



**DIVISION 07 01 50.61:
GACOFLEX™ POLYURETHANE ROOF COATING SYSTEM
FOR RESTORING AGED METAL ROOFING SYSTEMS**

PART 1 – GENERAL

1.1 SUMMARY

- A. This specification provides a remedial roof coating for application over existing weathered metal roofing systems of all profiles. Application is restricted to circumstances in which the metal panel substrate is in sound condition but requires a rejuvenation of the overall finish to prolong the useful life of the metal roofing system.

When properly applied in conjunction with seam restoration and fastener replacement, the GacoFlex Polyurethane Roof Coating System provides a weathertight seal that protects the substrate from degradation caused by ultraviolet light (UV), water, and other normal weathering hazards. The metal panels must be free of deflection and should have a slope ratio of 2:12 or greater to promote positive drainage.

Suitable metal surfaces to receive a GacoFlex Polyurethane Roof Coating System include steel (aged at least one year or treated galvanized steel), anodized aluminum, and pre-finished metal (other than siliconized and fluorocarbon finishes). The GacoFlex Polyurethane Roof Coating System is intended to renew an existing finish or add improved reflectivity to bare metal.

- B. The GacoFlex Polyurethane Roof Coating System discussed in this specification have a moderate rate of water vapor transmission and are not recommended for use on cold storage or cryogenic structures that may have constant high-water vapor drive causing long-term accumulations of moisture.
- C. 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 pre-existing system must be identified.
 - All pre-existing membranes must be fully adhered or mechanically attached and intact.
 - The structural decking must be sound.
- D. 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 jobsite 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 TEN (10) 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 Holcim Solutions and Products US, LLC
Other brands manufactured by Holcim Solutions and Products US, LLC as noted.

2.2 MATERIALS

- A. **CLEANER:**
GacoFlex GacoWash Concentrated Cleaner
- B. **SACRIFICIAL TAPE:**
ScotchBlue™ Original Painter's Tape or equivalent (*as needed*)
- C. **PRIMER:**
GacoPrime LVOC Primer (*as needed*)
(*GacoFlex E5320 2-Part Epoxy Primer/Filler is an acceptable alternate*)
- D. **FLASHING:**
- 1.) GacoFlex 66S Reinforcing Polyester Mesh Tape
 - 2.) GacoFlex UF9022 – GacoMastic™
 - 3.) ERsystems® H.E.R.
- E. **POLYURETHANE COATING:** **Available as Low-VOC / SCAQMD-Compliant*
GacoFlex U91 Single-Component Moisture Cure Polyurethane Coating having the following physical properties:

GacoFlex U91 Single-Component Moisture Cure Polyurethane Coating		
PROPERTY	VALUE	TEST METHOD
ELONGATION	350 %	ASTM D412
PERMANENT SET AT BREAK	7 %	ASTM D412
STRENGTH	2600 psi	ASTM D412
TEAR RESISTANCE	360 pli	ASTM D624
WATER VAPOR PERMEABILITY	0.02 Perm Inches	ASTM E96 Procedure B Max. 100% R.H. Difference at 70 °F (27 °C)
V.O.C.	150 g / L	EPA Method 24

- F. **ALIPHATIC POLYURETHANE COATING:** **Available as Low-VOC / SCAQMD-Compliant*
GacoFlex UA60 Aliphatic Polyurethane Coating having the following physical properties:

GacoFlex UA60 Two-Component Aliphatic Polyurethane Coating		
PROPERTY	VALUE	TEST METHOD
ELONGATION	180 %	ASTM D412
PERMANENT SET AT BREAK	10 %	ASTM D412
STRENGTH	3000 psi	ASTM D412
TEAR RESISTANCE	480 pli	ASTM D624
WATER VAPOR PERMEABILITY	0.02 Perm Inches	ASTM E96 Procedure B Max. 100 % R.H. Difference at 70 °F (27 °C)
V.O.C.	291.2 g / L	EPA Method 24

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Metal panels must be structurally sound and securely fastened. Severe oxidation may render some panels unsuitable to serve as a proper substrate for the coating and should be replaced as needed.
- B. Verify that substrate is ready to receive work; surface is clean, dry and free of substances that could affect bond.
- C. Verify that all other work involved with this area, done under other sections, has been completed and accepted by the architect, general contractor, or owner prior to starting the waterproofing application.

3.2 PREPARATION

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

- A. Remove heavy deposits of dirt, leaves and other debris from the roof using a stiff broom. Inspect metal fasteners and retighten where possible. Where fasteners are missing, corroded, or neoprene grommets are deteriorated, replace with oversize screws. Inspect horizontal and vertical seams, panel end laps, and tension bars/straps. Where necessary, remove fasteners to separate the panels, remove existing sealant, add new butyl caulk, and re-secure with new fasteners to create a water-tight compression seal.
- B. Pressure wash the roof with water and allow to dry completely. 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 (0.91-1.22 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 (20.69 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 drainage devices. 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.
- C. **BIOLOGICAL CONTROL:**
Areas of algae, mildew or fungus on the roof should be treated with a solution of one part bleach to three parts water followed by a power washer rinse using clear water.
- D. **DRYING:**
Allow surfaces to dry thoroughly. Examine the roof, paying particular attention to areas of physical damage or previous repairs to determine that residual water has in fact dried before continuing application.

NOTE: Drying time depends on weather conditions such as temperature, humidity, and air movement. The above drying time assumes good weather (70 °F / 21 °C daytime temperature) and no rain. Lower temperatures or overcast conditions will extend dry times.

- E. Structurally sound metal panels with moderate to extensive oxidation should be cleaned and/or lightly abraded to remove loose surface rust and treated with a rust-inhibiting primer to help prevent corrosion from spreading.

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:

Repair all leaks and seal flashings in the existing substrate using like materials as recommended by the original manufacturer before applying GacoFlex Polyurethane Roof Coating System. Newly repaired areas will require application of a suitable GacoFlex primer

C. PRIMER:

i. COVERAGE RATE:

Apply GacoPrime LVOC Primer at a rate of approximately 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.

1. BRUSH:

Use solvent resistant brush and apply.

2. ROLLER:

Apply 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. This is a very low viscosity fluid, so a small tip size is recommended.

CURING TIME:

Allow appropriate amount of cure time before applying each coat of primer (approximately 2 hours depending on ambient conditions). 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 additional drying time.

NOTE: Oxidized metal panels that have been treated with a rust-inhibiting primer as described in 3.2.E must be primed with two (2) coats of GacoPrime LVOC Primer.

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

1. Apply GacoFlex U91 by brush or roller at a minimum width of 6 in (152 mm) centered on the seam at minimum rate of 1.5 gal / 100 ft² (5.75 L / 9.25 m²) to obtain a Wet Film Thickness (WFT) of 24 mils (approx. 200 LF / gal). Immediately embed a 4 in (102 mm) strip GacoFlex 66S Reinforcing Polyester Mesh into the wet coating until the Polyester Mesh is completely saturated. The Polyester Mesh must be smoothly applied without wrinkles, "fish mouths," blisters, or pin holes. Once the Coating with embedded Polyester Mesh is firm to the touch, apply another coat of GacoFlex U91 at a minimum rate of 1.5 gal / 100 ft² (5.75 L / 9.3 m²) to completely encapsulate the Polyester Mesh. Allow to cure 10 – 12 hours at 75 °F (24 °C) and 50% RH. Dry time will be faster in warmer and more humid conditions, and slower in colder and dryer conditions.
2. Apply sacrificial tape ScotchBlue™ ORIGINAL Painter's Tape (or equivalent) as required. Apply GacoFlex UF9022 – GacoMastic 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 forty (40) hours at 75 °F (24 °C) and 55 % R.H. to achieve full cure. Low humidity and low temperature will result in longer cure times.
3. Apply ERSsystems 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. ROOF EQUIPMENT (HVAC / SLEEPERS):

Any units that are sitting on 4 in (102 mm) x 4 in (102 mm) wooden sleepers will be lifted so that the membrane underneath the units can be cleaned, primed (when required due to unsuccessful adhesion test) and coated following application instructions within this document. An approved slip sheet shall be placed under the sleepers to protect the coating system. If the units are not lifted off the deck to be able to accomplish this procedure, the untreated area will be excluded from the warrant

F. POLYURETHANE / ALIPHATIC POLYURETHANE COATINGS:

1. POLYURETHANE BASE COAT:

Apply GacoFlex U91 Polyurethane Coating at average rate of 1.25 gal / 100 ft² (4.7 L / 9.3 m²) to obtain 20 mil Wet Film Thickness (WFT) / 16 mil Dry Film Thickness (DFT). Coat all surfaces including expansion joint covers and flashings.

NOTE: Allow 10-12 hours at 75 °F (24 °C) and 50 % RH between coats. Dry time will be faster in warmer and more humid conditions, and slower in colder and drier conditions.

2. POLYURETHANE INTERMEDIATE COAT:

Apply GacoFlex U91 Polyurethane Coating at average rate of 1.25 gal / 100 ft² (4.7 L / 9.3 m²) to obtain 20 mil Wet Film Thickness (WFT) / 16 mil Dry Film Thickness (DFT). Coat all surfaces including expansion joint covers and flashings.

NOTE: Allow 10-12 hours at 75 °F (24 °C) and 50 % RH between coats. Dry time will be faster in warmer and more humid conditions, and slower in colder and drier conditions.

3. ALIPHATIC POLYURETHANE TOP COAT:

Apply GacoFlex UA60 Aliphatic Polyurethane Coating at average rate of 1 gal / 100 ft² (3.8 L / 9.3 m²) to obtain 16 mil Wet Film Thickness (WFT) / 10 mil Dry Film Thickness (DFT).

NOTE: Allow 24 hours of drying time at 70 °F (21 °C) and 50 % RH before walking on the coated surface.

3.4 FIELD QUALITY CONTROL

E. Any variations from the specified limits found by the Applicator or owner's representative shall be corrected by the Applicator.

F. 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.

G. 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.