



Application Specification:

IRMA-LM60-160-20

Revised: 10/2022

DIVISION 7120: GACOFLEX™ LM60 FOR INVERTED ROOF MEMBRANE ASSEMBLIES

PART 1 – GENERAL

1.1 SUMMARY

- A. This specification provides a UL class A fire resistance rated roof covering system suitable for a flat or low sloped (≤ 2 in : 1 ft (51 mm : 0.30 m)) structural concrete roof decks. GacoFlex LM60 is a two-component, 100 % solids (by volume), polyurethane rubber membrane that protects the structure from water under polystyrene board insulation. Extruded polystyrene board provides the desired level of thermal insulation and protects the membrane from damage. Filter cloth and a top covering in the form of rounded river rock, stone pavers, or cementitious surfacing are placed over the insulation.
- B. GacoFlex LM60 is easily applied by trowel or squeegee. A 5/16 x 5/16 in (8 x 8 mm) notched blade is effective in controlling thickness. With slight dilution, LM60 can be applied by spray. It provides a 1/16 in (1.5 mm) thick seamless waterproofing membrane with 100 % adhesion to the substrate. GacoFlex LM60 remains flexible to -50 °F (-45 °C) and will not creep, sag or flow at elevated temperatures.
- C. This application specification is prepared in a brief form. Surfaces to receive the roof covering system must meet requirements of applicable building codes and structural design.

1.2 RELATED SECTIONS

A. Flashing and Sheet Metal:	Section 07600
B. Drains, Vents, and Penetrations:	Section 07700

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:**
 - i. Applicator to present to owner a completed inspection report verifying substrate condition and any noted defects not specifically addressed regarding the installation of the coating.
 - ii. 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.
 - iii. 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:
 - i. 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.
 - ii. 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.
- D. Ensure compliance with all applicable environmental requirements in addition to ensuring that any work related to the preparation or application of coatings is only performed when existing and forecasted weather conditions will permit the application to be performed in accordance with the manufacturer's recommendations.

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 TWENTY (20) 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 (122 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

2.2 MATERIALS – POLYURETHANE WATERPROOFING MEMBRANE

A. SEALER / PRIMER:

GacoFlex E5691 Epoxy Sealer/Primer
ACCEPTABLE ALTERNATE: GacoFlex E5990 & GacoFlex E5320

B. NEOPRENE FLASHING:

- 1.) GENERAL: GacoFlex NF621 Field-Curing Neoprene Flashing
- 2.) EXPANSION JOINTS: GacoFlex NF621 Field-Curing Neoprene Flashing
- 3.) MOVING CRACKS: GacoFlex NF621 Field-Curing Neoprene Flashing

C. NEOPRENE ADHESIVE:

GacoFlex N1207 Single-Component Neoprene-Based Adhesive

D. SACRIFICIAL TAPE :

ScotchBlue™ ORIGINAL Painter's Tape or equivalent (*as required*)

E. ELASTOMERIC MEMBRANE COATING:

Meets the following minimum physical property specifications:

GacoFlex LM60 100% Solids Two-Component Elastomeric Coating		
PROPERTY	VALUE	TEST METHOD
TENSILE STRENGTH	240 ± 10 psi (1.65 ± 0.07 MPa)	ASTM D412
ELONGATION AT BREAK	300 % (± 20)	ASTM D412
TEAR RESISTANCE	30 pli (5.4 kg(f) / cm)	ASTM D-624
HARDNESS	50 Shore A min @ 70°F (21°C)	ASTM D-2240
WATER VAPOR PERMEABILITY	0.02 Perm Inches	ASTM E-96 (Procedure BW) 100 % R.H. Diff.
SOLIDS	Volume:100 %	ASTM D1644

- F. **TOPCOAT PRIMER – FOR AREAS EXPOSED TO UV: (as required)**
GacoFlex E5320 2-Part Epoxy Primer/Filler

- G. **TOPCOAT COATING - FOR AREAS EXPOSED TO UV: (as required)**
GacoFlex UB6421 Two-Component Polyurethane Elastomeric Coating
OR
GacoFlex U66 Two-Component Fire-Retardant Polyurethane Elastomeric Coating

2.3 MATERIALS – INVERTED ROOF COMPONENTS (AS REQUIRED)

IMPORTANT:

Ensure compatibility of all 3rd party products prior to project start and that installation instructions are followed completely (in addition to any pertinent supplemental documentation) as provided by the manufacture. Gaco cannot guarantee/warrant the installation of 3rd party products and any damages derived from incomplete/improper installation of such components will be the sole responsibility of the installer.

A. DRAINAGE MAT / FILTER FABRIC:

1. JDrain 302 by JDR Enterprises
2. JDrain 1000 by JDR Enterprises
3. MiraDrain 6200 by Carlisle
4. TremDrain 2000NW by Tremco
5. TremDrain S by Tremco

NOTE: Any dimple-type drainage mat placed directly over cured GacoFlex LM60 requires polymeric film install on top of GacoFlex LM60 prior to the next component. Equivalent 3rd party products may be substituted as necessary.

B. PROTECTION BOARD:

1. PermaBoard by HAL
 - i. Thickness: 1/8 – 3/16 in (3 – 5 mm)
2. Protection Course PC2 by WR Meadows
 - i. Thickness: 1/8 – 1/4 in (3 – 6 mm)
3. Rtech Fan Fold EPS by Insulfoam
 - i. Thickness: 3/8 – 1/2 in (10 – 6 mm)
4. Rigid or semi-rigid asphalt-type composition board
 - i. Thickness: 0.125 in (3 mm)

NOTE: Equivalent 3rd party products may be substituted as necessary.

C. STONE / PAVER BALLAST:

1. 3rd party product selection and Installation design shall be in accordance with Dow Chemical Company TechNote 508 "[Ballast Design Guide for IRMA Roofs](#)", all applicable building codes, wind design guides and the designer's specification.

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. Do not begin work until concrete substrate has cured a minimum of seven (7) days and reached an acceptable moisture content for inverted roof assembly installation.

- C. The work shall not be started when temperature is under 40 °F (4 °C) or when precipitation is imminent.

- 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

NOTE: IT IS EXTREMELY IMPORTANT FOR THE SUBSTRATE TO BE COMPLETELY CLEAN AND DRY PRIOR TO ANY PRIMING OR APPLICATION OF COATING.

- A. Properly and thoroughly clean the substrate within the coating application area to remove any and all surface contaminants. Refer to Gaco's General Instructions document "GW-1-1 Surface Preparation" available on Gaco.com for specific requirements and procedures.
- B. The surface shall be tested for the presence of adhesion reducing curing agents. Adhere a 2 in x 6 in (51 mm x 152 mm) piece of NF621 Neoprene Sheet Flashing to the deck using GacoFlex N1207 Adhesive. After forty-eight (48) hours, a 90° pull resistance test should be a minimum result of 5 lb/in² (0.9 kg / cm²).
- C. Provide a suitable workstation to mix the coating materials.

3.3 INSTALLATION

A. **TECHNICAL ADVICE:**

The installation of this waterproofing membrane shall be accomplished in the presence of, or with the advice of the manufacturer's technical representative. Contact the nearest regional office for assistance.

B. **SEALER / PRIMER:**

Apply GacoFlex E5691 at the rate of 1 gal / 400 ft² (3.8 L / 37.2 m²) over the entire application area and all vertical or sloping surfaces of curbs, cants, parapets, etc. which are to receive coatings with one coat of Sealer. Allow to dry a minimum of two (2) hours but no more than twenty-eight (28) days before applying the next component.

NOTE: Do not apply if substrate is below 50 °F (10 °C) or above 110 °F (43 °C), or when relative humidity is above 85 %.

NOTE: Gaco strongly recommends calcium chloride and adhesion tests be conducted to determine to proceed with installation. Based on the test results, the decision to proceed will be between the contractor and building owner.

C. **FLASHING:**

All changes of surface plane that are not a continuous pour of concrete, such as, but not limited to, deck to wall parapet transition, curbs including penetrations or protrusions shall be flashed with the NF621 Field Curing Neoprene Flashing prior to the application of the liquid applied membrane. It shall extend a minimum of 6 in (152 mm) on the vertical and a minimum of 3 in (76 mm) on the deck.

1. FOR EXPANSION JOINTS & CRACKS W/ MOVEMENT ≥ 1/8 IN (3 MM):
Install NF621 Field Curing Neoprene Flashing prior to the application of the liquid applied membrane.
2. FOR EXPANSION JOINTS & CRACKS W/ MOVEMENT < 1/8 IN (3 MM):
Install 2 in (50 mm) GacoFlex 66R Tape (or equivalent) centered over crack and stripe coat with GacoFlex LM60 to a thickness of 60 mils and 6 in (152 mm) wide.
3. CONTROL JOINTS & NON-MOVING CRACKS):
Install GacoFlex LM60 via stripe coat to a thickness of 60 mils and 6 in (152 mm) wide.

NOTE: If GacoFlex LM60 comes into contact with a wall waterproofing system, the wall system must be installed prior to the GacoFlex LM60. Overlap the GacoFlex LM60 a minimum of 6 in (152 mm) onto the wall system. As an alternate, use a neoprene sheet as the dividing interface between the two systems

D. NEOPRENE SHEET SEALANT:

Apply a bead of appropriate polyurethane sealant to the outside edge and lap seams of GacoFlex NF621. Allow to cure before application of GacoFlex LM60.

NOTE: Before application of GacoFlex LM60 begins, all neoprene sheets must be solvent-wiped and completely free of any residue and/or residual moisture.

E. ELASTOMERIC POLYURETHANE COATING:

Apply one (1) coat of GacoFlex LM60 at an approximate rate of 10 gal / 100 ft² (37.9 L / 9.3 m²) to achieve a minimum Wet Film Thickness of 160 mils / Dry Film Thickness (DFT) of 160 mils. Application by 7/16 x 7/16 in (11 x 11 mm) notched trowel is optimal in controlling the thickness of the coating – may also be applied by squeegee.

NOTE: For vertical and inclined surfaces, the maximum application rate per coat is 4 gal /100 ft² (15.1 L / 9.3 m²) to achieve a minimum Dry Film Thickness (DFT) of 64 mils (1.5 mm).

F. TOPCOAT – FOR AREAS OF GACOFLEX LM60 EXPOSED TO UV: (as required)

1. PRIMER

- i. Apply one (1) coat of GacoFlex E5320 at a minimum rate of 1 gal / 250 ft² (3.78 L / 9.29 m²) to achieve a Dry Film Thickness (DFT) of 1-2 mils.
Allow to dry for a minimum of six (6) hours before applying an appropriate GacoFlex coating. Dry time is dependent upon temperature, humidity and additional environmental factors.

NOTE: If GacoFlex E5320 is not coated within seventy-two (72) hours DO NOT PROCEED WITH INSTALLATION, please contact Technical Services for assistance.

2. COATING:

- i. GACOFLEX UB6421 – (COLOR: BLACK):
Apply one (1) coat of GacoFlex UB6421 at an approximate rate of 3.4 gal / 100 ft² (12.8 L / 9.3 m²) to achieve a minimum Wet Film Thickness of 54 mils / Dry Film Thickness (DFT) of 40 mils. Apply by spray, brush or roller with workable viscosity range (adjusted per environmental conditions).

When applied to surfaces with a temperature between 33 – 50 °F (1 –10 °C), mix Part A and Part B then warm to 60 °F (16 °C) minimum, and let mixture stand for a minimum of fifteen (15) minutes before application. This will cause a viscosity increase and thinning may be needed for application.

Coating will set with two (2) hours at 70 °F (21 °C) and 50 % R.H. Suitable for light foot traffic after a minimum twenty-four (24) hours of cure time. For vehicular traffic, add an additional twenty-four (24) hours of cure time.

NOTE: Do not apply any GacoFlex UB6421 Series coating to any surface with a temperature below 33 °F (1 °C).

OR

- ii. GACOFLEX U66 – (COLOR: STANDARD COLORS):
Examine both components for liquidity. Stir "Part A" to suspend any settled pigment. Combine equal volumes of "Part A" and "Part B". Mix thoroughly (power mixing is mandatory for quantities over 2 gal (7.6 L). Before application, ensure ambient and surface temperature are a minimum of 40 °F (4 °C) to allow coating to fully cure.

Apply one (1) coat of GacoFlex U66 at an approximate rate of 3.4 gal / 100 ft² (12.8 L / 9.3 m²) to achieve a minimum Wet Film Thickness of 54 mils / Dry Film Thickness

(DFT) of 40 mils. Brush, roll or notch trowel as mixed. If product is to be thinned, do not thin more than 5 %, so as not to exceed 250 g/L of VOC content.

NOTE: Pot life varies with the temperature of the material; including the temperature at which the material is stored. The following can be used as a general reference:

- a.) 60 °F (16 °C) – Approximately two (2) hours
- b.) 78 °F (26 °C) – Approximately one (1) hour
- c.) 96 °F (36 °C) – Approximately thirty (30) minutes

NOTE: Coating will set in eight (8) hours at 70 °F (21 °C) – restrict all light foot traffic until an additional twenty-four (24) hours after cure

NOTE: GacoFlex U5651 is an available accelerator for increased cure rate. Up to ¼ oz/gal (7 mL / 3.8 L) may be mixed into U66 “Part A” be used to decrease cure time by 50 % (or equivalent); pot life will also be reduced accordingly.

G. WATER TEST (AS REQUIRED):

When required per project specification requirements, allow a minimum of forty-eight (48) hours before running a water test. Complete the test at the direction of the project design professional or a structural engineer to avoid additional risk to the structure. Electronic Vector Mapping, performed by licensed third party inspectors, is an approved alternate to water testing.

NOTE: Low Voltage Vector Mapping is preferred when a structure cannot support the dead load weight of a water test.

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 Dry Film Thickness (DFT) mil measurement required. It is the Applicator’s responsibility to calculate the amount of coating needed to obtain the minimum Dry Film Thickness (DFT) measurement 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.