FBC CHEMICAL CORP.

Edition 1

LAURENCO WATERPROOFING

Deck System Installation Guide

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1. Introduction: Deck System Details

The FBC-Laurenco PMMA Decking System (LDS) is a cold fluid-applied protection and waterproofing material designed for use on parking decks, walkways, flight pads and other areas where fast return to service, extreme durability and performance are necessary.

LDS products are two-part, high-quality PMMA resins designed for use as a complete, standalone system for concrete decks. This system is designed for use as high performance vehicular traffic areas on covered and uncovered decks. It is a layered system made up of one coat of **Repelz MVS** epoxy primer, an optional **WP** coat for top exposed decks or areas where waterproofing is required, a **BUILD** coat that give reinforcement for vehicular traffic weights, a **CLEAR** coat that seals and gives a rugged protection layer necessary and parking deck environments followed by **STRIPE**, the colored striping system where line and safety striping is needed.

A. Repelz MVS Moisture Vapor Suppression Primer: Repelz MVS Primer is the 2-component epoxy go-to choice for concrete decks and surfaces where water is found to be an issue – or possibly a future issue. This specially designed epoxy primer stops both liquid and vapor water migrating through concrete. Use of this primer will stop the moisture blisters commonly seen in some PMMA deck systems.

B. WP Waterproofing Layer: Laurenco WP is the deck system layer utilized for top decks or decks found over top of finished areas or structures where a waterproofing layer is specified. It is not necessary to add this layer for most park deck levels other than the topmost, weather-exposed deck in most applications. Provides a seamless waterproofing layer that will not allow water or water vapor to permeate the cured membrane.

C. BUILD Body Coat Layer: Laurenco BUILD gives the compressive strength and tough ruggedness needed for the heaviest vehicular traffic. Available in gray and tan, custom colors available.

D. CLEAR Top Coat Layer: Laurenco CLEAR is the wear course coat of LDS. Supplied as a violet tinted resin, when catalyzed and cured dries to a clear, water-white super durable film that repels tire markings and resistance to a range of chemicals. CLEAR is to be applied over the BUILD coat layers.

E. STRIPE Line and Safety Striping: Laurenco STRIPE allows the same rugged performance offered by CLEAR but pigmented for use as line and safety striping for lanes, park lines, walkway and safety striping. STRIPE is available in white, black, safety yellow and safety red. Custom colors are available.

F. Gel Catalyst: Laurenco PMMA Gel Catalyst is a peroxide-based reactive agent used to activate curing of all Laurenco PMMA products ***(NOTE: Repelz MVS is a 2-***

component epoxy and does not require Gel Catalyst to activate). Laurenco PMMA Gel Catalyst is supplied as a white gel in pre-measured 2.3-ounce gel-pouches. Laurenco PMMA Catalyst is available in a specifically designed vented box. Each box contains 30 individual pouches.

G. Packaging and Storage: LDS products should be stored indoors in a cool, dry area away from heat, ignition sources, or open fire. As noted in the description, custom colors are available at special request with Laurenco approval but require a minimum bulk order to make.

LDS Package PHOTOS

2. Application: Equipment

A. Installation Tools:

The following items, including but not limited to those listed, will be needed in installing the materials.

1. cleaning tools, broom & dustpan
2. leaf blower
3. vacuum
4. grinder or wire wheel
5. sandpaper or abrasive cloth
6. solvent wipe
7. primer (proprietary and approved)
8. drop cloths.
9. variable speed drill gun w/mixing agitator
10. graduated mixing containers (metric)
11. digital scale
12. masking tape of different widths
13. trowel for detailing
14. brushes of various widths
15. rollers with handles and poles
16. field scissors
17. rubber or nitrile gloves
18. garbage bags
19. mixing sticks

B. PPE: Personal Protection Equipment

Workers must wear long sleeve shirt, long pants, and work boots. Workers must use butyl rubber or nitrile gloves when mixing and applying this product. Safety goggles are required for eye protection.

Use local exhaust ventilation to maintain worker exposure below TLV. If the airborne concentration poses a health hazard, becomes irritating, or exceeds recommended limits, use a NIOSH approved respirator in accordance with OSHA Respirator Protection requirements under 29 CFR 1910.134. Specific types of respirator will depend on airborne concentration. Dust masks and similar filter masks are not acceptable for use if the TLV filtering levels have been exceeded.

3. Concrete: Condition and Repair

A. Preparation: Generally, substrates must be sound, free of excessive protrusions, d depressions, and pitting, loose and unsound material, contaminants like dirt, oils, grease, residual coatings, ice, snow, water, and any condition that would compromise the adhesion of the **LDS** to the substrate. Specific surfaces may require scarification,

shot blasting or grinding to provide an acceptable substrate. Reference the following for specific surface preparations:

B. Concrete Substrates: Concrete surfaces should have a stiff broom finish or a profile of CSP 2 through CSP 6 as described by the International Concrete Repair Institute (ICRI). This can be accomplished through grinding, shot blasting, and scarification. Surface preparation should be immediately followed by assuring no concrete fines are remining on the deck, followed by the application of primer to avoid any compromise or contamination of the surface from exposure to the elements. The concrete should have a minimum compressive strength of 2500 psi and provisions for underside venting and not exceed the maximum limit of 75% relative humidity and moisture content <5.5%. Generally, a stiff broom finish profile is acceptable. ***FBC Chemical's Repelz MVS epoxy may be utilized in certain circumstances to mitigate moisture issues allowing the application of LDS over damp decks and new substrates seven (7) days after casting. Contact the Laurenco Technical Department for information on Repelz MVS.***

a. **Existing Concrete:** Existing concrete should be assessed and analyzed for contaminants, carbonation, residuals from previous materials, and excessive moisture content so as not to negatively affect the adhesion of the PMMA assembly. Testing methods can include but are not limited to relative humidity testing, sample cores, x-ray, infrared, petrographic analysis, and alkalinity testing.

b. **New Concrete:** New concrete requires a hydration period of 28 days (minimum) according to the published guidelines of the American Concrete Institute (ACI). New concrete should also not be treated with curing agents, penetrating release agents, or waterproofing materials as these materials can compromise adhesion. Generally, a stiff broom finish profile is acceptable.

c. **Adhesion Tests:** Independent adhesion testing according to ASTM D4541 is required for the concrete surfaces receiving Laurenco PMMA to verify the adhesion on the prepared substrate. This should be performed at intervals selected by the entity performing quality assurance. Results should be evaluated by the designer of record.

C. Repair: Damages and imperfections like cracks, joints, low spots and depressions should be primed with BLUE and filled with a Laurenco PRR or an approved epoxy or mortar for substrate repairs. ***Joints or cracks subjected to movement – consult with Laurenco Sales to determine optimal way to deal with these situations.***

D. Field Conditions: The **LDS** products should not be installed if there is the potential for precipitation or if there is condensation on the substrate, or the ambient temperature is within 5°F of the dew point, as it can affect the application of the **LDS** products.

Figure 1: unacceptable substrate honeycombing

Figure 2: unacceptable substrate concrete protrusions

4.Mixing

A. Mixing & Catalyzing: **Except for the BUILD product (as noted below), the other LDS products have the same gel catalyst mix ratio by temperature for ease of application.** When mixing, add the pre-measured gel catalyst pouch(es) to the product, thoroughly mix-agitate for 2-3 minutes using a mechanical means. Agitating by hand is not recommended and may cause improper dispersion of catalyst into the resin. Catalyze only the amount of **LDS** product that can be applied in the anticipated pot life. **Catalyze *only the amount of resin that can be used within the anticipated pot-life***. The amount of catalyst needed is directly related to the weight of the resin used and varies with the ambient temperature as shown in the "Laurenco PMMA Catalyst Mixing Chart".

Laurenco PMMA Deck System Product Mixing Chart – ALL PMMA products (Pouches per 10kg Pail)*:

Temperature Range 20^{0}F – 35^{0}F	
Resin Quantity	Pouches
10 kg (2.2 gal. 8.3 L)	8 (BUILD - 4)

Temperature Range 35^{0}F – 50^{0}F	
Resin Quantity	Pouches
10 kg (2.2 gal. 8.3 L)	6 (BUILD – 3)

Temperature Range 50^{0}F – 70^{0}F	
Resin Quantity	Pouches
10 kg (2.2 gal. 8.3 L)	4 (BUILD – 2)

Temperature Range 70^{0}F – 100^{0}F	
Resin Quantity	Pouches
10 kg (2.2 gal. 8.3 L)	2 (BUILD – 1)

***NOTE: BUILD uses half of the pouches indicated above, so at 70-100F, one would mix just one pouch per 10kg pail, not 2 pouches.**

B. Coverage Rates:

Quantities and coverage will vary depending on substrate conditions such as roughness and absorbency.

Repelz MVS Primer: 5-10 mil bond-coat to ensure sealing of pores, followed by second 10-15 mil main coat particularly over damp concrete areas to give optimal water suppression.
WP Waterproofing Layer: 40 mils minimum over either BLUE or MVS primers.
BUILD Body coat layers: One 200-250 mil layer or two 100 mil layer coats minimum.
CLEAR Top Coat: 20 mils minimum
STRIPE Traffic and Safety Striping: 20 mils minimum

5. Installation:

A. Laurenco Deck System (LDS) :

1. Ensure the surrounding substrate is clean, dry, and free of depressions, voids and adhered debris.
2. Fill any voids or cracks wider than 1/8 inch with approved epoxy, grout or **BLUE** and **PRR** fill as agreed upon by Laurenco Technical Services. (Laurenco **BLUE** PMMA Universal Primer and **PRR** not typically a part of the LDS system – consult with Laurenco Technical Service for more information)
3. A SPC 4-6 profile of the concrete is optimal for best adhesion.
4. As directed, apply the **Repelz MVS** to the properly prepared concrete deck surface and allow it to adequately cure before going to next step.
5. Where designed or deemed necessary, apply the layer of **WP** to the surface and allow to cure before going to next step.
6. Apply, as directed, the **BUILD** layer(s), making sure an even coat is applied via flat trowel or other implements. Allow this coating to cure completely prior to going to next step, about 30-45 minutes.
7. When applying the **CLEAR**, make certain that the proper millage is applied above the top profile of the surface to ensure that enough material has been applied but not so much so that the aggregate from the **BUILD** layer is covered over. Contact Laurenco Technical Services with any questions.
8. Apply any **STRIPE** materials as detailed for a given project, contact Laurenco Technical Services for additional information.

Figure 3: gather required materials and tools as required.

Figure 4: Pre-cut and dry fit reinforcing fleece.

Figure 5: mix-agitate PMMA resin.

Figure 6: use and catalyze what is needed for the installation.

Figure 7: add PMMA catalyst as required to PMMA resin.

Figure 8: thoroughly mix and evenly disperse catalyst into resin.

Figure 9: apply to prepped and primed substrate with roller.

Figure 10: verify first resin application is 45 mils wet thickness (min)

Figure 11: install fleece reinforcement.

Figure 12: set fleece reinforcement into fresh PMMA resin.

Figure 13: cut leading edge of fleece ¼-inch from edge of resin.

Figure 14: saturate fleece reinforcement with 2nd PMMA coat.

Figure 15: overlap 2-inches on existing PMMA as required.

Figure 16: verify 2nd PMMA resin coat is minimum wet 45mils thick.

C. Cure Times:

Based on an ambient temperature of 68F (20-degC) the minimum cure times noted below are approximate and may vary. The information provided herein is based on laboratory conditions and is intended for use as a guideline only. Actual cure times should be established in the field, based on actual field conditions, including but not limited to, ambient temperature, substrate temperature, humidity, and exposure to direct sunlight.

Repelz MVS Epoxy Primer:

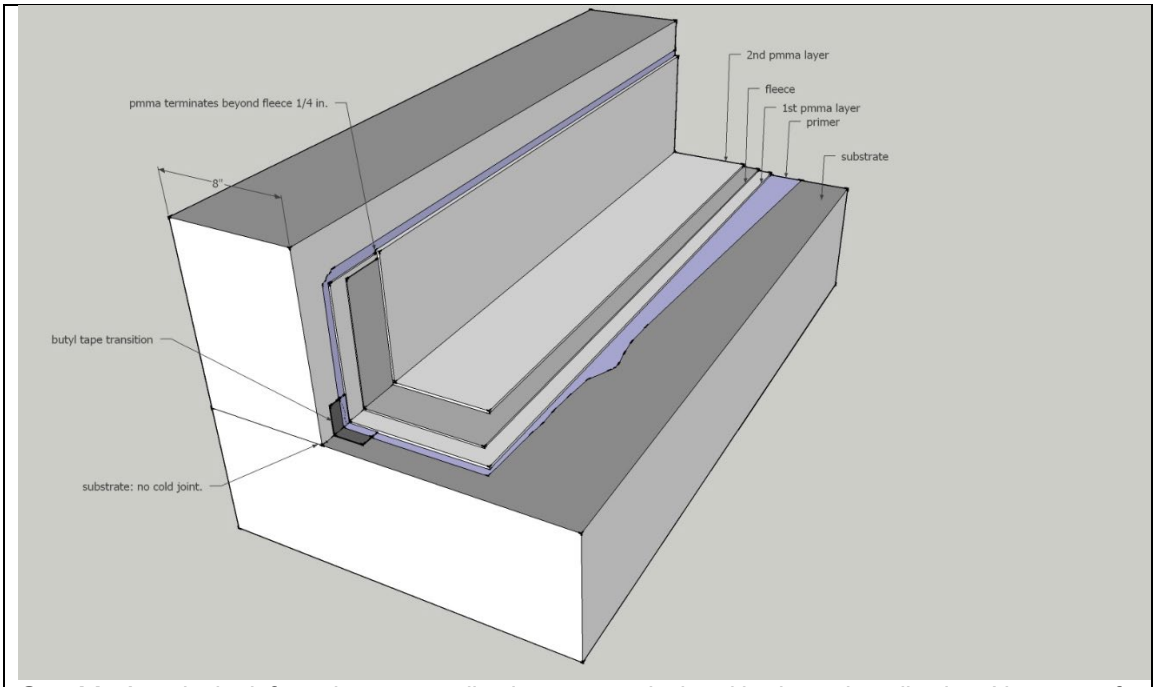
Pot Life, use time: 2 hours once A & B components are properly mixed
Resistant to rain at 68F (20-degC): Approx. 12-16 hours.

Laurenco PMMA Products in LDS:

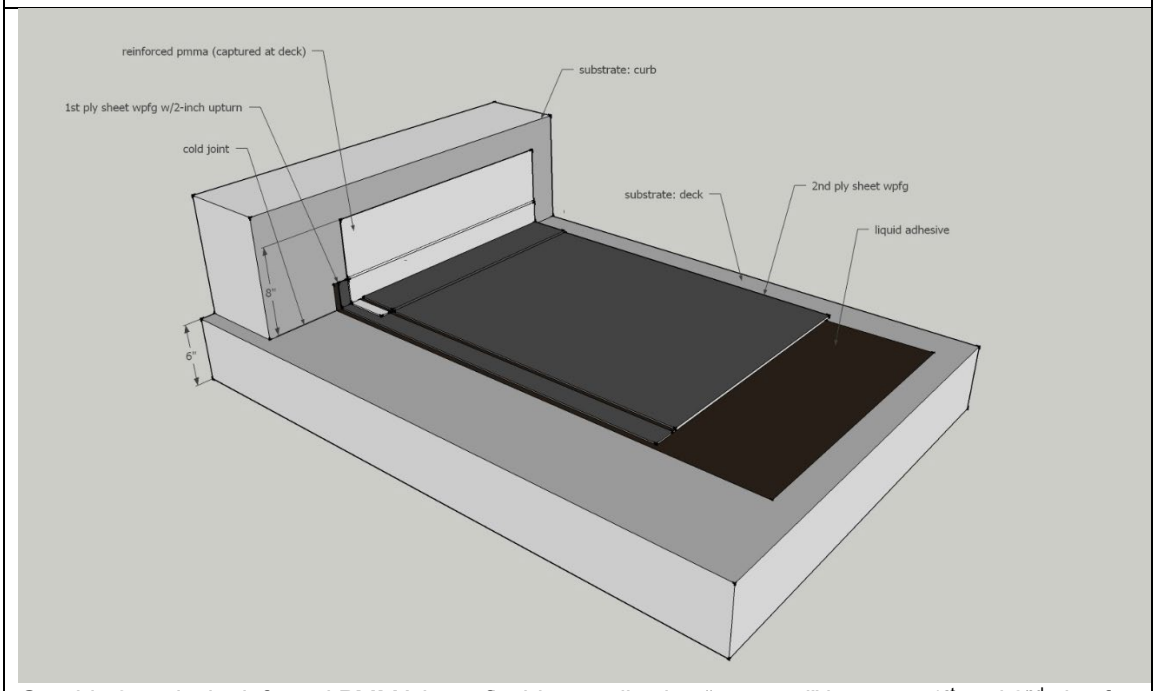
Pot life, use time: 15-20 minutes once properly mixed (1-2 minutes mixing to completely incorporate Gel Catalyst).
Resistant to rain at 68F (20-degC): Approx. 30 minutes.
Ready for 2nd coat at 68F (20-degC): Approx. 30-45 minutes.
Stress Resistant at 68F (20-degC): Approx. 2.0 hours.

D. Typical Details:

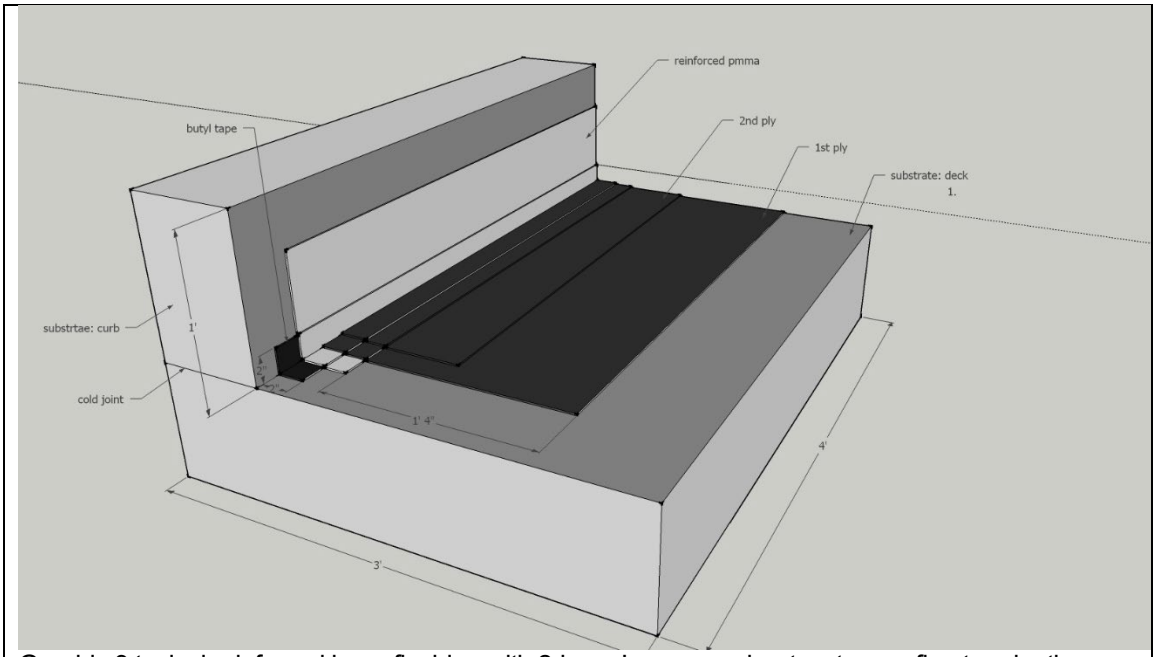
Please refer to attached graphics and the FBC-Laurenco's typical guideline detail drawings in the product documents section of the Laurenco Waterproofing website at www.laurencowaterproofing.com.



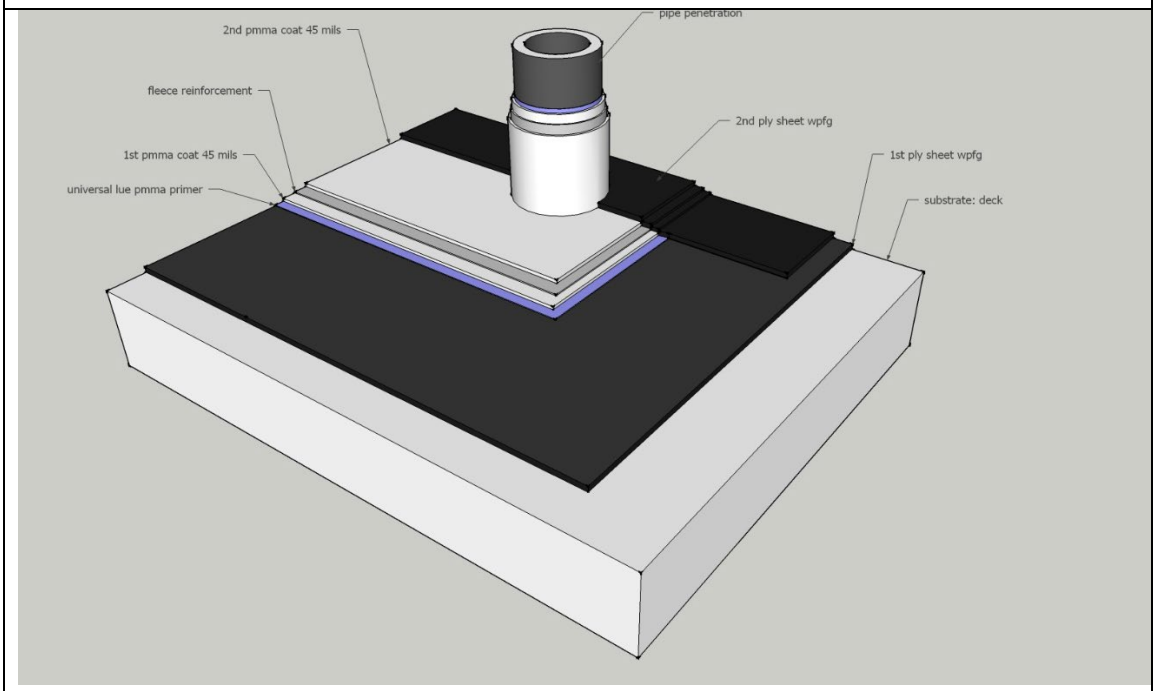
Graphic 1: typical reinforced pmma application on a vertical and horizontal application. Note use of butyl tape in liquid at inside corner to transition over cold joint in concrete.



Graphic 2: typical reinforced PMMA base flashing application "captured" between 1st and 2nd ply of Laurenco sheet waterproofing. Note the first ply is turned up like an end dam.



Graphic 3:typical reinforced base flashing with 2-layer Laurenco sheet waterproofing terminating on horizontal in corner transition. Note: butyl tape in liquid detailed at inside corner cold joint.



Graphic 4: typical reinforced PMMA flashing at pipe penetration. Note: PMMA flashing is captured under second layer of Laurenco sheet waterproofing.

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