Rev 01/2020

SECTION 07-56-11
TRITOFLEX 2K – VERTICAL LEG STANDING SEAM METAL ROOF RESTORATION SYSTEM

FOR INSTALLATION OVER METAL AND STEEL SUBSTRATES

This specification works as a guideline and may be modified, as necessary, by the "Designer of Record "to fulfill the needs of the individual project. Any changes or improvements to the content of this specification should be made only with the written consent of the "Designer of Record."

PART ONE - GENERAL

1.1 Description

A. Furnish and install an instant-setting, liquid-applied, roof restoration system complete, in place, as shown on the drawings, specified herein, or needed for a complete and proper watertight and warrantable installation. TritoFlex™ 2K and 1K Synthetic Rubber waterproofing materials shall be applied to all seams, flashings, edges, fasteners, penetrations, curbs, and defects at specified rate to create a watertight seal. An energy efficient and sustainable elastomeric topcoat, TritoCryl™ 2K, TritoCryl 1K, or TritoTherm™, will then be applied to the entire roof surface for UV protection, water resistance, and thermal shock reduction.

1.2 Quality Assurance

A. Standards: Comply with standards specified in this section and as listed in the General Requirements.

B. Qualifications of Manufacturer: The core products used in the roofing work and included in this section shall be manufactured directly by the manufacturer and not through a third-party mixing company or private label. Quality control measures include testing and retaining samples of every product batch by the manufacturer.

C. Qualifications of Installers: The Contractor and his personnel shall be currently approved by the manufacturer and only those spray techs that have been certified through the manufacturers' training program are to spray apply the roof membrane.

D. Roofing Inspections: Make all required notifications and secure all required inspections by the manufacturer of the approved materials to facilitate issuance of the specified roof warranty.

E. Manufacturer's Pre-Review: The manufacturer shall review and approve the existing roof substrate that is to be recovered with the TritoFlex system with respect to the appropriateness of the substrate for use of their recover system on this project.

F. Spray Equipment: The TritoFlex 2K liquid roof membrane may only be applied with spray equipment specifically manufactured for TritoFlex 2K and supplied by Triton Inc.

1.3 Submittals

A. Product Data: Prior to project starting, submit:

i. Complete material list of all items proposed to be furnished and installed under this section along with product data sheets for each.

ii. Manufacturer's pre-review comments, specific application guides, and other data such as photos required to demonstrate compliance with specified requirements.

1.4 Product Handling

A. Delivery and Storage:

i. Deliver all packaged materials to the job site in their original, unopened containers with all labels intact and legible at the time of the inspection.

ii. Store all materials in an approved manner and protected from freezing or extreme heat. Storage temperature to be maintained above 50 degrees Fahrenheit (10°C).

iii. Protect materials during handling and application to prevent damage or contamination.

B. Protection: Use all necessary means to protect the materials in this section before, during, and after installation, and to protect the work and materials of all other trades.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of and at no additional cost to the Owner.

1.5 Scheduling

A. Work is to be performed on a daily basis with appropriate scheduling of product applications to prevent contamination of the surfaces between applications. Products shall be installed only if temperatures do not dip below freezing for 72 hours after applying, and daytime temperature reaches 45 degrees Fahrenheit (10° C) or higher.

B. Final completion of work shall be defined as the installation of all specified primer, roof membrane, top coating, flashings, counterflashings, sheet metal, fasteners, and caulking.

C. Contractor shall complete installation of TritoFlex products within two (2) days after cleaning the existing substrate. After installation of the TritoFlex 2K rubber, a light rinsing of the surface to remove dry accelerator is required prior to top coating, no earlier than 6 hours after TritoFlex 2K installation. Top coating not to occur before TritoFlex 2K and 1K are completely dried. If top coating is performed later than three (3) days after completion of TritoFlex 2K and 1K products, another rinsing may be required to remove dust and dirt accumulations depending on the environment.

1.6 Warranty

A. As part of the work of this section, pay all required fees, secure all required inspections, and complete all items necessary to secure and deliver to the Owner a manufacturer's warranty of 10 years or 15 years, as requested. All warranties are eligible for extensions.

Duration	Covers*	TritoFlex 2K/1K Thickness	Topcoat Thickness	Extendable
10 Years	Material & Labor Costs	97 wet/60 dry mil on seams, flashings, penetrations, fasteners, and stress areas	30 wet/20 dry mil over entire surface	Yes
15 Years	Material & Labor Costs	130 wet/80 dry mil on seams, flashings, penetrations, fasteners, and stress areas	50 wet/30 dry mil over entire surface	Yes

**Workmanship warranties available upon request*

B. Contractor to provide photographs of areas to receive liquid membrane before start of work, during surface preparation, during spray application, and at completion of work for warranty acceptance

PART TWO - PRODUCTS

2.1 General

A. Minimum product requirements have been listed. All of these components must be used and bid. Products not supplied by the manufacturer are to be purchased from a manufacturer approved source.

2.2 Products Supplied by Warranty Manufacturer

A. 2K Liquid Membrane – Two-Component, Cold Spray-Applied Synthetic Rubber (TritoFlex™ 2K)

Spray-applied, instant-setting liquid waterproofing manufactured by Triton Inc. and applied by a manufacturer certified installer to create a waterproofing membrane. The liquid TritoFlex 2K product is water-based and solvent-free, which transforms into an instant-setting seamless rubberized roof membrane as it is spray-applied to the substrate and catalyzed by an accelerator component. The liquid is spray-applied in a single coat to achieve a minimum monolithic membrane thickness of either 60 dry mils for 10-year warranties, or 80 dry mils for 15-year warranties, and possess physical properties of no less than the values listed below:

Property	Test Method	Value
Solid Content	Vacuum cure	60%
Flame Exposure	ASTM E108	Class A, Self-Extinguishing
Water Vapor Permeability	ASTM E96	0.1 perms or less
Elongation	ASTM D412	1200% or greater
Tensile Strength	ASTM D412	500 psi or greater
Hydrostatic Pressure	BS EN 12390-8	Pass – No penetration
Impact and Hail Resistance	ASTM D3746	Pass
Dynamic Puncture Resistance	ASTM D5635	2.80 J/mm or greater
Pull-Off Adhesion to Steel (1000 hr UV)	ASTM D4541	2,000 psi or greater
1000 hr UV Exposure (Xenon)	ASTM G155	No effect
Cured to the Touch	After Sprayed	Instantly
VOC Content	--	None
Wind, Fire, Hail, Foot Traffic, UV	FM 4470	Pass (Class A, Severe Hail)

B. Patching and Flashing Membrane – One-Component, Brush-Applied Rubber

i. TritoFlex 1K Brush-Grade Rubber – Brush-applied, water-based, solvent-free, single-component waterproofing membrane manufactured by Triton Inc. Product is used for touch-up patching and reinforcing of flashing areas in the TritoFlex 2K membrane.

C. Reflective/ Protective Topcoat *(Select the appropriate coating that meets the building requirements)*

i. TritoCryl 2K: Highly reflective, instant-setting, water-based acrylic elastomeric topcoat manufactured by Triton Inc. It is spray-applied to the substrate using specialized equipment manufactured by Triton Inc. and catalyzed by an accelerator component. Available in white only.

ii. TritoCryl 1K: Highly reflective, water-based acrylic elastomeric topcoat. It is spray-applied using standard airless spray equipment, brush-applied, or roller-applied. Manufactured by Triton Inc. and typically provided in white, gray, or tan. Custom colors available upon request.

iii. TritoTherm: Thermal insulating, reflective, water-based acrylic elastomeric white top coating. Ceramic and glass microspheres within the top coating not only reflect UV rays, but also reduce heat transfer, making it a superior energy saving solution when used as part of the TritoFlex 2K roof membrane system; manufactured by Triton Inc.

D. Catalyst (Accelerator)

i. TritoFlex 2K ACCELERATOR: Specialty non-toxic, food-grade Calcium Chloride (CaCl) and water mixture used as the catalyst component in conjunction with spraying the TritoFlex 2K Rubber, allowing for the rapid build-up of the membrane to any thickness desired in one coat. The dry CaCl mixture is supplied by Triton, Inc. and the applicator mixes with water per the manufacturers' requirements on the job site. Alternate catalysts are in no way allowed, as they will cause damage to the final product.

ii. TritoCryl 2K CATALYST: Specialty inorganic salt and water mixture used as the catalyst component in conjunction with spraying the TritoCryl 2K Topcoat, allowing for the rapid build-up of the membrane to any thickness desired in one coat. The pre-mixed liquid is supplied by Triton, Inc and the applicator does not dilute before use. The TritoCryl 2K catalysts is classified as a Class 8 hazardous chemical. Comply with all OSHA and DOT regulations with shipping and handling this product. Read the Safety Data Sheet before use.

E. Primer

i. Triton METAL PRIME: Durable, rust-resistant, solvent-based coating and primer for bare galvanized and uncoated steel, supplied by Triton Inc. Also available in a low-VOC, water-based form.

F. Reinforcement Fabric

i. PolyFab: High-strength polyester fabric, used to reinforce high-stress and high-movement areas underneath the TritoFlex 2K product or within the TritoFlex 1K product.

2.3 Equipment Supplied by Manufacturer

A. Spray machine and testing gauges/meters

i. Triton Standard Spray Machine: dual-component spray rig consisting of spray gun, hoses, pumps, and cart, specifically manufactured and supplied by Triton, Inc.

ii. Triton High Production Spray Machine: dual-component spray rig consisting of spray gun, hoses, pumps, and cart, specifically manufactured and supplied by Triton, Inc.

iii. TritoFlex 2K mil gauge for testing wet mil thickness while spraying the liquid membrane.

iv. Standard paint mil gauge for testing wet mil thickness of TritoCryl 2K, TritoCryl 1K, or TritoTherm topcoat.

PART THREE - EXECUTION

3.1 Description

A. The latest manufacturer application techniques are to be followed along with the following requirements. These specific minimum requirements must be included in the bid and are not to be altered.

3.2 Inspection

A. Examine the existing roof conditions under which work in this section will be installed. Correct conditions detrimental to the proper and timely completion of the work such as loose fasteners, open joints and seams, loose patchwork, and severe degradation and rust. Do not proceed until such conditions have been corrected.

3.3 Surface Conditions

A. Surfaces scheduled to receive waterproofing are to be sound, clean, dry and free of any dust, grease, oil, laitance, and other contaminants.

B. Substrate is to be free of sharp projections and free of loose components.

3.4 Installation – Preparation of Substrate

A. Protect all adjacent surfaces from overspray at all times. Taping off surfaces with painter plastic to prevent overspray onto surfaces and to establish clean straight edge termination lines on the new liquid membrane flashings is required. Use care when masking air intakes and HVAC units so as not to block all ventilation and potentially damage the unit.

B. Repair all defects in existing substrates including; loose or missing fasteners, severe rust and degradation of the substrate, loose or peeling repairs and patches, removing all existing silicone products, missing or damaged closure strips, and open seams. Loose fasteners should be tightened down. If fasteners are missing or unable to tighten, replace with new, oversized fasteners. Seams with openings greater than 1/8" should be stitched down or re-crimped.

C. All existing metal flashings that are specified to remain must be inspected for watertightness. Any flashing metal such as counterflashings, termination bars, coping caps, edge metal, ridge caps, rake edges, etc., shall be properly repaired or replaced to achieve a watertight condition. Consult with Manufacturer for further clarification.

D. Remove all dirt, debris, and loose materials from the surface of the roof.

E. Existing surfaces shall be cleaned with pressure washing equipment to a condition conducive to positive adhesion of the TritoFlex 2K, per manufacturer's requirements prior to application of primer and/or liquid-applied system. Unapproved curing compounds, form release agents, petroleum distillates, animal fats, and other contaminates shall not come into contact with approved substrate after cleaning. Contractor shall complete installation of TritoFlex 2K membrane within two (2) days after cleaning of substrate.

F. Verify the substrate is visibly dry on the surface and free of moisture within its components.

G. On all bare metal and rusted surfaces, apply one coat of Triton Metal Prime at 275 square feet per gallon to a 5 wet/2 mil dry thickness by roller or airless sprayer. Needs to dry for 1 hour before coating over. Any areas of metal with existing acrylic coating or other materials should not be primed. The primer is only for direct contact

with bare metal and steel surfaces. Please see Manufacturer's data sheets for additional information and safety precautions.

3.5 Installation of Liquid Membrane

A. General:

i. Stir materials prior to application in accordance with manufacturer's instructions using a mechanical mixer.

ii. Spray instant-set TritoFlex 2K and Accelerator as a continuous, monolithic membrane of uniform thickness, beginning at the lowest point and terminating at the highest point. Final membrane thickness after full cure must be a minimum, on all surfaces, 97 wet/60 dry mils for 10-year warranties and 130 wet/80 dry mils for 15-year warranties.

iii. Spray TritoFlex 2K with Accelerator at 97 wet/60 dry mils or 130 wet/80 dry mils minimum into all vertical seams at minimum 2 inches wide and into all horizontal seams at minimum 12" wide. Use TritoFlex 1K for any seams that may be difficult or impossible to spray properly.

iv. Spray TritoFlex 2K with Accelerator at 97 wet/60 dry mils or 130 wet/80 dry mils to all penetrations, curbs, flashings, rake edge, terminations, and into any closure strips. Apply at least 3" on each side of transition point.

v. When a spot repair is required during application, re-spray defect area within 15 minutes of initial spray application so entire membrane cures monolithically.

vi. Perform wet mil thickness tests (with a manufacturer supplied mil gauge) at regular intervals while spraying to assure a minimum of 97 wet mils throughout for 60 dry mils, and 130 wet mils for 80 dry mils. Immediately re-spray spots checked with gauge to fill in void.

vii. Apply TritoFlex 1K Brush-Grade at 97 wet/60 dry mils on all exposed fasteners at minimum of 2" width. If applying with a caulking gun or airless sprayer, brush in with a chip brush after delivery of the material to ensure proper adhesion around the fastener.

viii. After TritoFlex 2K has dried, brush apply TritoFlex 1K Brush-Grade to any spray imperfections or voids that may exist. Also apply as an additional sealant over TritoFlex 2K at the top of all vertical leg seams and at any 90-degree transitions and around penetrations to ensure a smooth, fully watertight seal.

ix. If reinforcement fabric is to be used, first apply a thin base layer of TritoFlex 1K (or TritoFlex 2K liquid with no Accelerator) on the surface. Embed 4" or 6" polyester fabric into the wet coating and use a brush to smooth the fabric and saturate it with the coating. Apply more product, if needed, to fully saturate the fabric, but not create any pooling. Immediately apply TritoFlex 2K with the Accelerator on top of the reinforcement to create the final membrane. Please consult with Manufacturer or Designer for details on where reinforcement is required.

x. Refer to manufacturer's recommendations and details for proper membrane terminations.

3.6 Installation of Topcoat and Final Check

A. After the TritoFlex 2K and TritoFlex 1K products are fully dry to the touch with no moisture coming out of the material when pressed on with a hand, rinse dried accelerator from all TritoFlex 2K surfaces with clean water

until dried accelerator residue is rinsed completely off of the roof. The surface should be completely dry prior to applying top coatings.

B. Following the application of TritoFlex 2K roof membrane and TritoFlex 1K Brush-Grade as described above, apply the specified reflective, sacrificial topcoat: TritoCryl 2K, TritoCryl 1K or TritoTherm. All topcoats are to be installed per Triton's guidelines to achieve a final minimum dry film thickness of 30 wet/20 mils for 10-year warranties. 15-year warranties require a topcoat applied at 50 wet/30 dry mils.

   i. TritoCryl 2K is instant-set and installed in one coat to the thickness required. Use TritoCryl 1K to create clean lines and terminations.

   ii. TritoTherm or TritoCryl 1K Topcoat are installed in two coats and the first coat is to be back-rolled, when applying by sprayer, to assure full coverage to textured TritoFlex surface.

C. Installation of top coating shall occur after the TritoFlex 2K membrane and TritoFlex 1K Brush-Grade flashings are fully dry, cured, and rinsing of Accelerator has dried. If top coating is performed later than three (3) days after completion of TritoFlex 2K membrane, another rinsing may be required to remove dust and dirt accumulations depending on the environment.

3.7 Field Quality Control

A. Use of specialized equipment, such as a mil gauge supplied by the manufacturer to check the liquid membrane thickness during application and a good quality digital camera to provide photos to manufacturer of installation is required.

B. Contractor to provide photographs of areas to receive liquid membrane before start of work, during surface preparation, during spray application, and at completion of work for warranty acceptance.

3.8 Clean-Up

A. All debris shall be removed from the premises promptly and the construction area left clean daily.

B. All overspray of products must be cleaned from surfaces not scheduled to receive the waterproofing membrane.

C. At the completion of the contract, Contractor is to remove and dispose of all equipment or temporary facilities related to their contract within 3 days.

Triton, Inc. instructions. Triton, Inc. disclaims all, and assumes no, liability for on-site inspections, for its products applied improperly, or by unqualified persons or entities, or as part of an improperly designed or constructed building, for the nonperformance of adjacent building components or assemblies, or for other construction activities beyond Triton's control. Improper use of Triton, Inc. products or use as part of an improperly designed or constructed larger assembly or building may result in serious damage to Triton Inc. products, and to the structure of the building or its components. TRITON INC. DISCLAIMS ALL WARRANTIES EXPRESS OR IMPLIED EXCEPT FOR EXPLICIT LIMITED WRITTEN WARRANTIES ISSUED TO AND ACCEPTED BY BUILDING OWNERS IN ACCORDANCE WITH TRITON'S WARRANTY PROGRAMS WHICH ARE SUBJECT TO CHANGE FROM TIME TO TIME.

- END OF SECTION –