



# POLYMERICA

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# INCORPORATED

## POLYMERICA PRODUCT DATA

### MasterShield NEL

Novolac Epoxy  
Linings

#### PRODUCT PRESENTATION

**MasterShield NEL systems are chemically resistant, liquid applied linings** used to protect and restore concrete or steel in severe chemical environments, especially strong acid and caustic exposures. These systems provide chemical and thermal designed to restore damaged concrete or protect new concrete in strong acid and caustic environments.

**MasterShield NEL systems** are applied at an 1/8" thickness consisting of:

- ➔ a 100% solids epoxy novolac primer
- ➔ a silica or carbon filled novolac base coat
- ➔ a woven fiberglass or synthetic fabric reinforcement
- ➔ an epoxy novolac saturant
- ➔ a silica or carbon filled epoxy novolac top coat

Certain chemical exposures will require **MasterShield HPN** or **VNL**; consult chemical resistance chart.

#### FEATURES

- ➔ Best overall chemical resistant epoxy system.
- ➔ High temperature performance in many cases up to 275°F (spills) or 350°F (dry).
- ➔ Will cure in cool and damp conditions.
- ➔ Reinforced system bridges minor surface cracks, reduces permeability and increases tensile strength.
- ➔ 100% non-volatile and odorless for application in occupied facilities.
- ➔ Materials comply with USDA requirements for use in federally inspected meat and poultry plants.
- ➔ Approved by Agriculture Canada Food Production and Inspection Branch for use in registered establishments.

#### USES

**MasterShield NEL systems** are used in harsh acid (98% Sulfuric) and caustic exposures. **NEL** will provide service approaching, and in some cases surpassing, vinyl esters without the odor or sensitivity to adverse curing conditions.

**MasterShield NEL systems** are designed for lining tanks, trenches, troughs, and pits, primary or secondary containment and processing floors subject to constant chemical exposures.

These systems are also used for lining walls in food processing areas near high temperature processes.

#### LIMITATIONS

- ➔ Substrate must be sound, clean, properly prepared and free from hydrostatic pressure.
- ➔ Minimum application temperature is 40°F.
- ➔ Temperatures below 65°F affect handling characteristics and lengthen cure times.
- ➔ Chemical exposure, service temperatures, mechanical abuse and housekeeping influence service life.

## **ESTIMATING & APPLICATION GUIDELINES**

<b>System</b>	<b>Primer</b>	<b>Base Coat</b>	<b>Reinforcement</b>	<b>Saturant</b>	<b>Top Coat</b>
Silica	NEB	NEC/LSF	9.8 oz. woven roving or 1.5 oz. matte	NEC	NEC/LSF
Mix Ratio	2A:1B	1/2 gal. NEC-A: 1/4 gal. NEC-B to 15-20 lb. LSF	None	2A:1B	1/2 gal. NEC-A: 1/4 gal. NEC-B to 10-15 lb. LSF
Carton	NEB	NEC/LCF	Synthetic Veil	NEC	NEC/LCF
Mix Ratio	2A:1B	1/2 gal. NEC-A: 1/4 gal. NEC-B to 7-10 lb. LCF	None	2A:1B	1/2 gal. NEC-A: 1/4 gal. NEC-B to 7-10 lb. LCF
Coverage*	200-250 ft <sup>2</sup> /gal	35-40 ft <sup>2</sup> /Kit	Total area plus 10%	80-100 ft <sup>2</sup> /gal	30-35 ft <sup>2</sup> /Kit
Requirements per 1000 ft <sup>2</sup>	4 gal	29 kits	122 yds <sup>2</sup>	12 gal	33 kits
Pot Life @ 70°F	20 min.	20 min.	None	20 min.	20 min.
Cure to next step @ 70°F	1/2 to 6 hrs. maximum	None	4 to 6 hrs. maximum	4 to 6 hrs.	10 to 16 hrs. Full chemical cure 3-5 days

\*coverage and requirements will vary due to conditions of substrate and desired finish and texture.

### **Application:**

- Preparation:** Metal must be abrasive blast cleaned to a white metal finish according to NACE #1 or SSPC 5 to achieve a 2-3 mil. minimum profile. Prime before rust bloom occurs. Concrete must be structurally sound and clean. Preferred method includes abrasive blast or water blast cleaning. An acid etch, rinsed and neutralized, is also acceptable. Consult **POLYMERICA** Bulletin SP-C for complete details.
- Step one:** Mix **NEB** A&B with a low speed drill for two minutes. Apply with squeegee, cut in with brush and backroll with short nap roller. Do not puddle.
- Step two:** Mix **NEC** A&B thoroughly with low speed drill for two minutes. Add appropriate filler to the catalyzed mixture and blend for an additional two minutes. Apply a 1/16" thick base coat using a plasterer's trowel. Spread to an even, smooth finish.
- Step three:** Press reinforcing fabric into wet basecoat. Lap all edges by 1". Press fabric firmly into basecoat using a phenolic core roller or medium nap roller dampened with smoothing liquid to remove wrinkles and air pockets.
- Step four:** Mix **NEC** A&B thoroughly with low speed drill for two minutes. Saturate the fabric using a short nap 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 2. Lightly brush the wet top coat with a 4" thick bristle brush and smoothing liquid to remove pinholes and trowel marks. Allow to cure overnight. If applicable, spark test lining with a 20,000 VAC spark tester. Mark and repair all pinholes. Retest repairs only. Because carbon linings cannot be spark tested, good application procedures and thorough visual inspection is required.

## PERFORMANCE CHARACTERISTICS

Compressive Strength (ASTM C-579) ..... @ 7 days	11,500 psi
Tensile Strength (ASTM C-307) .....	2,400 psi
Flexural Strength (ASTM C-580) .....	8,900 psi
Bond Strength (ACI Comm #403) .....	350 psi concrete fails
Thermal Coefficient of ..... Expansion (ASTM D-696) .	0.000014 inch per inch per °F
Abrasion Resistance (ASTM D-1044) ..... CS-10 wheel, 1 kg load, 1000 rev.	0.1 gm. maximum. 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-20% .....	R	Lactic Acid .....	R
Acetone .....	L	Methyl Ethyl Ketone .....	L
Bleach .....	L	Nitric Acid-20% .....	R
Citric Acid .....	R	Skydrol .....	R
Crude Oil .....	R	Sodium Hydroxide-50% .....	R
Diesel Fuel .....	R	Sulfuric Acid-98% .....	R
Ethylene Glycol .....	R	Toluene .....	L
Fatty Acids .....	R	Urea .....	R
Gasoline .....	R	Vinegar .....	R
Hydrochloric Acid-36% .....	R	Xylene .....	L

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 75°F. The data is intended as a guide only. 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.

## **CARE AND MAINTENANCE**

**MasterPiece Floors** must be protected from traffic, chemicals and abuse during the cure process.

Newly installed floors should be cured a minimum of 18 hours at 65°F before washdowns. Only warm water should be used to clean within the first week. If use of a detergent is necessary in the first week, use only a NON-CHLORINE cleaner dissolved in water. Sanitizing detergents containing chlorine or hypochlorite should not be used for at least 7 days.

Good housekeeping practices and regulated spill removal will prolong the service life of the floor. **MasterPiece Floors** are not self-cleaning nor always non-staining. The following cleaning procedures are recommended weekly or as needed:

Spills must be removed and rinsed at the first opportunity. No spillage should be ignored and allowed to dry or soak into the floor

Sweep or vacuum loose dirt and debris daily.

Mop or scrub floors weekly or as usage dictates.

Use an neutral detergent, dissolved in water as directed by the manufacturer.

MasterPiece Polymer Surface Cleaner is recommended for general purpose cleaning, however, proper cleaners should be selected for specific spillage residue or stains. Always allow cleaners time to loosen foreign matter. Always adhere to manufacturer's dilution ratio.

If rinsing is required, always keep mop heads and buckets clean; change rinse water frequently to avoid streaking.

Large or heavily soiled areas can be power scrubbed, then rinsed if required.

High luster finished or sealers can be applied if desired. Follow manufacture's directions. High speed buffing or spray buffing is generally not required, but can be incorporated in your maintenance program.

Conventional methods are also acceptable for small areas.

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## **COLORS**

Solid colors: Pearl gray

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 NEB, and NEC** are two part epoxy systems. Part A contains epoxy resins. Part B contains amine-epoxy adducts. Workers should wear gloves, goggles, and body covering clothing when mixing and applying product. Clean with soap and warm water. **TrowelMaster Fillers** contain silica which would cause delayed 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 product 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 non-compliance 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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[www.polymerica.com](http://www.polymerica.com)  
or email us at [info@polymerica.com](mailto:info@polymerica.com)

800.762.1678  
[www.polymerica.com](http://www.polymerica.com)

