



Application Specification:

MFR-90-U
July 2009
Supersedes 02/07

Section 07120:

GACOFLEX LM-60 LIQUID POLYURETHANE ELASTOMERIC MEMBRANE MINERALFLEX ROOFING SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- A. GacoFlex LM-60 is a two component, solvent free, 100% solids liquid polyurethane that cures when mixed to a full elastomeric seamless membrane at ambient temperature and does not depend on atmospheric moisture to cure. GacoFlex LM-60H is used to waterproof structural concrete, plywood and other structurally sound existing roofing using white or colored roof granule as the exposed surface. This system passes ASTM E-108 spread of flame for a non-combustible substrate.

NOTE: The MFR-90-U system can be used for BUR. Please contact your local Gaco Western representative for more information.

- B. This specification is prepared in brief form so it can be used verbatim in the waterproofing section. It is necessary only to make the selections indicated to complete it. Gaco Western's General Instructions, which are incorporated by reference, provide specific detailed instructions for the guidance of contractors and inspectors.

1.2 RELATED SECTIONS

- A. Drains, Vents, Ducts, Penetrations: Section 07700
B. Cast-In-Place Concrete: Section: 03300

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.

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.

**Waterproofing and Insulating our World, from NASA to your Neighborhood,
Gaco Western has you Covered with Innovative Solutions.**

- 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 to be 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 specifications 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:
- D. Pre-Installation Conference: Just prior to commencement of the fluid application waterproofing system, 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. Store all coating materials in the original unopened containers at 50° to 80°F (10° to 27°C) until ready for use.
- B. Follow the special handling or storage requirements of the manufacturer for cold weather, hot weather, etc.
- C. Safety: Refer to all applicable data, including, but not limited to MSDS sheets, PDS sheets, Product labels, specific instructions for specific personal protection requirements.

When working with Part B, avoid contact with skin and eyes. If contact occurs, wash skin with water or alcohol; flush eyes immediately with large quantities of water and get medical attention. Do not smoke during mixing, application, or in the immediate area if thinners are used until all vapors have disappeared.

- D. Ventilation: Provide adequate ventilation to prevent the accumulation of hazardous fumes during application.
- E. 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.

1.6 WARRANTY

A warranty is available for commercial projects only. Contractor must be eligible for, and make application to, Gaco Western, prior to the start of work under this section.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

Acceptable Manufacturer:
Gaco Western

2.2 MATERIALS

- A. Etching Detergent: GacoFlex D-09 is a single component rinseable detergent solution for cleaning various substrates.
- B. Concrete Primer/Sealer: GacoFlex U-5677 Polyurethane Concrete Sealer and GacoFlex E-5320 two component Epoxy Concrete Primer.

Alternative Concrete Primer/Sealer: GacoFlex E-5511 Zero VOC, two component 100% solids Epoxy Concrete Primer/Sealer.

- C. Flashing and Joint coating: GacoFlex UB-64 series two component polyurethane coating.

- D. Flashing and Joint reinforcing fabric: Gaco Western's 66B and 66S fabric. GacoFlex NF-621 neoprene sheet flashing and related materials as required for flashing drains, base angles, etc. Consult Gaco Western GW-1-2 for specific recommendations.
- E. Polyurethane Coatings: Liquid Polyurethane Elastomeric Membrane material shall meet the published properties of this product and also must meet applicable Air Pollution Control regulations. *GacoFlex LM-60 is solvent free.*

GacoFlex LM-60 has the following physical properties:

<u>Property</u>	<u>Value</u>	<u>Test Method</u>
Tensile Strength	240 ± 10 psi (1.65 ± .07 MPa)	ASTM D-412
Elongation	300% ± 20	ASTM D-412
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	0.012 Perm Inches	ASTM E-96 ASTM E-96 Procedure BW 100% R.H. Difference
Solids by Volume	100%	

- F. Misc. Accessories: All items incorporated into this system shall be compatible with and approved by coating manufacturer.

NOTE: Allow additional material for rough or irregular surfaces; add 2% to 3% for material loss during application.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that substrate is ready to receive work, and that the surface is clean, dry and free from projections, depressions loose scale, sand, curing compounds, grease, oil, and other foreign deposits. Construction work on the roof should be completed and all penetrations installed.
- B. Verify that the plywood shall conform to U.S. Product Standard PS 1-95 and shall carry the grade trademark of The Engineered Wood Association - APA EXT or APA AC EXT are acceptable. Underlayment grade plywood (APA AC EXT Underlayment) with solid, plugged cross bands under the face veneer is recommended for commercial installations.

Unacceptable Grades: APA C-D EXT, APA C-C EXT, Exposure 1 markings, oriented strand board (OSB), waferboard and Lauan or Mahogany plywood are **NOT** suitable substrates for liquid-applied coating systems. This is due to poor dimensional stability, weak glue lines which allow buckling or lifting of the top ply, and excessive splintered, leafed and raised surface grain.

Refer to Gaco Western's General Instruction GW-2-3 for complete information on the installation and fastening of plywood.

- C. Do not begin work until new concrete substrates have cured 28 days, minimum.
- D. Verify that the Single Ply and existing roofing substrate is in a reasonable structural condition to be recoated. A failing substrate cannot be recoated.
1. The existing single ply material must be identified for compatibility. An adhesion test of the LM-60 to the single ply is critical. Consult your local Gaco Western representative for proper procedures for the adhesion test.
 2. The existing single ply must be structurally sound. Threadbare, delaminated, or a failing substrate is unacceptable. Tears, holes or open seams must be repaired. All seams must be intact and structurally sound prior to recoating.

3. Moisture in the existing substrate is unacceptable. All moisture in the existing substrate must be dried out and or removed prior to application.

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

F. 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 any and all surface contaminants using GacoFlex D-09 Etching Detergent. Refer to Gaco Western's General Instructions Section GW-1-1 Surface Preparation.

B. Mask off all adjoining areas that are not to receive the fluid applied roofing.

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. Concrete Primer/Sealer: Prime entire deck surface and all vertical or sloping surfaces of curbs, cants, parapets, etc. which are to receive coatings with one coat GacoFlex U-5677 Sealer at a rate of one gallon per 300 square feet (3.78 L / 27.9 m²). Allow to dry a minimum of 1 hour and no more than 24 hours before applying primer coat.

Apply one coat of GacoFlex E-5320 by roller at the rate of one gallon per 250 square feet (3.78 L / 23.2 m²). Allow 3 to 24 hours drying time. For maximum solvent resistance, see drying time directed in Gaco Western's General Instructions GW-2-2. Drying times vary depending on weather conditions such as temperature, humidity and air movement.

Alternative Concrete Primer/Sealer: Apply one coat of GacoFlex E-5511 to all surfaces to receive the fluid applied waterproofing. Apply at a rate of one gallon per 150 sq. ft. (3.78 L / 13.9 m²) and allow to cure at least 6 hours, but no more than 3 days before applying basecoat.

NOTE: Clean, dry new plywood does not need a primer.

C. Detail Work: Apply primer, expansion joint covers (where called for), seal cracks, and joints, install flashing and apply liquid polyurethane membrane as directed in Gaco Western Application Instructions LWM-62-U.

GacoFlex UB-64 can be used to install Gaco Western fabric reinforced flashing 66S tape at all changes of plane. Treat cracks in the surface with GacoFlex UB-64 series polyurethane and 66B tape.

D. Polyurethane Membrane: Apply GacoFlex LM-60 membrane to secure a total minimum coverage of 5 gallons per 100 square feet (18.92 L / 9.3 m²) (Total wet film thickness - 80 mils (2.03 mm)).

E. Texture Course: After overnight cure, (minimum 16 hours), mix GacoFlex LM-60H using 5% thinner (GacoFlex T-5116 or GacoFlex T-5112) and apply at a rate of one gallon per 100 sq. ft. (3.78 L / 9.3 m²) Immediately broadcast into the wet coating #10 mesh roofing granule to refusal, approximately 50 lbs. per 100 sq. ft. (22.7 kg / 9.3 m²). Allow to cure overnight (minimum 6 hours).

F. Exposed LM-60: If there is any GacoFlex LM-60 coating exposed to UV after the granule has been applied, it must be top coated with GacoFlex A-30 at a rate of one gallon per 100 sq. ft. (3.78 L / 9.3 m²).

NOTE: Entire roof surface to be inspected to insure all seams are properly sealed and waterproofed. If defects in seams or other possible tears are found, they are to be repaired as to the original product manufacturer's specifications and procedures.

3.4 FIELD QUALITY CONTROL

- A. The contractor for work under this section shall maintain a quality control program specifically to verify compliance with this specification. A daily log shall be kept to record actions in the field.
- B. Inspections: A minimum of three (Substrate, Application and Final) inspections, by an approved manufacturer representative, will be required on all projects requiring a warranty.
- C. Dry Film Thickness: Average dry film thickness shall be 90 mils (2.29 mm) excluding granule and shall not be less than 80 mils (2.03 mm) at minimum areas.