



SHIELDLOK

Rehabilitated and Existing Concrete Lining System

Application Instructions

The ShieldLok PVC Lining is specifically marketed to provide corrosion protection for structurally sound or rehabilitated concrete structures such as manholes, lift stations, digesters, primary effluent channels, sludge wet wells, primary sedimentation tanks, headworks and other such areas. It utilizes three components, ShieldLok Mini D-Key PVC Lining, ShieldLok Mastic and ShieldLok Primer.

Shipping and Storage

Care must be taken in transporting, handling and storing ShieldLok PVC sheets to prevent damage. Sheets should be stored flat and protected from contact with all sharp-edged objects. Additional care must be taken in handling the sheets during cold weather since the Mini D Key sheets become rigid as temperatures decrease.

General

The purpose of this document is to provide instructions for the installation of ShieldLok PVC Lining.

1. Equipment Required

During installation of the ShieldLok PVC Lining the following equipment is recommended.

- 1.1 Equipment for water blast, sand blast, mechanical abrasion, or acid etching, depending on type of surface preparation selected.
- 1.2 Power mixer - a mixer powered by air or electric motor.

- 1.3 Finishing trowel or other suitable tool for applying ShieldLok Mastic to concrete substrate. (Do not use a notched trowel)
- 1.4 Brush or roller to apply ShieldLok Primer.
- 1.5 Appropriate spray equipment for spray application of ShieldLok Primer. (optional)
- 1.6 7.5" (190 mm) wide pressure rubber roller
- 1.7 Blower or other equipment if required to assure adequate ventilation during application of mastic primer and epoxy mastic.
- 1.8 An appropriate welding tool as recommended by the lining manufacturer.
- 1.9 110-volt extension cord
- 1.10 Miscellaneous hand tools for measuring, marking, cutting, including a 2" (50 mm) heavy-blade, sharp putty knife, utility knife or similar sharp knife for cutting ShieldLok sheets.

2. Substrate Preparation

Prior to applying ShieldLok Primer, areas of corroded, but structurally sound, concrete substrate must be cleaned free of such contaminants as dust, oil, dirt and corrosion residues. This may be accomplished using either sand or water blasting, mechanical abrasion or acid etching. Acceptable PH range for the prepared surface is 7 or greater.

3. Priming

Mix ShieldLok Primer according to directions on the product label. Then use brush or roller or appropriate spray system to apply a good, wet coat to the exposed concrete, making sure to obtain thorough coverage. Let the primer cure until it becomes dry (minimum of 2 hours depending on jobsite conditions) before applying mastic. Drying time may be longer in cool climates or high humidity. Approximate coverage of primer is 200 sq. ft. per gallon (4.9 sq. meters/liter).

4. ShieldLok Mastic Application

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ShieldLok Mastic is a 2:1 epoxy gel for filling voids and bonding to properly prepared concrete substrates.

Note: The mastic should not be applied at temperatures below 45° F (7 ° C) or above 100° F (38° C).

4.1 Packaging - ShieldLok Mastic Component A & B, packaged as a 4 gallon (15 liters) unit in a 5 gallon pail.

4.2 Pot Life is 15 minutes if left in the container. If mastic is applied immediately after mixing, working time is approximately 45 minutes. At temperatures above 77°F (25°C) pot life and working time are shorter.

4.3 Mixing - Place Component B with Component A into the 5 gallon pail for mixing. Using a mixer powered by air or electric motor, mix until both components are blended to a uniform color. (Do not over mix) as this will shorten pot life. (See label for detailed instructions.)

NOTE: In cool climactic conditions it may be necessary to store both mastic and primer components in a heated space at approximately 77° F (25° C) to facilitate mixing and application.

4.4 Application—Use finishing trowel, or other suitable tool to apply mastic to a uniform minimum thickness of 3/8” (9.5 mm). Small voids may be filled with mastic. Large voids may require filling with some type of concrete repair material prior to mastic application. After mastic application, watch the setting time of the mastic to be sure it does not set up too hard before applying the liner. Mastic coverage is approximately 4 sq. ft. per gallon at 3/8” thickness (.372 sq. meter/liter at 9.5 mm thickness), depending on the condition of the concrete substrate.

Note: Exposure to water is detrimental to the adhesion of the mastic to the primer. All external water infiltration must be mitigated prior to installation of the product.

5. ShieldLok Lining Installation

Be sure to install the sheet with Mini Diamond Keys in a position to facilitate run-off of any moisture that may accumulate behind the lining. The sheet is installed as follows:

5.1 Measure and cut sheets to size as required prior to mixing and application of mastic.

5.2 Place one edge of the ShieldLok sheet into position and roll the Mini Diamond Keys into the mastic.

5.3 Properly align the sheet in relation to other sheets as required by the type of joint to be produced. (See Figures 1 and 2 later in this instruction for details of joint types.)

NOTE: It may be necessary to heat the lining to facilitate turning corners.

5.4 Use a hand roller to embed the Mini Diamond Keys full depth, approximately 1/4” (6 mm), into the intermediate mastic layer.

5.5 After the sheet has been rolled into position, if necessary, clean surface of sheet with a soft cloth. Note: Be sure not to contaminate weld area with mastic.

5.6 Continue placing sheet until all surfaces to be protected are covered.

6. Hot-Air Welding of Liner Joints

When making ShieldLok joints using weld strip and hot-air welding, the welding is to be performed as follows:

(Refer to Figures 1 and 2 for details.)

6.1 Lightly abrade areas to be welded with a 4” angle grinder and sanding disc to remove sheen and contaminants. Cured mastic in the weld area may be removed by scraping.

6.2 Adjust the hot-air welding tool to approximately 500-600° F (246-301°C) so that the effluent air will fuse the sheet and weld strip without charring.

6.3 Hold the welding tool nozzle approximately 1/4 inch (6 mm) from the surface to be welded at a 45° angle.

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6.4 Move the welding tool back and forth across the intersection between the weld strip and the sheet, moving slowly enough to cause the sheet to appear wet or molten before the weld strip is pressed into place.

6.5 As the heat from the tool softens the sheet to the proper fusible condition, the weld strip should be moved continuously forward and pressed firmly onto the sheet while constant downward pressure is applied.

6.6 Pinholes may occur as a result of frequent stopping and restarting of this continuous welding process. To avoid this problem when restarting, carefully pull back slightly on the weld strip to allow the hot air to be directed upon the last section to be fused together.

6.7 When properly welded, a small bead of molten material will be visible along each edge of the strip. Note: Be sure not to contaminate weld area with mastic.

7. Inspection and Repair

7.1 Visually inspect all areas of the lining and joints for cracks, cuts, tears, punctures and delamination. Repair punctures and holes in the lining by fuse-welding on weld strips directly or in combination with joint strips over the damaged area.

7.2 All welds shall be physically tested by a non-destructive probing method using a blunt instrument such as a putty knife.

7.3 All repairs shall be made using methods approved by the lining manufacturer.

Safety Precautions

Read material safety data sheet before use. Safety precautions must be strictly followed during storage, handling and use.

Caution: Improper use and handling of this product can be hazardous to health.

Do not use this product without first taking all

appropriate safety measures to prevent property damage and injuries. These measures may include, without limitation: implementation of proper ventilation, use of proper lamps, wearing of proper protective clothing and masks, tenting and proper separation of application areas. Consult your supervisor. Proper ventilation and protective measures must be provided during application and drying to keep spray mist concentrations within safe limits and to protect against toxic hazards. Necessary safety equipment must be used and ventilation requirements carefully observed, especially in confined or enclosed spaces, such as tank interior and buildings. This product is to be used by those knowledgeable about proper application methods. ArmorLok makes no recommendation about the types of safety measures that may be adopted because these depend on application environment and space, of which ArmorLok is unaware and over which it has no control. Fumes emitted during the welding of ArmorLok PVC Lining have been tested as non-toxic. However, it is important to provide proper ventilation to move fumes away from the welder, and proper venting and exhaust to remove fumes from confined areas to avoid any potential health risks. If proper ventilation cannot be attained, the use of respirator protection is recommended. See "Safety Precautions" Sheet. If you do not fully understand these warnings and instructions or if you cannot strictly comply with them, do not use the product.

Note: Consult Code of Federal Regulations Title 29, Labor, parts 1910 and 1915 concerning occupational safety and health standards and regulations, as well as any other applicable federal, state and local regulations for safe practices in lining and coating operations.

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Warranty

ArmorLok warrants that this product conforms to the specific description in ArmorLok trade literature as to character and quality of raw materials, workmanship and adaptability for recommended use. Within one year from date of purchase, ArmorLok shall supply replacement material for this product or any portion thereof, or at its option equivalent material, F.O.B. ArmorLok distribution facility, if it fails to meet the foregoing warranty, provided that installation and application of the product have been properly accomplished and that ArmorLok has been promptly notified of the defect. The preceding constitutes the sole remedy of the Buyer and the sole liability of ArmorLok for product defect. No other express or implied warranties, whether of merchantability or of fitness for any particular purpose or use, shall apply. ArmorLok shall not be responsible for consequential damages. ArmorLok's Standard Terms and Conditions of Sale apply to purchase of this product. This product data sheet and the recommendations for usage it contains were based on test data believed to be reliable, and are intended for use by personnel having skill and know-how, at their own discretion and risk, in accordance with current industry practice and normal operating conditions. Variation in environment, changes in operating procedures or extrapolation of data may cause unsatisfactory results. Since we have no control over the conditions or service, we expressly disclaim responsibility for the results obtained or for any consequential or incidental effects of any kind. Also refer to "Terms and Conditions of Sale".

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