HUNTSMAN
BUILDING SOLUTIONS

ULTRALOK™ / 2.8

07 57 13 Sprayed Polyurethane Foam Roofing
ULTRALOK™ Sprayed Polyurethane Foam
ULTRALOK 2.8 with Thermo-Flex™ Acrylic Elastomeric Coating

PART 1 - GENERAL

1.1 SUMMARY

A. This document discusses the application of a liquid-applied elastomeric coating to serve as a protective coating over Ultralok 2.8 sprayed polyurethane foam as part of a roofing system.

B. PRIMER:
The primers shall be Huntsman Building Solutions' Thermo-Prime™, manufactured by Huntsman Building Solutions.

C. SPRAYED POLYURETHANE FOAM
The polyurethane foam material shall be Huntsman Building Solutions' Ultralok 2.8 lb. density spray polyurethane, as manufactured by Huntsman Building Solutions.

D. COATING:
The acrylic elastomeric roof coating shall be Thermo-Flex, 100% acrylic resin coating uniquely formulated for the protection of sprayed-in-place polyurethane foam roofing systems, as manufactured Huntsman Building Solutions.

1.2 SUBMITTALS
ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

A. Submit manufacturer's product literature, warranties request information, and samples to the owner in accordance with requirements specified.

B. Manufacturer's literature: Manufacturer's literature shall be submitted for review before work is started. Literature shall include material specifications; technical data sheets that include the estimated application rate for the required dry mil thickness, current application instructions of the manufacturer, and a 2" x 6" sample of Thermo-Flex coating over Ultralok spray polyurethane foam roofing.

1.3 QUALITY ASSURANCE

A. Contractor Qualifications: The contractor should provide information concerning projects similar in nature to the one proposed, including location and person to be contacted.

B. Qualifications of applicator: Applicator of fluid-applied spray polyurethane foam roofing shall have at least three years of successful installations of polyurethane foam. Contractor must be authorized by HBS.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in original sealed containers, clearly marked with the manufacturer's name, brand name, product identification, type of material, safety information, manufacture date, and lot numbers.

B. Store materials in an area protected from the weather and direct sunlight, where temperatures will not be less than 50°F or more than 70°.

C. All materials shall be stored in compliance with local safety requirements.

1.5 SITE CONDITIONS

A . Install all materials in strict accordance with all published safety, weather, and temperature precautions given by the manufacturer and HBS application guidelines.

B. Do not apply elastomeric coatings at temperatures below 50°F or when there is a possibility of temperatures falling below 32°F within a 24 hour period. Do not apply if weather conditions will not permit complete cure before rain, dew, fog, or freezing temperatures. Roofing substrates must free of dirt (loose impediments) , oil, grease and moisture before application of HBS SPF roofing foam or coatings.

C. Do not apply polyurethane foam at temperatures below 50°F or above 120°F, or when wind velocity exceeds 12 mph. Do not apply if weather conditions will not permit complete cure before rain, dew, fog, or freezing temperatures.

1.6 SAFETY REQUIREMENTS

A. All personnel spraying coating materials in exterior applications must wear acceptable organic respirators or other protective equipment to ensure good safety precautions at all times. Contractor shall perform all work in accordance with OSHA regulations and safety regulations governing the location of the job site.

B. Proper disposal of waste materials and containers must be done in compliance with federal, state and local regulatory agencies.

PART 2 - PRODUCTS

2.1 OWNER-SUPPLIED PRODUCTS

A. Provide Ultralok 2.8 Spray Polyurethane Foam, 100% Acrylic Thermo-Flex Roof Coating, and Thermo-Prime acrylic primer manufactured by Huntsman Building Solutions, 3315 E Division St., Arlington, Texas 76011,
Tel: (833) 4-HBSCALL/ 833-442-7225. Submit requests for substitutions in accordance with provisions of Section 01600.

2.2 PRIMERS

A. Thermo-Prime Acrylic Roof Primer™ is a single component, water soluble, acrylic primer that promotes adhesion of spray-in-place polyurethane foam to a variety of roofing substrates including BUR, modified bitumen, concrete, masonry, galvanized metal and wood.

2.3 SPRAY POLYURETHANE FOAM

A. Ultralok™ is a two-component, closed-cell, polyurethane foam system specifically designed to provide a high performance, light weight roofing system for use over a wide variety of roof deck construction and configurations.

- California State Fire Marshall
- California Bureau Of Home Furnishings and Thermal Insulation Reg. NO. CA-T444 (TX)ICC ESR-3916
- UL 790 Certified (14353) , Miami Dade NOA Listed, Meets TAS 110 Requirements

Physical Properties		
Properties	Test Method/Requirements	Value
Aged "R" Value	ASTM C 518	6.2 per inch
Compressive Strength	ASTM D 1621 (40 min.)	40-45 psi
Core Density	ASTM D 1622	2.7-2.9 lbs./ft³
Closed Cell Content (% Volume)	ASTM D 2856 (90 min.)	>92%
Tensile Strength	ASTM D 1623 (60 min.)	>70 psi
Water Absorption	ASTM D 2842 (1.0 max per volume)	Less than 1% volume
Water Vapor Permeability @ 74°F, perm inch	ASTM E 96 (2.5 max)	1.1 perms @ 1"
Dimensional Stability 28 days at 158°F, 98%RH	ASTM D 2126	≤1% change in volume
Shelf Life	6 months when stored within recommended temperature range	
Coating Recommendation	Thermo-Flex Series Acrylic or High Solid Silicone	
Recyclable Content	11.8 %	

2.4 ELASTOMERIC COATING:

A. Thermo-Flex 1000 is a technologically advanced, fire retardant, thixotropic, acrylic elastomeric coating uniquely formulated for the protection of polyurethane foam insulation. Thermo-Flex is designed to withstand the damp heat and ultra-violet rays of humid environments. Acrylic elastomeric coatings shall conform to the following minimum physical properties and certifications:

PHYSICAL PROPERTIES		
Properties	Test Method/Requirements	Value
Tensile Strength:	ASTM D 2370	290psi (±25)
Elongation:	ASTM D 2370	153% (±25)
Adhesion:	ASTM C794-D 903	4.9 pli PUF(wet) 6.0 pli Galv. Steel (wet)
Weathering	ASTM D4798	No Cracking
Permeability:	ASTM D 1653A	21 U.S. Perms @ 20mils
Tear Resistance:	ASTM D 624	15.8 kN/m
Solids by Weight:	ASTM D 1644	63.5% (±3)
Solids by Volume:	ASTM D 2697	54.2% (±3)
Weight per Gallon:	ASTM D 1475	10.7 (± .2)
Theoretical Coverage:	13-14 dry mils	1.5 gallons
Viscosity (cps):	ASTM D 562	23 Pa-s

Credentials/Certifications

- UL 14353 Certified
- Cool Roof Rating Council (CRRC) Listed
- CRRC Product ID: 1001 White - 0770-0001
- Meets Federal Specification FE-TT-C 555B
- Energy Star Approved
- Title 24 Compliant

2.5 SUBSTITUTIONS

A. Fluid-applied waterproofing materials such as cementitious coatings, asphaltic coatings, hypalons,and butyls are not acceptable substitutes for materials specified herein.

PART 3 - EXECUTION

3.1 INSTALLERS

A. Comply with the instructions and recommendations of the roofing system manufacturer.

B. Familiarize all installers with correct and safe application and handling procedures: 1. See SPFA Bulletin AX- 119, "MDI-Based Polyurethane Foam Systems: Guidelines for Safe Handling and Disposal." 2. Refer to appropriate Materials Safety Data Sheets (MSDS) for additional safety information.

C .Before starting to apply foam or coating, shut off all HVAC equipment on the roof and seal air intakes and exhausts. Seal other potential sources of air entry into the building.

3.2 SURFACE PREPARATION - GENERAL

A. Any roof deck that is to receive sprayed polyurethane foam shall be securely fastened to the building structure.

B. Remove any contaminants that will interfere with total adhesion of the sprayed polyurethane to the substrate. Surface shall be free of loose particles, rust, scale, grease, dirt, laitance, or other contaminants.

C. Priming of substrate may be necessary.

3.3 SURFACE PREPARATION - CONCRETE

A. Concrete surfaces must be free of form oil or form release agents.

B. Excessive grease or oil other than form oil must be removed by use of a proper chemical solvent. Other loose dirt or contaminants may be removed by use of air jet, vacuum equipment, hand or power broom. Washing with tri-sodium phosphate solution may be employed if deck is dry prior to application of sprayed polyurethane foam.

C. Taping may be required prior to application of sprayed polyurethane foam, if joint opening between matching panels of concrete beams exceeds 1/4”. Taping is optional, depending on thickness of foam sprayed-in-place.

D. If matching edges of precast or prestressed panels are offset more than 1/2” special treatment of such a joint may be required.

E. Lightweight concrete fill shall be generally smooth and sufficiently dense when cured to provide a firm hard surface. Loose granular finishes are not acceptable.

F. Prime with Thermo-Prime at the rate of 1.5 gallons per 100 sq. ft.

3.4 SURFACE PREPARATION - METAL

A. If free of rust or loose scale, surface may be cleaned by use of air jet, vacuum equipment, hand or power broom to remove loose dirt.

B. Grease, oil or other obvious contaminants must be removed by a proper chemical solvent.

C. Metal surfaces having loose scale or rust must be cleaned in accordance with Steel Structure Painting Council Bulletin SP63 Commercial Blast Cleaning.

D. Priming of substrate may be required. Prime all metal substrates with Thermo-Prime at the rate of 1.5 gallons per 100 sq. ft.

E. If a thermal barrier is required under the foam insulation to satisfy insurance or code requirements, refer to specific local codes. If deemed necessary, add the following:*

1. Steel decks shall have one layer of 1/2" thick type X gypsum board thermal barrier attached prior to the application of the foam insulation. All gypsum boards shall be mechanically fastened to the metal roof deck.
2. Fasteners shall be Dekfast #14's, 1 1/4" and coated with corrosion inhibitors. All fasteners are to be installed with a 2-3 inch steel, 26 gauge, galvanized plate. Minimum fastening pattern shall be one fastener and plate every four square feet. For a list of approved mechanical fasteners, see the latest edition of the Factory Mutual Approval Guide. Apply in pattern and spacing appropriate to materials and fasteners used as recommended by the manufacturer.

3.5 SURFACE PREPARATION - WOOD SURFACES

A. Plywood (exterior grade) should be not less than 15/32" in thickness and secured firmly in place with screws or nails. Please ensure attachment mechanisms are in line with building code requirements to meet wind uplift standards for your local area.

B. Moisture content of wood deck should be less than 18% /weight in accordance with ASTM D 4444-84

C. Un-treated wood decks may require priming. Prime with HBS THERMO-PRIME Acrylic roofing primer prior to application of HBS roofing spray foam. (This helps reduce moisture absorption of applied foam.)

D. For tongue-and-groove planking decks, exterior grade plywood (¼") or cover board should be used over top –please refer to local building code requirements for the tongue and groove sheathing application requirements.

E. Joints between wood decking at ¼" or greater in width should have approved metal tape applied before SPF foam is applied.

F. Surface preparation for the wood deck:
Remove all loose dirt
Remove all dust and debris (hand broom/vacuum etc.)
Remove all other contaminates including grease, oil etc. with proper cleaning solutions/procedures.
Note: Power washing Not Recommended

G. Priming of substrate may be necessary. Prime surfaces with Thermo-Prime at the rate of 1.5 gallon per 100 square feet.

3.6 SURFACE PREPARATION - DENSDECK/GYPSUM BOARD

A. HBS UL Card # 14353

B. Noncombustible roof deck Classifications are applicable for use over combustible (minimum 15/32-in. thick plywood) roof decks when a barrier board of minimum 1/2 in. thick gypsum board or minimum1/4 in. thick Georgia-Pacific Gypsum LLC "DensDeck® Roofboard" or "DensDeck Prime® Roofboard" or "DensDeck DuraGuard™ Roofboard" is utilized. The butt joints in the barrier board must be offset a minimum of 6-in. from the butt joints in plywood roof deck.

C. Surface of the DensDeck/Gypsum must be free and clear of dirt, moisture, oil/grease, and debris of any kind and must be installed according to manufacturer's guidelines.

D. Note: These products can be used to cover steel/wood decks which provide suitable substrate for SPF application code compliance and per UL per above.

3.7 SURFACE PREPARATION - SCARFING OF SPF FOAM

A. Determine areas of roof with SPF that have been damaged to extent scarfing is required due to need of repair or replacement
B. Determine the thickness of the SPF/coating to be removed due to the damage
C. If roof is ballasted, remove ballast first
D. Remove all standing water from roof
E. Once the roof SPF is dry, utilize scarfing machine to required thickness of SPF/coating removal. Remove damaged SPF/coating's foam until dry SPF foam layer is reached (may require a moisture detector to determine)
G. Scarfing will leave behind pieces of cut up SPF, which will be removed from the area
H. After damaged SPF has been removed by scarfing, the remaining SPF roof should be blown clean to remove all remaining debris and loose impediments (power washing could force water back into SFP system—this is not recommended)
I. Apply new layer of foam & coating & granules as required per manufacturer specifications

3.8 SURFACE PREPARATION - EXISTING ASPHALT OR COAL TAR BUILT-UP ROOF SYSTEMS

A. Remove all existing non-embedded gravel or slag surfacing material by means of stiff bristle street brooms or powered mechanical sweepers. Gravel or slag materials shall be hauled from the job site. Suitable trash chutes shall be used to convey existing roofing materials from roof level to ground.

B . Roof shall be examined for areas where cold application materials may have been applied. Where these materials are present in excessive amounts, such as puddles or mounds, these materials shall be removed down to the existing roofing felts.

C. Remove dirt and dust from existing roof surface by means of air jet or power vacuum. No washing will be permitted without prior approval. A broomed clean surface is acceptable.

D. Cut and repair all blisters and water saturated areas prior to application of sprayed polyurethane foam.

E. The existing roof shall be examined for spongy insulation and/or water saturation. Depending up on conditions revealed by inspection, such areas shall be thoroughly dried or removed and replaced prior to application of sprayed polyurethane foam.

F. Examine mounting or support members by removal, if necessary, of roof mounted mechanical equipment, such as air conditioners, evaporative coolers, fans, ducts, pipes, etc. If wood skids are utilized as support members for existing mechanical equipment, check for dry rot and replace with redwood. All such roof-mounted equipment shall be given specific consideration for proper application of sprayed polyurethane foam and elastomeric roof coating. Wood skids and support members shall not be encapsulated in the roofing system.

G. Roof moisture/vapor vents shall be installed at the rate of one per 500-1000 square feet depending upon moisture content in the existing substrate and BUR. Cut a 3" to 4" vent hole extending through all insulation and roofing membrane to deck then attach vent to roof surface prior to application of the sprayed urethane foam: If there is a vapor barrier, leave it intact.

H. Existing asphaltic material on top of parapet walls and around scuppers is to be removed a minimum of three inches from the perimeter.

I. Priming of substrate is necessary. Prime all existing asphaltic substrates with Thermo-Prime primer at the rate of 1.5 gallons per 100 sq. ft

3.9 APPLICATION OF SPRAYED POLYURETHANE FOAM

A. Sprayed polyurethane foam shall be metered to material supplier specifications through proportioning equipment, which provides thermostatically controlled material temperatures. Hoses between the proportioner and spray gun shall be temperature controlled. HBS recommends a nominal SPF thickness of 1.5". Foam shall be applied in no less than 1” passes. Additional foam may be required to provide positive drainage and a smooth consistent transition to the roof edge or added insulation value. Spray foam should be applied at 1/4" per 12 ft slope for proper drainage

B. Complete foam application in the same day. Foam work not completed must be protected from moisture or condensation by means of six-mil plastic or priming that day.

C. Foam normally shall not be applied when the measured roof deck temperature is below 50°F or above 125°F (refer to foam manufacturer’s tech data on specific cold and warm weather foam requirements). Foam shall not be applied when the relative humidity is above 85%. Foam shall not be applied when wind velocities exceed 12 miles per hour, as measured by a wind velometer, unless suitable wind barriers are employed. Foam shall not be applied to any surface where visible moisture is present or, that when tested with a moisture meter, registers a reading greater than ten percent. No foam shall be applied to a roof deck if the deck temperature is within 5°F of the dew point. Roofing contractor shall provide all equipment to check weather conditions and shall maintain a daily weather log during the project to be submitted with Warranty Request.

D. Surface texture of the installed foam shall range from a smooth to medium coarse “orange peel” finish. Surface textures which may be defined as “popcorn” or “tree bark” are not acceptable and must be resprayed.

E. Transition of the foam to parapet walls, vents, skylights, roof mounted equipment, etc., shall provide a relatively smooth transition to the roof deck, shall be of uniform cross-section thickness and shall meet all other foam surface texture requirements.

F. All areas, which fail to meet specification requirements with respect to thickness, foam quality, etc., shall be repaired and resprayed at the expense of the contractor.

G. Application of spray foam shall not commence during inclement weather or when precipitation is imminent. Area shall be kept clear of traffic from other trades during and for twenty-four hours after completion of application.

H. Mask off metal, brick, fascias and other surfaces not to receive foam. Provide all procedures or means as required to prevent damage from over spray of the polyurethane foam insulation. Caution shall be taken to protect those areas not to receive spray foam, including vehicles located nearby.

3.10 APPLICATION OF ACRYLIC ELASTOMERIC ROOF COATING:

A. Apply in a minimum of 2 coats with each coat at a maximum rate of 1.5 gallons per 100 square feet, for a total minimum coating rate of 3 gallons per 100 square feet. Additional coats of 1.5 gallons maximum per 100 square feet may be applied to obtain the desired final thickness of coating. The minimum allowable dry mill thickness shall be 24 mils.

B. Each coat shall be allowed to cure a minimum of 12 hours (depending upon drying conditions) before proceeding with successive coats. Second and successive coats must be applied within 48 hours to ensure good adhesion.

C. The new nominal thickness of the final dry film protective elastomeric acrylic coating system, in order to obtain a Huntsman Building Solutions' material only warranty, requirements for a 15-year warranty shall be minimum of 36 mils. and 40 mils for a 20-year warranty.

D. Mask off metal and other surfaces not to receive coating.

E. Refer to manufacturer's application instructions and precautions in the technical data sheet for specific details on:
1. Mixing.
2. Recommended spray equipment.
3. Spray techniques.
4. Cold and hot temperature precautions during application.

F. All foam is to be coated with the acrylic elastomeric coating. Coating shall be extended up and overall foam or vent pipes and terminate a minimum of two inches above the foam creating a self-terminating flashing.

H. Coat foam the same day of application, unless delayed by inclement climatic conditions.

I. If foam is exposed in excess of three days and additional foam thickness is necessary, or surface oxidation has occurred apply Thermo-Prime primer and apply at a rate of 100 square feet per 1.5 gallons.

Note: HBS supplies silicone roof coatings as an alternate option to Acrylic coatings. Please contact your local HBS representative for further details.

3.11 ROOFING GRANULES

A. Roofing granules or a reinforced polyester mesh shall be installed around all mechanical equipment at least six feet out as follows:
1. Apply an additional coat of acrylic coating at the rate of 1-1/2 gallons per 100 square feet.
2. Broadcast grade 11 roofing granules at a rate of 40 pounds per 100 square feet or lay down the reinforced polyester mesh while the coating is in a fluid condition.
3. Seal granules or polyester mesh in by applying additional coating at the rate of 3/4 gallon per 100 square feet. No foot traffic shall be permitted on the finished coated surface for 72 hours after application.

3.12 CLEANING

A. At the end of each work day, remove rubbish, empty containers, rags, and other discarded items from the site. After completing work, clean glass and spattered surfaces. Remove spattered coatings by washing, scraping, or other methods, being careful not to scratch or damage adjacent finished surfaces.

Note: HBS SPF cannot be directly applied to single ply membranes. This application requires a commercial grade certified cover board or rigid insulation before SPF application.

Please contact your local HBS representative for further information.

END OF SECTION

3315 E. Division Street, Arlington, TX 76011
Tel: 817.640.4900 | 888.224.1533
www.huntsmanbuildingsolutions.com