

DIVISION 07 01 50.61: GACOFLEX™ P300 SERIES POLYURETHANE ROOF COATING FOR RESTORING WEATHERED SINGLE PLY ROOFING MEMBRANES

PART 1 - GENERAL

1.1 SUMMARY

- A. This specification provides a remedial coating system for application over weathered EPDM, TPO, CPA, CSPE, and PVC Single-Ply Membrane Roofing Systems. Use is restricted to circumstances where the membrane is at least 45-mils, aged less than 25 years, and the surface is in sound condition but requires a renewal of the membrane surface due to the normal effects of aging and use.

When properly applied, the GacoFlex Polyurethane 300 system provides a weathertight seal that protects the substrate from degradation caused by (UV), ultraviolet light, water, and other normal weathering hazards. The deck should have at least a Slope of Rise = 0.25 in (0.64 cm) to Run = 1 ft (0.30 m) to promote positive drainage.

NOTE: BALLASTED SINGLE-PLY ROOFING SYSTEMS ARE EXCLUDED FROM THIS SPECIFICATION.

- B. This specification is intended only as a guide for the development of a project specification. The suitability of this specification for a particular project must be determined by a qualified representative of the owner.

CONDITIONS TO CHECK AND CORRECTIONS TO CONSIDER ARE:

- The type of existing system must be identified.
- All pre-existing membranes must be fully adhered or mechanically attached and intact.
- The structural decking must be sound.

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

- C. Adhesion tests are strongly recommended prior to bidding. A coating applicator licensed by the product manufacturer should perform wet and dry adhesion tests as instructed in GacoFlex General Instructions *GW-1-3 Adhesion Testing Procedures* using the products listed in Section 2.2, below.

1.2 RELATED SECTIONS

A. Cast-In-Place Concrete:	Division 03 30 00	F. Vapor /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 and Penetrations:	Division 22 14 26.13		

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 Letter of Good Standing from the specified waterproofing manufacturer.
- C. **SUBSTRATE CONDITIONS:**
1. Applicator to present to owner a completed inspection report verifying substrate condition and any noted defects not specifically addressed in regard to the installation of the coating.

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 the installation of the coating.
3. Applicator shall complete a substrate inspection prior to the start of the installation of the coating. The architect/owner and Applicator shall accept the substrate. Start of the work constitutes acceptance.

1.4 QUALIFICATIONS

- A. Primary waterproofing materials shall be the products of a single manufacturer. Secondary materials shall be recommended by the primary manufacturer. The manufacturer shall have a minimum of ten (10) years' experience in the manufacture of materials of this type.
- B. Applicators shall have a minimum of five (5) years' experience in the application of waterproofing materials of the type specified. The Applicator shall possess a current Letter of Good Standing from the specified waterproofing manufacturer.
- C. **PRE-BID CONFERENCE:**
Ten (10) working days prior to the bid opening there is to be a mandatory Pre-Bid Conference. Those 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 addendum issued five (5) working days prior to the bid opening. No other changes to the specification or bid documents will be accepted.
- D. Materials other than those specified shall be submitted to the architect/owner for approval no later than ten (10) days prior to the 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 alternate 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.
- E. **PRE-INSTALLATION CONFERENCE:**
Just prior to the commencement of the installation, meet at the job-site with a representative of the coating manufacturer, Applicator, general contractor, architect, and other parties affected by this section. Review the methods and procedures, substrate conditions, scheduling, and safety.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Owner/owner's representative shall reject damaged or non-conforming materials. Rejected materials must be removed immediately from the job site.
- B. Store the coating materials as recommended by the manufacturer and conforming to applicable safety regulatory agencies: town or city, state, and federal. Refer to all applicable data including, but not limited to: Safety Data Sheets, 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 the site application.

1.6 WARRANTY

- A. Manufacturer warrants that the material supplied will meet or exceed physical properties as published. The Applicator guarantees that workmanship will be free of defects in coating application. Since performance of previously applied coatings is beyond the control of Manufacturer and Applicator, requests for additional warranty coverage shall be subject to prior approval by Manufacturer.
- B. **A FIFTEEN (15) YEAR LABOR AND MATERIAL WARRANTY MUST BE OBTAINED THROUGH THE MANUFACTURER.**
- C. **PROTECTION OF BUILDING AND OCCUPANTS:**
 1. All surfaces not to receive the coating specified shall be protected from overspray hazard, e.g., windows, doors, exterior surfaces and facades, parking lots, and vehicles. Protective coverings shall be secured against wind and shall be vented if used in conjunction with applications preventing collection and moisture.
 2. Applicator to post signs noting potential overspray hazard within 400 ft (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.
- D. **SUBSTRATE:**
Proceed with work as specified only after substrate construction, preparation, and detail work has been completed.
- E. **EQUIPMENT:**
All equipment used during operations shall be located so as not to adversely affect 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, www.gaco.com – Manufactured by Amrize Building Envelope LLC.
Other brands manufactured by Amrize Building Envelope LLC as noted.

2.2 MATERIALS

- A. **PRIMER:**
GacoPrime LVOC Primer (*as needed*).
(*GacoFlex E5320 2-Part Primer/Filler is an acceptable alternate*)

- B. **FLASHING:**
- 1.) TieTex Polyester Fabric
 - 2.) GacoFlex H.E.R.
 - 3.) GacoFlex 2100MS Adhesive Sealant

- C. **POLYURETHANE AROMATIC BASECOAT:**
Meets the following minimum physical property specifications:

GacoFlex P300 Series Polyurethane 300 Aromatic Basecoat		
PROPERTY	VALUE	TEST METHOD
TENSILE STRENGTH (1000 hours)	500 psi (3.4 MPa)	ASTM D2370
ELONGATION AT BREAK (1000 hours)	225 %	ASTM D2370
SOLIDS	70% ± 2% Volume Solids	ASTM D1644
VOC	233 g / L	EPA Method 24
Moisture Vapor Transmission ASTM E-96	2.4 Perm ± 0.4 @ 30 MIL	ASTM E-96

- D. **POLYURETHANE ALIPHATIC TOPCOAT:**
Meets the following minimum physical property specifications:

GacoFlex P300 Series Polyurethane 300 Aliphatic Topcoat		
PROPERTY	VALUE	TEST METHOD
TENSILE STRENGTH (1000 hours)	2390 psi (16.4 MPa)	ASTM D2370
ELONGATION AT BREAK (1000 hours)	475 %	ASTM D2370
SOLIDS	Weight Solids 76% Weight Volume 75%	ASTM D1644
VOC	80 g / L	EPA Method 24
Moisture Vapor Transmission ASTM E-96	3.38 Perm ± 0.4 @ 15 MIL	ASTM E-96

PART 3 - EXECUTION

3.1 EXAMINATION

- D. A moisture survey is strongly recommended to identify any wet roofing materials. All wet roofing materials must be removed and replaced prior to the coating application.
- A. Repair to the structural components of the roof should be completed.
- B. Verify that the drains, vents, ducts, gutters, metal cap flashing, or other penetrations have been replaced or modified.
- C. An aged reinforced single ply membrane exhibiting significant millage loss to the point that the reinforcement scrim is exposed must be disqualified as a suitable substrate to receive a coating system. Aged thermoplastic membranes that shrink or have become brittle due to plasticizer loss must be disqualified as suitable substrates to receive a coating system. Please contact Technical Services for recommendations.

3.2 PREPARATION

NOTE: IT IS EXTREMELY IMPORTANT FOR THE ROOF TO BE CLEAN AND DRY.

- A. First remove heavy deposits of dirt, leaves and other debris from the roof using a stiff broom or air broom, then inspect the entire roof surface and flashings for any open seams, tears, cuts, etc. Repair these defects using "like" materials recommended by the membrane manufacturer so water does not enter the roofing system during the cleaning process. Pressure wash roof with water and allow to dry completely.
- B. After the roof is dry from initial cleaning, apply GacoWash Concentrated Cleaner according to label instructions with sprayer of choice, using a 3 - 4 ft (0.9 - 1.2 m) arc pattern. A Hudson-type agricultural sprayer, conventional pressure sprayer or airless sprayer is recommended. Allow solution to stand for 10-15 minutes, adding a light mist of water to prevent drying. While it sets, lightly agitate any heavily soiled areas with a broom or brush. Do not allow dirt to settle in low areas. Use a commercial power washer >3,000 psi (21 MPa) to remove debris and continue rinsing until all suds are gone. Start at the lowest point of the roof and work towards the highest point. For low-sloped roofs, work away from and then back towards, roof drains. It is important to keep the surface wet until all of the GacoWash and other residue has been completely rinsed off and the surface is clean. After cleaning and rinsing the roof, ensure no dirt or debris is present.
- C. **BIOLOGICAL CONTROL:**
Areas of algae, mildew or fungus on the roof membrane or the existing coating should be treated with a solution of 1-part household bleach to 3-parts water, followed by a power washer rinse using clear water.
- D. **DRYING:**
Allow surfaces to thoroughly dry to prevent blistering of the coating. Examine roof, paying particular attention to areas of physical damage to determine that residual water has in fact dried before applying additional coating.

NOTE: Drying time depends on weather conditions such as temperature, humidity, and air movement. The above drying times assume good weather (70 °F / 21 °C daytime temperature) and no rain. Conditions of lower temperature and rain will require a longer period for drying.

3.3 INSTALLATION

- A. **TECHNICAL ADVICE:**
The installation of this system shall be accomplished with the advice of, the manufacturer's technical representative. Contact Technical Services for assistance.
- B. **REPAIRS:**
 - 1. Inspect the roofing system for open seams, open T-Joints, open corner patches or flashing voids and perform repairs with like materials as recommended by the membrane manufacturer.
 - 2. Repair or replace any areas of delaminated, warped, bowed, or displaced insulation utilizing materials and methods recommended by the membrane manufacturer.
 - 3. Repair or replace defective edge attachments or base tie-ins and bridged or tented wall or penetration flashings utilizing materials and methods recommended by the membrane manufacturer.

4. Remove defective pitch pan filler, metal flashing sealants or termination caulking and replace with appropriate materials.
5. Areas of wet roofing materials must be removed down to the structural decking and replaced utilizing materials and methods recommended by the membrane manufacturer.

NOTE: All areas repaired with new membrane must be primed with a single ply primer recommended by the membrane manufacturer prior to the installation of GacoFlex Polyurethane 300 system.

C. PRIMER:

- i. **COVERAGE RATE - GACOPRIME LVOC PRIMER:** If adhesion testing indicates the need for a primer, apply GacoPrime LVOC Primer at an approximate rate of 200 - 250 ft² / gal (18 - 23 m² / 3.8 L).
Avoid puddling of primer on the surface. Target Wet Film Thickness (WFT) is 6 - 8 mils. Apply through one of the following methods:
 1. **BRUSH:** Use solvent resistant brush and apply.
 2. **ROLLER:** Apply GacoPrime with a solvent resistant short nap roller (standard 3/8 in (10 mm) nap recommended).
 3. **SPRAY:** Do not thin. Use pressure pot or airless sprayer to apply primer. Avoid puddling of primer on surface when spraying.
- ii. **COVERAGE RATE - GACOFLEX E5320 PRIMER:** If adhesion testing indicates the need for a primer, Apply one coat at the rate of 1 gal / 500 ft² (3.78 L / 46.5 m²) a total Dry Film Thickness (DFT) of 1 – 2 mils. NOTE: Combined material will need to be thinned 10 – 20 % with clean water to achieve this spread rate.:
 1. **BRUSH:** Use solvent resistant brush and apply.
 2. **ROLLER:** Apply GacoFlex E5320 primer with a solvent resistant short nap roller (standard 3/8 in (10 mm) nap recommended).
 2. **SPRAY:** Use pressure pot or airless sprayer to apply primer Avoid puddling of primer on surface when spraying.
- iii. **CURING TIME – GACOPRIME LVOC PRIMER:** Allow appropriate amount of cure time before applying base / topcoats (approximately 2 hours depending on ambient temperature). The primer will dry to a slightly tacky film. Test the primer film by pressing firmly with a finger and removing. Properly dried film will be well bonded to the substrate. If the film is removed from the substrate allow for further drying time.
- iv. **CURING TIME – GACOFLEX E5320 PRIMER:** Allow appropriate amount of cure time before applying base / topcoats (approximately 6 hours minimum depending on ambient temperature). Dry time is dependent upon temperature and humidity. Apply GacoFlex topcoat within 72 hours.

D. AT ALL FLASHING SEAMS, CORNERS, TERMINATIONS, AND LAPS, CHOOSE ONE OF THE FOLLOWING:

1. Apply GacoFlex H.E.R. Sealant at the approximate rate of 70 LF / gal and 4 in (102 mm) wide, crested and centered at the seam. Achieve an average minimum WFT of 64 mils when measured at center at all areas to receive flashing. Allow to dry a minimum of twelve (12) to twenty-four (24) hours at 75 °F (24 °C) and 45 % R.H. Weather-related conditions such as frost, dew, mist, condensation, humidity, and temperature must be taken into consideration prior to coating. Temperature should be above 40 °F (4.5 °C) more than 5 °F (2.8 °C) above the dew point and rising, for best application results.

NOTE: Refer to manufacturer's product instructions and/or data sheet for important information regarding drying times and other important factors to consider regarding application.

E. HVAC/ELECTRICAL:

Existing HVAC Units and other equipment on curbs with a membrane flashing: The membrane flashing must be coated up to the bottom of the metal cap of the unit and sealed underneath with H.E.R. polyurethane sealant. Curbs must be a minimum of 8 in (210 mm) above the roofing membrane.

F. SLEEPERS:

Any units that are sitting on sleepers must be lifted so that the membrane underneath the units can be cleaned, primed, and coated. An approved slip sheet must be placed under the sleepers to protect the coating. If the units are not lifted off the deck so as to be able to accomplish this procedure, the untreated area will be excluded from the manufacturer's warranty.

G. COATING:**BASE COAT:**

Apply GacoFlex Polyurethane 300 Aromatic Basecoat at the average rate of 1.5 gal / 100 ft² (5.7 L / 9.25 m²) to obtain 24 mil Wet Film Thickness (WFT) / 16 mil Dry Film Thickness (DFT). Do not apply at an application rate greater than 2.0 gal / 100 ft² (7.5 L / 9.25 m²). GacoFlex Polyurethane 300 Aromatic Basecoat may be applied with a 3/8 in (10 mm) nap roller, brush, or airless sprayer. Coat all surfaces including expansion joint covers and flashings. At all edges and penetrations, an extra coat must be applied. Allow appropriate drying time as adjusted for environmental conditions (see note below).

TOPCOAT:

Apply GacoFlex Polyurethane 300 Aliphatic Topcoat at the average rate of 1.25 gal / 100 ft² (4.7 L / 9.25 m²) to obtain 20 mil Wet Film Thickness (WFT) / 15 mil Dry Film Thickness (DFT). Do not apply at an application rate greater than 1.25 gal / 100 ft² (4.7 L / 9.25 m²). GacoFlex Polyurethane 300 Aliphatic Topcoat may be applied with a 3/8 in (10 mm) nap roller, brush, or airless sprayer. Coat all surfaces including expansion joint covers and flashings. At all edges and penetrations, an extra coat must be applied. Allow appropriate drying time as adjusted for environmental conditions (see note below).

NOTE: Granule Application (optional): Granules may be placed into the finish coat to produce a tougher, more durable and weather resistant surface. Embed 30-40 lbs. of No. 11 Roofing Granules into a tack coat of 1/2 gallon (1.89 liters) per 100 square feet of GacoFlex Polyurethane 300 Aliphatic Topcoat.

NOTE: Allow to cure for a minimum of twenty-four (24) hours (depending on temperature and humidity).

3.4 FIELD QUALITY CONTROL

- A. Any variations from the specified limits found by the applicator or owner's representative shall be corrected by the Applicator.
- B. **MINIMUM DRY FILM THICKNESS (DFT) REQUIREMENT:**
Gaco recommends adding a 10 % variance factor to obtain the minimum DFT mil thickness required. It is the Applicator's responsibility to calculate the amount of coating needed to obtain the minimum DFT mil thickness required.
- C. No traffic shall be permitted on the coated surface for a minimum of three (3) days. Damage to the surface by other trades shall not be the responsibility of the Applicator.