DURO-SHIELD™ ACRYLIC ROOF COATING INSTALLATION GUIDE

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GENERAL REQUIREMENTS

- Roof substrate preparation is the responsibility of the installer.
- Do not begin work with Duro-Shield™ acrylic products until preliminary work has been completed or until unsatisfactory conditions have been corrected as per the Duro-Shield Acrylic Roof Coating Installation Guide. The substrate must be clean, dry and free of any foreign objects prior to application of Duro-Shield acrylic products. Do **not** apply Duro-Shield acrylic products, including all Duro-Shield acrylic primer and acrylic coatings, to unacceptable substrates.
- Roof must have positive drainage. Substrate should not pond water for more than 48 hours after precipitation stops.
- Protect any surfaces that should not receive Duro-Shield acrylic products.
- Do not apply Duro-Shield acrylic products whenever weather conditions are unfavorable or inclement.

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SUBSTRATE PREPARATION

GENERAL

Inspect each substrate and repair any of the following issues as described in this section.

METAL SUBSTRATES	
Issue	**Repair**
Rust	• Severely damaged or rusted seams and/or fasteners must be replaced. • Metal panels that have holes must be replaced. • Metal panels with light rust must be treated to prevent further deterioration. The entire roof surface must have no more than 20% rust.
Fasteners	• All fasteners must be retightened, secured, or replaced as necessary. • All stripped fasteners must be replaced with new, larger grommet-head fasteners. • All deteriorated or missing fasteners must be replaced. • All fasteners must be fully encapsulated with Duro-Caulk® Advanced.
Small Gaps (Less than 1/8 inch)	• For gaps less than 1/8 inch, seal with Duro-Caulk Advanced.
Large Gaps (1/8 inch or greater)	• For gaps greater than 1/8 inch, install backer rod and seal with a three-course treatment of Duro-Shield Acrylic Brush-Grade Mastic, Polyester Reinforcement Fabric and another layer of Duro-Shield Acrylic Brush-Grade Mastic.

NON-METAL SUBSTRATES	
Substrate	**Repair**
Duro-Last®	• Any areas where Duro-Last is torn, cracked, and/or buckled must be repaired using the same type of Duro-Last products. • Any wet insulation must be replaced.
Other PVCs	• Any areas where PVC is torn, cracked, and/or buckled must be repaired using similar products. • Any wet insulation must be replaced.
EPDM	• Any areas where EPDM is torn, cracked, and/or buckled must be repaired using similar products. • Any wet insulation must be replaced.
Hypalon®	• Any areas where Hypalon is torn, cracked, and/or buckled must be repaired using similar products. • Any wet insulation must be replaced.
TPO	• Duro-Shield acrylic products, including all Duro-Shield acrylic primer and acrylic coatings, are **not** allowed on this type of substrate.

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NON-METAL SUBSTRATES (CONTINUED)	
Substrate	**Repair**
Mineral & Granule Surfaced BUR or Modified Bitumen (SBS & APP) **OR** **Smooth Surfaced BUR or Modified Bitumen (SBS & APP)**	• Any areas where BUR or modified bitumen are blistered, buckled and/or otherwise damaged must be removed and repaired using similar products. • New BUR or modified bitumen repair materials must be allowed at least 30 days to weather before applying liquid-applied products to these repaired areas. • All areas where BUR or modified bitumen have significantly craze-cracked (gaps 1/8 inch or greater in width and/or depth) must be repaired using the three-course treatment described above in the **Large Gaps** section of **Metal Substrates** preparation.
Wood	• Any areas where substrate is rotten, wet and/or otherwise damaged must be removed and repaired using similar products. • All large or excessive gaps (greater than 1/8 inch) existing between roof panels and/or penetrations must be repaired using the three-course treatment described above in the **Large Gaps** section of **Metal Substrates** preparation. • All fasteners must be retightened, secured, or replaced as necessary. All stripped fasteners must be replaced with new, larger fasteners. • All deteriorated or missing fasteners must be replaced. • All fasteners must be fully encapsulated with Duro-Caulk Advanced.
Concrete	• Duro-Shield acrylic products are **not** recommended for this type of substrate. Contact Duro-Last for alternate products.
Sprayed Polyurethane Foam	• Duro-Shield acrylic products, including all Duro-Shield acrylic primer and acrylic coatings, are **not** allowed on this type of substrate.

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CLEANING PROCEDURES

GENERAL – ALL SUBSTRATES

- Roof wash-off catchment systems should be in place when required. Follow all state and local requirements for roof wash-off catchments during the cleaning process.
- Kill and remove any living organisms such as algae, mold or fungus with a fungicidal treatment. Ensure that the substrate will not be adversely affected by the treatment.
- Pressure wash (1,000 psi, maximum) with water and/or approved cleaner. Do not damage or inject water into the substrate during washing. Allow to dry completely.
- Use stiff bristle push broom to remove all dirt, dust, loose and flaking particles, grease, oil, laitance and other contaminants or loose materials that may interfere with proper adhesion.

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TESTING

GENERAL

Adhesion testing is performed to verify the suitability of any substrate to receive Duro-Shield acrylic products. It is the responsibility of the installer to determine the suitability prior to the installation of any Duro-Shield acrylic products.

When adhesion tests are conducted:

- Test patches shall be labeled and photographed to document adhesion results for your records.
- Installer can consult with Duro-Last's Engineering Services Department by email (engineering@duro-last.com) or by phone (800-248-0280) concerning all adhesion test results.

Duro-Last recommends the following test method:

TEST METHOD: FIELD PEEL ADHESION	
Overview	ASTM D903 "Peel adhesion" is found in all roof coating standards. Primers and enamels may also be evaluated by a similar test called ASTM D3359 "Tape Adhesion." Often it is important to run the test wet; this is called "wet adhesion."
Preparation	• Make a mock-up of the intended system. • Duplicate any mechanical substrate preparation. • Simulate cleaning and pressure washing. ○ A worn Scotch-Brite™ cleaning pad makes a good pressure washing simulation. • Prime as required. • Apply a layer of coating to the substrate.

Test Method	• Testing should be completed in same atmospheric conditions as Duro-Shield acrylic products will be installed.
	• Wet about 6 inches of a pre-cut 1-inch wide by 12-inch long fabric strip with the coating.
	• Allow the remaining 6 inches of the fabric to be available to pull on the test sample.
	• Apply another layer of coating to encapsulate the wetted section of fabric.
	• Allow to dry.
	  ○ This can be anywhere from 24 hours to 2 weeks.
	  ○ In warm weather, 1 day may be sufficient.
	  ○ In cold weather, 5 days is often required.
	  ○ The standard practice is 2 weeks.
	• Soak prior to testing (best practice).
	  ○ One hour is usually sufficient, use wet rag and cover with a bucket lid or plastic.

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TEST METHOD: FIELD PEEL ADHESION (CONTINUED)

Quantitative Evaluation (Best Practice)

- Use a force gauge such as a digital fish scale or trigger-pressure gauge.
- A loop, staple or clamp is used to hold the fabric in the gauge.
- Pull slowly, the peak value should be above 1 lb. and preferably over 2 lbs. (standard is 2 lbs./inch).

Qualitative Evaluation

Good: 70% or greater cohesion (2 lbs./inch or greater)

Fair: 50 – 69% cohesion (1 – 2 lbs/inch)

Poor: 10 – 49% cohesion (1 lb./inch or greater)

Fail: Less than 10% cohesion (Less than 1 lb./inch)

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SEAM TREATMENT

GENERAL

Roof seams can be a primary area where leaks occur. All horizontal and vertical seams must be flashed in accordance with the following Duro-Shield Acrylic Brush-Grade Mastic application instructions. Duro-Caulk Advanced may be used on metal seams, screw heads, and small gaps and cracks less than 1/8 inch.

- Only apply product when the ambient temperature is at least 50º F (10° C) and rising. Product must be stored between 60º F (15° C) and 80º F (26° C) for 24 hours prior to installation.
- Do **not** apply when rain, cold or nightfall are imminent.
- Do **not** use under water or below grade.
- Thinning the product is **not** allowed.

INSTALLATION

1. Joint dimensions should not exceed 1/4 inch by 1/2 inch deep. Use polyethylene backing rod for depths exceeding 3/8 inch. Seal with a three-course treatment of Duro-Shield Acrylic Brush-Grade Mastic, Polyester Reinforcement Fabric and another layer of Duro-Shield Acrylic Brush-Grade Mastic.
2. Use a putty knife or trowel to apply product to cracks and voids. Refillable caulking guns may also be used to apply the product.
3. If re-coating is needed, wait 1 to 2 hours for first treatment to dry.
4. Allow to dry for 72 hours.

CLEANUP

- Uncured product may be removed by wiping with warm water, soap and a clean cloth.
- Application equipment should be cleaned immediately after use with warm water, soap and a clean cloth.

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PRIMING

GENERAL

- Only apply product when the ambient temperature is at least 50º F (10° C) and rising. Product must be stored between 60º F (15° C) and 80º F (26° C) for 24 hours prior to installation.
- Do **not** apply when rain, cold or nightfall are imminent.
- Thinning the product is **not** allowed.
- Use a brush, roller (1-inch nap, min.), or airless sprayer to apply. Best results are obtained when using an airless sprayer. Care should be taken when using an airless sprayer to apply Duro-Shield acrylic products. Wind-blown over-spray may damage property adjacent to the project site.

PRIMER APPLICATION

1. Stir until an even consistency is achieved. A slow-speed drill with mixer attachment is recommended.
2. A minimum thickness of 6 dry mils must be achieved.
   a. BUR and modified bitumen substrates: approximate coverage rate of 150 square feet per gallon
   b. All other substrates: approximate coverage rate of 300 square feet per gallon
3. Allow to dry for 24 hours.

CLEANUP

- Uncured product may be removed by wiping with warm water, soap and a clean cloth.
- Application equipment should be cleaned immediately after use with warm water, soap and a clean cloth.

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COATING

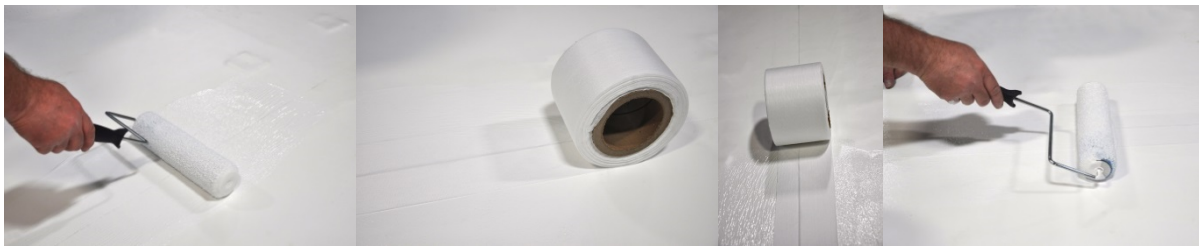
GENERAL

Install Duro-Shield acrylic roof coating once all of the instructions above have been completed.

- Only apply product when the ambient temperature is between 50º F (10° C) and 95º F (35° C). Product must be stored between 60º F (15° C) and 80º F (26° C) for 24 hours prior to installation.
- Do **not** apply when rain, cold or nightfall are imminent. Relative humidity must be below 80%.
- In extreme hot, windy, or dry conditions, wet the surface to be coated with a fine mist of clean water just before applying Duro-Shield acrylic roof coating.
- Thinning the product is **not** allowed.
- Use a brush, roller (1-inch nap, min.), or airless sprayer to apply. Best results are obtained when using an airless sprayer. Care should be taken when using an airless sprayer to apply Duro-Shield acrylic products. Wind-blown over-spray may damage property adjacent to the project site.

COATING APPLICATION

1. Stir until an even consistency is achieved. A slow-speed drill with mixer attachment is recommended.
2. The length of the desired warranty will determine the number of required coats and application volume per coat. Refer to the tables below.
3. For **Duro-Shield 20 Acrylic Roof Coating**, at all seams, transitions, or flashings, Polyester Reinforcement Fabric must be laid into the first coat while it is still wet. Refer to installation photos below.



4. Allow to dry completely.
5. When two coats are required, application of the second coat should be perpendicular to the first coat and at approximate coverage rate and thickness per the tables below. Areas with Polyester Reinforcement Fabric may need more coating to fully cover the fabric than what is listed in the tables below.
6. Allow to dry completely.

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5-Year Warranty Requirements					
Substrate	**Product**	**Primer**	**Base Coat**	**Top Coat**	**Total Dry Mils**
Metal	Duro-Shield 10	On rusted areas only	2 gallons per 100 square feet (32 wet mils)	Not required	16 mils
BUR/Modified Bitumen	Duro-Shield 10	YES – 150 square feet per gallon	2 gallons per 100 square feet (32 wet mils)	Not required	16 mils
Aged PVC, EPDM, Hypalon	Duro-Shield 10	NO	2 gallons per 100 square feet (32 wet mils)	Not required	16 mils

10-Year Warranty Requirements					
Substrate	**Product**	**Primer**	**Base Coat**	**Top Coat**	**Total Dry Mils**
Metal	Duro-Shield 10	On rusted areas only	1.5 gallons per 100 square feet (24 wet mils)	1.5 gallons per 100 square feet (24 wet mils)	24 mils
BUR/Modified Bitumen	Duro-Shield 10	YES – 150 square feet per gallon	1.5 gallons per 100 square feet (24 wet mils)	1.5 gallons per 100 square feet (24 wet mils)	24 mils
Aged PVC, EPDM, Hypalon	Duro-Shield 10	NO	1.5 gallons per 100 square feet (24 wet mils)	1.5 gallons per 100 square feet (24 wet mils)	24 mils

20-Year Warranty Requirements					
Substrate	**Product**	**Primer**	**Base Coat**	**Top Coat**	**Total Dry Mils**
Metal	Duro-Shield 20	On rusted areas only	2 gallons per 100 square feet (32 wet mils)	1.75 gallons per 100 square feet (28 wet mils)	33 mils
BUR/Modified Bitumen	Duro-Shield 20	YES – 150 square feet per gallon	2 gallons per 100 square feet (32 wet mils)	1.75 gallons per 100 square feet (28 wet mils)	33 mils
Aged PVC, EPDM, Hypalon	Duro-Shield 20	NO	2 gallons per 100 square feet (32 wet mils)	1.75 gallons per 100 square feet (28 wet mils)	33 mils

Refer to the Duro-Shield Acrylic Coating Calculator on the Duro-Last website for assistance in calculating quantities and pricing.

CLEANUP

- Uncured product may be removed by wiping with warm water, soap and a clean cloth.
- Application equipment should be cleaned immediately after use with warm water, soap and a clean cloth.

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