ELASTO-SHIELD SURFACE PREPARATION & APPLICATION GUIDE

TNEMEC

Performance never looked better.

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For Tnemec Technical Services or the representative in your area call: 1-800-TNEMEC1

This Application Guide is used in conjunction with the appropriate Product Data Sheets and addresses the application of:

Series 66 Hi-Build Epoxoline
(Series 20 Pota-Pox for potable water exposures)
Series 260 Tneme-Bond
Series 262 Elasto-Shield
Series 264 Elasto-Shield
Series 265 Elasto-Shield TG (Trowel Grade)

TYPICAL SYSTEMS*

Primer	Patching/Filling	Topcoat
1. N/A	Series 265	Series 262
2. Series 66	Series 265	Series 262
3. Series 66*	Series 265	Series 264

* For potable water applications substitute Series 20 Pota-Pox.

INTRODUCTION

Prior to starting work, read this entire guide carefully. If you have questions, call your Tnemec representative or Tnemec Company, Inc. at 1-800-TNEMEC1. It is important you obtain answers to any questions before you start work.

PRODUCTS

Elasto-Shield consists of two components: Part A Black Base and Part B Clear Converter. Each compound is pre-measured by weight and must be mixed in its entirety without splitting down to smaller quantities. (It is important that an adequate crew and equipment be assembled for the application of fast-setting linings.)

PACKAGING AND SUGGESTED COVERAGE

SERIES 20 POTA-POX

TWO-GALLON AND TEN-GALLON KITS.
Consists of fully filled one-gallon or five-gallon containers of Parts A & B; when mixed yields two or ten gallons (7.58 or 37.8L) respectively. Coverage at 2.0-6.0 mils (50-150 microns) DFT is 150-450 sq. ft. (13.9-41.8 m^2) per mixed gallon.

SERIES 66 HI-BUILD EPOXOLINE

TWO-GALLON AND TEN-GALLON KITS.
Consists of fully filled one-gallon or five-gallon containers of Parts A & B; when mixed yields two or ten gallons (7.58 or 37.8L) respectively. Coverage at 2.0-6.0 mils (50-150 microns) DFT is 150-450 sq. ft. (13.9-41.8 m^2) per mixed gallon.

SERIES 260 TNEME-BOND

ONE-GALLON CANS.
Ready to spray. Coverage is approximately 600 sq. ft. (55.7 m^2) per gallon for non-porous substrate.

SERIES 262 & SERIES 264 ELASTO-SHIELD

FIVE-GALLON KITS.
Consists of a partially filled 6.2-gallon pail of Part A Black Base and a plastic jug of Part B Clear Converter. When mixed yields five gallons (18.9L). Coverage at 50.0 mils (1270 microns) DFT is approximately 27.9 sq. ft. (2.6 m^2) per mixed gallon.

NOTE: Spray application requires multiple passes at timed intervals to achieve 50.0 mils (1270 microns) DFT on vertical surfaces. (See Application.)

SERIES 265 ELASTO-SHIELD TG (TROWEL GRADE)

ONE-GALLON KITS.
Consists of a partially filled one-gallon can of Part A Black Base and a plastic bottle of Part B Clear Converter. When mixed yields .794 gallon (3.0L). Coverage at 50.0-125.0 mils (1270-3175 microns) DFT is approximately 13.0-25.0 sq. ft. (1.2-2.3 m^2) per mixed gallon; at ¼" (6.4 mm), approximately 6.4 sq. ft. (.6 m^2) per gallon.

EQUIPMENT AND SUPPLIES

In addition to appropriate health and safety equipment, this section lists tools and supplies normally required for surface preparation, mixing and installation of an Elasto-Shield lining system.

FOR SURFACE PREPARATION

It is important that Elasto-Shield be applied to a clean, dry and sound substrate. Surface preparation will vary depending on substrate and exposure conditions. Various combinations of the following equipment and supplies may be needed.

- Abrasive blast cleaning equipment
- Hand tools - scrapers, trowels, etc.
- Water blast cleaning equipment
- Personal protective equipment
- Plastic film/masking paper for overspray
- Wet and dry film thickness gauges
- Surface and material thermometers
- Masking tape
- Plaster mixer
- Compressors
- Mineral spirits for cleaning
- Grinders
- Industrial vacuum
- Empty pails
- Duct tape
- Wire brushes
- Generator
- Fabric scrim - (Contact Tnemec Customer Service, 1-800-TNEMEC1)

FOR MIXING AND APPLICATION

MIXING

- ½" (5.5 amp) variable speed drill
- Plaster or drywall mud blade
- Flexible spatula or scraper

Drill and Mixing Blade Jig - While not mandatory for successful mixing, it will greatly reduce operator fatigue on medium to large scale projects. (Contact Tnemec Customer Service, 1-800-TNEMEC1.)

APPLICATION OF SERIES 260 TNEME-BOND

Garden-type sprayer capable of producing a fine mist.

APPLICATION OF SERIES 66 HI-BUILD EPOXOLINE

	Air Spray
Gun	DeVilbiss MBC or JGA
Fluid Tip	E
Air Cap	765 or 78
Air Hose ID	5/16" or 3/8" (7.9 or 9.5 mm)
Mat'l Hose ID	3/8" or 1/2" (9.5 or 12.7 mm)
Atomizing Pressure	75-100 psi (5.2 - 6.9 bar)
Pot Pressure	10-20 psi (0.7 - 1.4 bar)

Low temperatures or longer hoses require higher pot pressure.

	Airless Spray
Tip Orifice	0.015" - 0.019" (380 - 485 microns)
Atomizing Pressure	1800 - 3000 psi (124 - 207 bar)
Mat'l Hose ID	1/4" or 3/8" (6.4 mm or 9.5 mm)
Manifold Filter	60 mesh (250 microns)

Use appropriate tip/atomizing pressure for equipment, applicator technique and weather conditions.

Roller: Roller application optional when environmental restrictions do not allow spray. Use ⅜" or ½" (9.5 mm or 12.7 mm) synthetic nap covers.

APPLICATION OF SERIES 262 & SERIES 264 ELASTO-SHIELD

	Air Spray	
Gun	Graco 204-000	Binks 7E2 or #125 pole
Fluid Nozzle	167-331	47
Air Cap	160-660	3/8"
Air Hose ID	3/8" (9.5 mm) min.	3/8" (9.5 mm) min.
Mat'l Hose ID	3/4" (19.0 mm) min.	3/4" (19.0 mm) min.
Atomizing Pressure	40-100 psi (2.6-6.9 bar)	40-100 psi (2.6-6.9 bar)
*Pump	954-088, 10:1 President Pump	41-6670, 8:1 Comet Pump
**Fluid Pressure	350-800 psi (24.1-55.2 bar)	350-800 psi (24.1-55.2 bar)

* Pump must have a minimum of two gpm delivery with hopper.

**Listed pressure is at gun.

NOTE: The equipment specifications above are the basic requirements for spraying Elasto-Shield. These additional components for the Binks listing are strongly recommended as contributing to high production rates, quality and efficient Elasto-Shield application.

- No. 41-13120 Cart
- No. 41-3128 Air Control
- No. 86944 Oil And Water Extractor
- Hopper
- Aluminum strapping for hopper
- No. 71-285 10 ½" Feed Hose (Hopper to Pump)
- Pump brackets
- No. 72-418 Connectors (2)

VERTICAL SURFACES

A functional coat of Elasto-Shield may contain some runs and sags on vertical surfaces. Backrolling can help improve the appearance.

HORIZONTAL SURFACES

- Spray or squeegee
- Rollers
- Extension poles

APPLICATION OF SERIES 265 ELASTO-SHIELD TG

- Trowels - flat and pointing
- Broad knives
- Putty knives

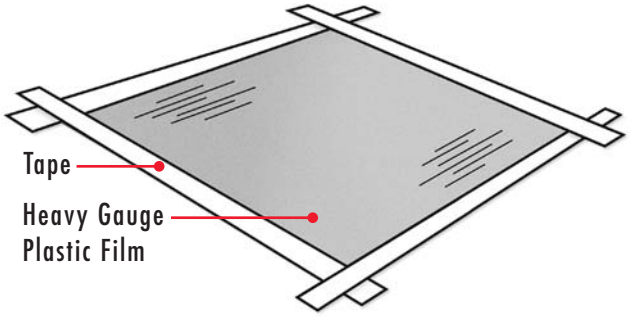
SURFACE PREPARATION

CONCRETE

Allow new concrete and mortar to cure 28 days. Surfaces to be coated with Elasto-Shield must be completely dry. Verify dryness by testing for moisture with a "tape-down test".

TAPE-DOWN TEST - ASTM D 4263

Hidden dampness can be detected by using a clear polyethylene cover. This test utilizes a heavy gauge plastic film approximately 18 inches square and 4.0 mils thick, securely taped to the concrete. Test area should be a slow drying area, such as a below grade, low spot in the floor, inside corner and lower walls. The polyethylene sheet is checked after 24 hours for beads of moisture. If condensation appears on the backside of the film, or if the concrete under the film appears to be darker, damp or wet, this indicates the presence of moisture in the concrete.



Another method to determine the presence of moisture in/through concrete is by performing vapor emissions testing (V.E.T.). The test method for water vapor emissions was developed by the Rubber Manufacturers Association and is designated as ASTM F1869 "Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride." Test kits for the evaluation are available through a variety of sources.

Prior to abrasive blasting (ASTM D 4259), remove all dirt, oil, grease and other soluble contaminants. Common methods for removal of surface contaminants may include the use of scrapers, solvents, steam cleaning, power washing, etc. Scrape or grind level all fins, protrusions and mortar spatter.

In addition to the previous, old or contaminated concrete should be inspected for the presence of chemical contamination. Alkaline material should be washed or otherwise cleaned and neutralized before commencing abrasive blasting.

ABRASIVE BLAST CLEANING (CONCRETE)

Recommended for dense concrete for the removal of laitance, concrete curing compounds/membranes, sealers, hardeners, spalled concrete or other non-degradable surface contaminants. Care should be taken to assure that air supply is oil and moisture free. Surface voids are to be opened and a profile created equivalent to medium grit sandpaper. (Minimum ICRI CSP 3 or greater.) Vacuum all dust and debris. All surfaces must be clean and dry prior to painting. Prepare concrete in accordance to SSPC-SP13/NACE 6.

STEEL

Immersion: SSPC-SP10 Near-White Blast Cleaning/ NACE 2.

Non-Immersion: SSPC-SP6 Commercial Blast Cleaning/NACE 3.

OTHER SUBSTRATES

Contact your Tnemec representative or Tnemec Technical Services.

MIXING AND APPLICATION

CAUTION: All material, equipment, air supply and surfaces to be coated must be kept dry. Do not apply during wet weather or when wet conditions may occur within four hours of application. **Material must be applied when surface temperature is stable or in a descending pattern to greatly reduce the potential for out-gassing of concrete. Series 262 and Series 264 must be stored at 70° F to 75° F 24 hours prior to mixing and application.** Also, be aware that the pot life for Elasto-Shield products is less than one hour. Consult the Temperature and Time Table on page five of this guide before commencing work.

NOTE: It is important that all products used on an Elasto-Shield project be correctly proportioned and thoroughly mixed. This is particularly so with Series 262, 264 and 265 Elasto-Shield. On projects requiring more than a few pails, you can help ensure a quality application by the use of two special pieces of equipment. First an **Elasto-Shield Mixing Jig** - a heavy gauge steel five-gallon pail cover to position

and rest upon, the required one-half inch drill and mixing blade. Secondly, a sealed electrical **Elasto-Shield Mixing Timer.** Connected to the mixing drill, all that is required is a punch of the starter button to assure mixing for the specified time.

PRIMING

While satisfactory performance can be expected from Elasto-Shield applied directly to properly prepared concrete surfaces, an initial prime coat is frequently used. Series 66 Hi-Build Epoxoline (Series 20 Pota-Pox for potable water) applied at 2.0-6.0 mils (50.0-150.0 microns) DFT will greatly reduce the tendency of concrete to outgas - a frequent cause for most thick film topcoats to bubble.

SERIES 66 HI-BUILD EPOXOLINE (SERIES 20 POTA-POX FOR POTABLE WATER APPLICATIONS)

MIXING

Use power mixer to stir contents of each container, making sure no pigment remains on the bottom. Pour a measured amount of Part B into a clean container large enough to hold both components. Add an equal volume of Part A to Part B while under agitation. Continue agitation until the two components are thoroughly mixed. Do not use mixed material beyond pot life limits.

NOTE: For application between 50° F - 60° F (10° C-16° C), both components (Part A & B) should be above 50° F (10° C) prior to mixing. Allow mixed material to stand 30 minutes before application; restir before using.

APPLICATION

Spray or roller apply material at a rate of 180-225 sq. ft. (16.7-20.9 m²) per gallon. If required, thinning up to five percent with Tnemec No. 4 Thinner is acceptable.

IMPORTANT NOTE: Application of Elasto-Shield at 50.0 mils DFT and greater will form a continuous film over small voids and bugholes. However, if this condition is unacceptable for any reason, first fill all openings or spalled areas up to ¼" in depth with Series 265 Elasto-Shield TG (Trowel Grade).

(For holes or patching greater than ¼" (6.4 mm) depth, contact your Tnemec representative or Tnemec Technical Services.)

Application of the Elasto-Shield lining system must be done within one to four hours of the application of the Series 265 Elasto-Shield TG (Trowel Grade) material. Have materials and equipment properly staged. (Mixing of large numbers of Elasto-Shield kits can lead to operator fatigue and errors. The **Five-Gallon Drill and Mixing Blade Jig** and **Mixing Timer** will greatly reduce this possibility.)

SERIES 260 TNEME-BOND

A chemically-activated solution used to promote adhesion of Elasto-Shield to non-porous surfaces, e.g. carbon and galvanized steel, non-ferrous metals, glass or applied coats of Elasto-Shield whose cure has exceeded the maximum four hour recoat window.

MIXING

Stirring is not required. Shake can before using.

APPLICATION

Use a garden-style sprayer capable of producing a fine controlled mist. Apply Series 260 Tneme-Bond on non-porous surfaces at a rate of approximately 600 sq. ft. (55.7 m²) per gallon. Do not overwet the surface or attempt to apply by any other means.

Exceeding the spreading rate or creating puddles will adversely affect the performance of the Elasto-Shield system. Recoating with Series 262, 264 or 265 may generally be done within five to 30 minutes. The surface is ready when it takes on a dry appearance. Recoating must be done within one hour.

SERIES 265 ELASTO-SHIELD TG

MIXING

Use a ½" (5.5 amp) variable speed drill with a drywall mud or plaster mixing blade. Mix the entire contents of the Part A in the can supplied. While continuing agitation, add the entire contents of the Part B bottle and mix for three minutes.

NOTE: Do not vary these directions. These materials are packaged by weight and the ratio of Part A and Part B should not be altered.

APPLICATION

Using various types of trowels, broad knives or similar tools, surface and/or fill voids, bugholes and spalled areas up to ¼" (6.4 mm) depth. Larger openings will require that the material be built up in stages, or contact your Tnemec representative or Tnemec Technical Services for an approved alternate material.

SERIES 262 AND SERIES 264 ELASTO-SHIELD (SERIES 264 FOR POTABLE WATER)

CAUTION: You are dealing with a material that has a very short pot life. It is very important that you have all surfaces properly prepared and all materials, equipment and supplies properly staged before commencing the mixing and application.

Fabric Scrim: Sometimes used for the abridgement of perforations in floors and walls and to improve the surface integrity of other irregular surfaces. (See Equipment and Supplies, Mixing and Application.)

Effective times are approximately as follows:

TEMPERATURES	POT LIFE (Minutes)	APPROXIMATE POURING AND SPREADING TIME (Minutes)	APPROXIMATE SPRAYABLE TIME (Minutes)
90º F (32º C)	15-20	13-15	8-10
75º F (24º C)	30-35	20-25	12-15
60º F (16º C)	45-50	30-35	17-20

MIXING

Use a ½" (5.5 amp) variable speed drill with a drywall mud or plaster mixing blade. Mix the entire contents of the Part A in the pail supplied. While continuing agitation, add the entire contents of the Part B jug and mix for three minutes.

NOTE: Do not thin and do not vary these directions. Also, these materials are packaged by weight and the ratio of Part A and Part B should not be altered.

APPLICATION

Using spray equipment as specified in the EQUIPMENT AND SUPPLIES section or its equivalent, apply a single coat of Series 262 Elasto-Shield (Series 264 for potable water) to large expanses of horizontal surface. The spreading rate should be approximately 29 sq. ft. (2.7 m^2) per gallon to achieve an average dry film thickness of 50.0 mils (1270 microns).

NOTE: When higher film thicknesses are specified, spreading rates will be reduced accordingly.

On vertical surfaces, multiple spray passes of approximately 16.0-20.0 mils each are required to achieve the 50.0 mils (1270 microns) dry film thickness normally specified. Timing between multiple passes will vary depending on temperature and time into pot life. Generally, Elasto-Shield can be recoated after curing one hour up to a maximum of four hours.

NOTE: Some runs and sags may appear during vertical applications. Generally these will not affect performance. However, if desired, a 9" roller with extension pole may be used to “pick-up” and redistribute this material.

CAUTION: To avoid damage to spray equipment that could result from relatively short pot life, one of the following methods should be used:

1. Purge lines completely between each five-gallon kit by allowing the pump to cavitate and draw air - before using each successive pail.

NOTE: On high production applications a five-gallon kit should be sprayed every three to five minutes.

2. Flush lines with solvent between every 10-30 kits. Slower production rates will require more frequent pump and line flushings.

OPTIONAL SQUEEGEE APPLICATION

On broad expanses of horizontal surfaces, Series 262 or Series 264 Elasto-Shield may be poured directly onto the surface and spread with a squeegee to the specified thickness. V, U and square-cut notched squeegees are generally available to control and provide even distribution. (See your local contractor supply store.) Material applied in this manner can be installed in one operation up to 125.0 mils (3175 microns) DFT.

IMPORTANT: For immersion service, applications requiring multiple passes to achieve the specified film thickness should be accomplished within the same day. Recoating must be done within four hours. If this four-hour time is exceeded, to promote intercoat adhesion, the surface must first be abraded using a wire cup brush attached to right angle drills or grinders and then sprayed with Series 260 Tneme-Bond.

When unavoidable interruptions exceeding four hours occur, i.e. weather conditions, equipment failure, etc., use the procedure outlined above. Abrade approximately the last 6" (15.2 cm) of the interrupted application, apply a coat of Series 260 Tneme-Bond and overlap the resumed application to this area.

TNEMEC COMPANY INCORPORATED

6800 CORPORATE DRIVE, KANSAS CITY MISSOURI 64120-1372 TEL:816-483-3400

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www.tnemec.com