

Gaco Western

S I N C E 1 9 5 5

Application Specification:

SI-30-A31
May 2015

Division: 07 57 00

GACOFLEX ELASTOMERIC COATING SYSTEMS OVER SEAMLESS SPRAYED IN PLACE POLYURETHANE FOAM INSULATION

PART 1 - GENERAL

1.1 SUMMARY

NOTE TO ARCHITECTS AND ENGINEERS: This specification provides for a fire resistant roof covering system. Suitable substrates include concrete, gypsum board, metal and certain heavy wood decks. For re-roofing over BUR or other roof covering materials, system, applied according to this specification will not alter the existing fire resistance rating. Surfaces to receive the roof covering system must comply with applicable building codes.

Sprayed in place polyurethane foam is applied at a desired thickness (1" (2.54 cm) minimum)) to fulfill thermal insulation requirements and to provide seamless monolithic surface over a variety of roof designs, shapes, and draining slopes.

The deck should have at least a ¼" (0.64 cm) to the foot slope for drainage and avoid ponding water. Ponding water is defined as standing water in excess of 100 square feet (9.3 m²) or in excess of ½" (1.27 cm) deep or water that does not evaporate within 72 hours.

Thickness of the foam insulation may vary to allow slope to drain, build crickets in corners, and fill low areas. The appearance of the system depends on the surface of the foam insulation that normally has slight profile. Sprayed in-place polyurethane foam follows the contour of the substrate, reflecting projections and depressions.

The GacoFlex elastomeric coating systems in this specification have moderate rate of water vapor transmission and are not recommended for use on cold storage or cryogenic structures. Such structures may have constant high water vapor drive causing long-term accumulation of moisture in the insulation. Consult Gaco Western for vapor retardant systems to use on refrigerated structures.

The Specifier must choose one of the base coat/top coat combinations listed in the systems chart included. This selection is determined by the physical properties listed in the back of this specification.

This specification is intended only as a guide for the development of a project specification. A qualified representative of the owner must determine the suitability of this specification for a particular project.

Elements of this specification may require modification in order to clearly delineate project requirements. Sections that are not pertinent may be deleted.

1.2 RELATED SECTIONS

A. Cast-In-Place Concrete:	Division 03 30 00	F. Vapor barriers/air barriers:	Division 07 25 00
B. Flashing/Sheet Metal:	Division 07 60 00	G. Board Insulation:	Division 07 22 00
C. Roof Accessories:	Division 07 72 00	H. Skylights:	Division 08 60 00
D. Rough Carpentry/wood blocking	Division 06 10 00	I. Metal decking	Division 05 30 00
E. Drains, vents, penetrations	Division 07 72 00		

1.3 SUBMITTALS

- A. Product Data: Submit manufacturer's standard submittal package including specification, installation instructions, and general information for each waterproofing material.
- B. Applicator Qualifications: Submit current "Qualified Applicator" Certificate from the specified waterproofing manufacturer.
- C. Sample: Two physical samples reflecting completed installation, i.e. finish, color, shall be submitted to the owner/owners representative. Size of these samples shall be 12" X 12" (30.48cm x .30.48cm) minimum.
- D. Substrate Conditions:
 - 1. Manufacturer's representative to present to owner a completed inspection form verifying substrate condition and any noted defects not specifically addressed in regard to this installation.
 - 2. Surface shall be free from loose dirt, stone, debris, moisture, and shall be in stable condition. Any work on the area to receive this application shall be completed prior to installation.
 - 3. Applicator shall complete a substrate inspection prior to start of roofing. The architect/owner and applicator shall accept the surface. Start of the work constitutes acceptance.

1.4 QUALIFICATIONS

- A. Primary polyurethane foam insulation and the designated elastomeric coating system shall be of:
 - 1. Single manufacturer. Manufacturer shall have a minimum of 10 years experience in the manufacture of materials of this type.
 - 2. Applicators shall have a minimum of 5 years experience in the application of waterproofing materials of the type specified. Applicator shall possess a current "Qualified Applicator" Certificate from the specified waterproofing manufacturer.
- B. Pre-Bid Conference: 10 working days prior to bid opening there is to be a mandatory Pre-Bid Conference. Anyone not attending the Pre-Bid Conference will not be allowed to bid the project. All products considered an equal to the specified product or any changes in the scope of work installation or specifications must be presented at the Pre-Bid Conference. If a change in the specifications is accepted, it will be considered as an alternate and will be presented as a bid amendment issued 5 working days prior to the bid opening. No other changes to specification or bid documents will be accepted.
- C. Materials other than specified shall be submitted to the architect/owner for approval no later than ten days prior to bid date. In requesting prior approval, it shall be necessary to submit:
 - 1. A letter of certification, signed by an officer of the manufacturer, stating that the alternative material is equal to or better than the specified product.
 - 2. Independent laboratory test data giving physical property values in comparison to the specified material.
- D. Pre-Installation Conference: Just prior to commencement of the installation, meet at the site with a representative of the coating manufacturer, the waterproofing contractor, the general contractor, the architect and other parties affected by this section. Review methods and procedures, substrate conditions, scheduling and safety.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver all materials in sufficient quantities as not to cause delays in application of the roofing system. Owner/owner's representative shall reject damaged materials not conforming. Rejected materials shall be removed immediately from the job site and replaced at no additional cost to the owner.
- B. Store materials as recommended by manufacturer and conforming to applicable safety regulatory agencies: town, state, and federal. Refer to all applicable data including but not limited to MSDS, Product Data Sheets, product labels and specific instructions for personal protection.

- C. Provide adequate ventilation, protection from hazardous fumes, and overspray potential to workers and associated trades in close proximity of site applications.

1.6 ENVIRONMENTAL REQUIREMENTS

Proceed with work of this section only when existing and forecasted weather conditions will permit the application to be performed in accordance with the manufacturer's recommendations.

- A. **Do not** install polyurethane foam insulation under the following conditions:

1. When ambient temperature is below 50°F (10° C) or surface temperature is above 160°F (71° C).
2. When relative humidity is above 80% or temperature is within 5°F of dew point.
3. When wind velocity exceeds 15 mph (24 km/h) (Without use of windscreen)

1.7 WARRANTY

- A. The manufacturer shall provide a warranty upon the successful completion of the roofing system. Application for a warranty must be made prior to start of job.

- B. Protection of building and occupants:

1. All surfaces not to receive system specified shall be protected from overspray hazard i.e. windows, doors, exterior and vehicles. Protective coverings shall be secured against wind and shall be vented if used in conjunction with applications preventing collection and moisture.
2. Contractor to post signs noting potential overspray hazard within 400' (121.90 m) of applications.
3. All air intake ventilation equipment shall be turned off to prevent fumes from entering building.
4. Surfaces damaged during application shall be restored at no expense to the owner.
5. No smoking signs to be posted as mandated by local fire officials.

- C. Substrate: Proceed with work as specified only after substrate construction, preparation, and detail work has been completed.

- D. Equipment: All equipment used during operations shall be located so as not to adversely effect the daily operations or endanger occupants, structure or materials on-site. All spray equipment must be grounded during operations.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Acceptable Manufacturers:

Gaco Western LLC, www.gaco.com

2.2 MATERIALS

- A. Cleaner: GacoFlex GacoWash Concentrated Cleaner

- B. Primer: GacoFlex E-5320 Epoxy Primer.

- C. Polyurethane Foam: Gaco RoofFoam 2733.

- D. Elastomeric Coating:

1. GacoFlex A-31 Quick Set Water-Borne Elastomeric Coating

- E. Miscellaneous Accessories: All items incorporated into this system shall be compatible with and approved by the system manufacturer.

2.3 PERFORMANCE QUALIFICATIONS

- A. General: This entire system including all accessories shall be a seamless, insulated and waterproof roofing system designed for the intended use. It shall meet the requirements of UL 790 Class A on non-combustible substrates. It shall not be adversely affected by normal weathering for exposure to occasional foot traffic required for maintenance of roof mounted equipment. The service temperatures of this system shall range from -40°F to 200°F (-40° to 93° C) (exempt acrylics which would be 0°F to 200°F) (-18° to 93° C). The manufacturer shall test it to meet the following minimum physical properties.
- B. Polyurethane Foam: In addition to the following minimum properties the polyurethane foam insulation shall be designed for spray application resulting in high quality, rigid polyurethane foam under the prevailing application conditions. Polyurethane foam shall be of the proper formulation to meet climatic conditions at the time of application.

NOTE: Polyurethane foam used in interior walls or ceilings may represent an unreasonable fire hazard unless it is covered with a thermal barrier and that the resulting composite construction has a minimum 15-minute rating as listed by an acceptable agency.

1. Gaco RoofFoam 2733

<u>Property</u>	<u>Value</u>	<u>Test Method</u>
Nominal Density	2.5/3.0 lbs/ft ³	ASTM 1622-93
Closed Cells	94.3 %	ASTM D-2856 C-94
Compressive	50.1 psi	ASTM D-1621
R Factor Initial	7.1 @ 40°F	ASTM C-518
R Value	6.5 per inch	ASTM C-518

- C. GacoFlex A-31 Quick Set Water-Borne Elastomeric Coating: Enter physical properties from product data sheets.

<u>Property</u>	<u>Value</u>	<u>Test Method</u>
Tensile Strength	350 PSI	ASTM D-412
Elongation	170%	ASTM D-412
Tear Resistance	75 min +/- 5 (13.4 +/- .9kg(f)/cm)	ASTM D-642 Die C
Hardness	75+/- 5 Shore A	ASTM D-2240
Permeability	0.06 Perm Inches	ASTM E-96 Method B
Volume Solids	65%	Method 4041
Reflectance	85%	ASTM C-1549

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that substrate is ready to receive work; surface is clean, dry and free of substances that could affect bond.
- B. Cleaning of the roof should be accomplished by using power vacuum equipment, power sweepers, air blowers, power washers or other suitable means.
- C. All associated construction (i.e. drain installation, edge flashing, penetrations and mechanical apparatus) shall be completed prior to commencement of specified roofing system.
- D. Verify that all other work involved with this area, done under other sections, has been completed and accepted by the architect and general contractor prior to starting the waterproofing application.

3.2 PREPARATION

- A. Clean substrate to remove all oils and surface contaminants. Refer to Gaco Western's General Instructions GW-1-1, Surface Preparation.
- B. Mask off all adjoining areas that will not receive the roofing system.

3.3 INSTALLATION

- A. Technical Advice: The installation of this roofing system shall be accomplished in the presence of, or with the advice of the manufacturer's technical representative. Contact the nearest regional office for assistance.

Note: Surface should be clean and dry, remove all oils and other surface containments.

- B. Primer: No primer system is required unless rust is present. Area the contain Rust: Apply GacoFlex E-5320 Primer at one gallon per 300 square feet (3.78 L / 27.9 m²) to steel, aluminum, copper and ferrous metal. The primer must be completely dry before starting the polyurethane foam application.
- C. Foam: Install Gaco RoofFoam 2733 in a thickness of _____ ± 1/4"(.64 cm), (1" (2.54 cm) minimum required.) Neatly terminate the sprayed-in-place polyurethane foam on all vertical surfaces, (i.e. pipe penetrations, vents, mechanical equipment, parapet walls, etc.) a minimum of 3" (7.62 cm) or 2¹/₂ times as specified minimum foam thickness.

Example: If 1" (2.54 cm) minimum is specified, all vertical terminations shall have a minimum of 2 ½" (6.35cm) sprayed up onto the vertical surface and canted to the horizontal surface.

1. The foam spray application shall be limited to only that amount which can be completed to full foam thickness in one day and base coat applied.
 2. The completed foam surface shall be between smooth to orange peel in surface texture. Popcorn texture is not acceptable.
 3. The completed surface shall be free of pinholes and "fisheyes" due to improper equipment calibration or climatic condition.
 4. The polyurethane foam shall be sprayed in a manner so as to achieve a full and proper spray pattern. The polyurethane foam application shall be applied in passes no less than 1" (2.54cm) in thickness.
- D. Coating: Apply base protective coating to foam surface on the same day as the foam application (2 hour minimum). Apply 3 coat(s) of Gaco Western's GacoFlex A-31 Quick Set Water-Borne Elastomeric at a coverage rate of 1 ¼ gallon(s) per 100 square feet (9.3m²) per coat to achieve an average dry film thickness of 10 dry mils per coat. Refer to the product label for application instructions.
1. Allowed to cure a minimum of 4-6 hours between coats before proceeding with topcoat application.
 2. Shall be second coated within 48 hours. If application is delayed beyond that time, consult Gaco Western for primer recommendations.

NOTE: Double coat flashing and edge termination.

NOTE: Base coat must cover all surfaces completely, extending at least 2" (5.08 cm) beyond foam on vertical terminations. Extra base coat material is required at all edges and penetrations if neoprene sheet flashing is not used. Losses due to overspray, surface profile, foam texture and wind, increased material required.

NOTE: Topcoat must completely cover the base coats including expansion joint covers and flashing. Losses due to overspray, foam texture, surface profile, or wind may increase material requirements.

NOTE: No traffic shall be permitted on the coated surface for a minimum of 3 days. Damage to the surface by other trades shall not be the responsibility of the roofing contractor.

3.4 FIELD QUALITY CONTROL

- A. The contractor shall maintain the system to verify compliance with this specification.
1. Thickness of polyurethane foam and applied coating shall be measured and recorded for each coat and the total protective coating system.

- B. The owner's representative has the option of taking core samples to verify compliance with the specification.
 - 1. Cut out sections shall be immediately repaired by the contractor at his cost.
 - 2. All costs of testing the core samples shall be paid for by the owner.
- C. Any variations from the specified limits found by the contractor or owner's representative shall be corrected by the contractor.
- D. Dry Film Thickness: The total dry mil thickness of the coating, without the granular coat, shall measure a minimum of 30 dry mils. Rough foam which increases the surface area will require proportionate increases in the coating to maintain an average dry film thickness.