced system bridges minor surface cracks, reduces permeability, and increases tensile strength

USES

MasterShield VNL exhibits superior resistance to a wider range of chemicals than any other polymeric lining. **VNL** is typically specified in plating and metal finishing plants, the pulp and paper industry, petroleum and chemical processing plants, and water and waste treatment facilities.

MasterShield VNL is designed for lining tanks, trenches, primary and secondary containment vessels, and processing floors subject to constant chemical exposures.

Certain chemical exposures will require MasterShield NEL - consult POLYMERICA'S Chemical Resistance Guide for details.

Carbon filled systems provide improved conductivity and spark resistance while offering improved resistance against fluorides.

LIMITATIONS

- ⚠ substrate must be sound, clean, properly prepared, and free from hydrostatic pressure and high levels of moisture vapor transmission
- ➔ minimum application temperature is 50°F
- ➔ adequate ventilation must be provided during application and curing
- ➔ chemical exposure, service temperatures, mechanical abuse, and housekeeping influence service life
- ➔ liquid components have a 2-month shelf life

PERFORMANCE CHARACTERISTICS OF SYSTEM

Compressive Strength @ 7 days (ASTM C-579)	12,000 psi.
Tensile Strength (ASTM C-307)	2,400 psi.
Flexural Strength (ASTM C-580)	8,500 psi.
Bond Strength (ACI 503R)	350 psi.
	concrete fails
Thermal Coefficient of	0.000014 inch
Expansion (ASTM D-696)	per inch per 0°F
Abrasion Resistance (ASTM D-4060)	26 - 28 mg. maximum
CS-17 wheel, 1 kg. load, 1,000 rev.	weight loss
Thermal Shock Resistance (ASTM C-884)	passes
Water Absorption (ASTM C-413)	0.1%
Flammability (ASTM D-635)	Self-extinguishing
Impact Resistance (MIL D-3134F)	16 foot-pounds
	concrete fractures
Indentation (MIL D-3134F)	No indentation

CHEMICAL RESISTANCE

<u>Reagent</u>	<u>Rating</u>	<u>Reagent</u>	<u>Rating</u>
Acetic Acid	R	Lactic Acid	R
Acetone	L	Methyl Ethyl Ketone	L
Acrylic Acid - 25%	R	Nitric Acid - 40%	R
Citric Acid - 50%	R	Phenol	L
Chromic Acid - 20%	R	Sodium Hydroxide - 50%	R
Diesel Fuel	R	Sulfuric Acid - 70%	R
Ethylene Glycol	R	Toluene	R
Fatty Acids	R	Urea	R
Gasoline	R	Vinegar	R
Hydrochloric Acid - 37%	R	Xylene	R

R - Recommended for continuous service.

L - Limited recommendation, occasional spills.

This chart is intended as an aid in evaluating the performance of these systems in various chemical exposures at 100°F. The data is intended as a guide only. Consult **POLYMERICA** Chemical Resistance Guide for complete chemical data.




In severe or combination exposures, a sample should be tested under actual or simulated use conditions.


Product data is revised as needed to reflect the most recent technology and field experience. Consult **POLYMERICA** for current printing date of literature.

ESTIMATING & APPLICATION GUIDELINES

System	Step one	Step two	Step three	Step Four	Step Five
	Primer	Base Coat	Reinforcement	Saturant	Top Coat

	Silica System	VNB	VNB + LSF	9.8 oz. woven roving or 1.5 oz. mat	VNB	VNC + LSF
	Mix Ratio Silica System	1 gallon Part A 4 oz. Part B	1 gallon Part A 4 oz. Part B 20 - 25 # LSF	N/A	1 gallon Part A 4 oz. Part B	1 gallon Part A 4 oz. Part B 20 - 25 # LSF




	Carbon System	VNB	VNB + LCF	Synthetic Veil	VNB	VNC + LCF
	Mix Ratio Carbon System	1 gallon Part A 4 oz. Part B	1 gallon Part A 4 oz. Part B 10 - 15 # LCF	N/A	1 gallon Part A 4 oz. Part B	1 gallon Part A 4 oz. Part B 10 - 15 # LCF

Coverage*	160 ft ² / gal.	40 - 45 ft ² /gal.	area + 10%	80 - 100 ft ² /gal.	40 - 45 ft ² /gal.
Requirements per 1,000 ft ²	6 gallons	25 kits	122 yds. ²	12 gallons	25 kits
Pot Life @ 70°F	20 minutes	30 minutes		20 minutes	30 minutes
Cure to next step @ 70°F	1/2 to 6 hrs.	None	1/2 to 6 hrs.	4 - 6 hours	10 - 16 hours Full cure 3 - 5 days

*Coverage and requirements are dependant upon substrate condition.

APPLICATION

Preparation: **Metal:** Metal must be abrasive-blast cleaned to a white metal finish in accordance with NACE # 1 or SSPC 5-63 to achieve a 2 - 3 mil profile. Prime before rust bloom occurs.
Concrete: Concrete must be structurally sound and clean. Preferred method includes abrasive blast or water blast cleaning. As is the case with any impermeable floor coating, any concrete slab on grade to receive this product should be tested for moisture content while in the planning and estimating stages. Product should only be installed if moisture content falls within acceptable range. Consult **POLYMERICA** Bulletin **SP-C** for complete details.

 **Make absolutely certain that the substrate and all mixing vessels and equipment are free of any epoxy contamination (cured or uncured) and free of moisture.**

Step One: Premix both components, then mix **VNB** Parts A & B with a low speed drill fitted with a Jiffy Mixer for two minutes. Pour onto substrate in ribbons and apply with squeegee. Cut in with brush, and backroll with a short nap roller. Do not puddle. Application rate should be 10 mils or 160 square feet per gallon, but will vary depending upon the condition of the substrate. Allow to tack. Proceed to next step within window.

Step Two: Premix all components, then mix **VNB** Parts A & B as in last step for two minutes. Add appropriate filler (silica or carbon) to the catalyzed mixture and blend for an additional two minutes. Apply a 1/16" thick basecoat using a plasterer's trowel. Spread to an even, smooth finish. Proceed to next step immediately.

Step Three: Press reinforcing fabric into wet basecoat. Overlap all edges by 1". Press fabric firmly into basecoat using a stiff natural brush to remove wrinkles and air pockets. Allow to tack.

Step Four: Premix both components, then mix **VNB** Parts A & B as in previous steps for two minutes. Saturate the fabric using a Pro-Doo-Z 3/16" roller and enough resin to wet out the fabric. Do not puddle or drip. Allow to cure for 4 - 6 hours.

Step Five: Grind any sharp glass protrusions. Repeat Step Two using **VNC** for the liquid portion. Lightly brush the wet top coat using a 4" brush and Smoothing Liquid (**SL-1**) to remove pinholes and trowel marks. Allow to cure overnight. Spark test lining with a 20,000 VAC spark tester. Mark and repair all pinholes. Retest repairs only. **NOTE:** Carbon linings can not be spark tested. Therefore, particular attention must be paid to application procedures and a thorough visual inspection is necessary.

VNB = Vinyl Ester Novolac Binder, **VNC** = Vinyl Ester Novolac Coating, **LSF** = Lining Silica Filler, **LCF** = Lining Carbon Filler

CARE & MAINTENANCE

Newly installed floors should be cured a minimum of 48 hours at 70°F - 75°F before wash-downs. Only warm water should be used to clean within the first week.

If the use of a detergent is absolutely necessary during the first week, use **only a MasterShield PSD or a NON-CHLORINE** cleaner dissolved in water. Sanitizing detergents containing chlorine or hypochlorite **must not be used** for at least 7 days.

Again, only if absolutely necessary, cleaning may be accomplished with **MasterShield PSD**, a non-chlorinated cleaner.

REGULAR MAINTENANCE

Good housekeeping practices and regulated spill removal will prolong the service life of the floor. While polymer flooring often requires less maintenance than other finishes, cleaning and stain removal must be performed.

Stains should be removed as soon as possible, but only after determining the cause of the stain and selecting the proper method of stain removal. The following maintenance should be performed on a weekly basis or as needed:

- ➔ Remove spills at the earliest opportunity.
- ➔ Sweep or vacuum loose dirt and debris.
- ➔ Clean floor with **MasterShield PSD** or another industrial detergent, dissolved in water as directed by cleaner manufacturer. A mild, moderately alkaline, non-sudsing detergent is generally best. Proper cleaners should be selected for specific spills or stains.
- ➔ Power scrub surface, then rinse with a pressure washer. **CAUTION:** Certain stiff-bristled brushes can affect gloss of finish when used with power scrubbing tools. Consult with janitorial supplier for brush recommendation.
- ➔ Change soap solution and rinse water frequently. Remove rinse water with a wet vacuum or squeegee. Keep mop heads and maintenance equipment free of accumulated dirt.
- ➔ Floors can be sealed, waxed, and buffed, if desired. A local janitorial supply house is a good source for supplies. **All materials for cleaning and sealing should be tested in a small area prior to use.**

COLORS

Sabre Grey, Custom colors or other MasterShield colors are available with restrictions.

SAFETY

Material Safety Data Sheets are available from **POLYMERICA** and should be consulted prior to use of the product. These products are intended for use by professionals only. Keep away from children and those not trained in the use and potential hazards involved.

MasterShield VNB and VNC contain vinyl ester resins and styrene. Both are cured with an organic peroxide catalyst. Both components are **FLAMMABLE**. Keep away from all sources of ignition. Provide NIOSH-approved respirators and forced ventilation in confined spaces. Workers should wear gloves, goggles and body covering clothing when mixing or applying product. Clean up with soap and warm water. **TrowelMaster** Fillers contain silica which can cause lung damage. Dust masks should be worn when handling. Be sure to follow all label and MSDS cautions.

WARRANTY

POLYMERICA warrants its products to conform to its manufacturing standards. **POLYMERICA** will replace or refund the purchase price of non-conforming products at the seller's option; such remedy being exclusive of all others and sole remedy available to the buyer. Buyer hereby expressly waives claim to additional damages. Any claim under this warranty must be made in writing within 7 days of discovery of noncompliance and no later than one year from the date of delivery of product. No representative, distributor or applicator of these products is authorized to modify product data or warranty.

IMPORTANT NOTICE

These products are sold subject only to the express warranties contained herein. There are no other warranties by **POLYMERICA** of any nature whatsoever, expressed or implied, including any warranty of merchantability or fitness for a particular purpose in connection with this product. Buyer agrees that seller assumes no liability for remote or consequential damages of any kind which result from the use or misuse of this product. Information contained herein is based on data believed to be reliable, however, it is the Buyer's responsibility to satisfy itself of the suitability of the product for a particular purpose.

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