



Application Specification:

EPDM-BAL-S20-10
Revised: 09/2020

DIVISION 07 01 50.61: GACOFLEX™ S20 SERIES ELASTOMERIC SILICONE COATING FOR RESTORING BALLASTED EPDM ROOFS

PART 1 - GENERAL

1.1 SUMMARY

- A. This specification provides a remedial coating system for application to ballasted-in-place EPDM membrane roofing systems aged thirty (30) years or less.
- B. The GacoFlex S20 Series Elastomeric Silicone Coatings discussed in this specification have a moderate rate of water vapor transmission. They 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.
- C. This specification is intended only as a guide for the development of a project specification. The suitability of this specification for a 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.
- The structural decking must be sound.

Elements of this specification may require modification to clearly delineate project requirements.

Sections that are not pertinent may be deleted.

- D. Adhesion tests are required 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. **WARRANTY:**
Warranty must be supplied by product manufacturer.
- D. **SUBSTRATE CONDITIONS:**
 1. 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.
 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 10 years' experience in the manufacture of materials of this type.
- B. Applicators shall have a minimum of 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:**
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 near 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 Material and Labor Warranty must be supplied by the product 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' (121.9 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 Manufacturer:
Gaco, www.gaco.com

2.2 MATERIALS

- A. **CLEANER:**
GacoFlex GacoWash Concentrated Cleaner
- B. **PRIMER:**
GacoFlex E5320 2-Part Epoxy Primer/Filler
- C. **FLASHING:**
GacoFlex 66S Reinforcing Polyester Mesh
or
GacoFlex SF2000 SeamSeal
or
GacoPatch Silicone Roof Sealant
- D. **FABRIC REINFORCEMENT:**
GacoFlex 66S Reinforcing Polyester Mesh (36" / 914.4 mm)
- E. **PROTECTION MAT:**
Suitable Ballast Protection Mat or Filter Fabric
- F. **COATING:**
GacoFlex S20 Series Silicone Coating having the following physical properties

GacoFlex S20 Series		
PROPERTY	VALUE	TEST METHOD
TENSILE STRENGTH	450 psi	ASTM D412
ELONGATION	169 %	ASTM D412
SOLIDS	96.5% by weight 95% by volume	ASTM D1644 ASTM D2697
VOC	< 50 Grams/liter	EPA Method 24
REFLECTANCE	0.87 initial	ASTM Method 4041 Fed. Std. 141
WATER VAPOR PERMEABILITY	5.0 Perms	ASTM E96-B

PART 3 - EXECUTION

NOTE: Due to the critical role played by ballast rock in keeping the EPDM roofing system attached to the building structure, work must be performed in stages and sufficient precautions must be taken to prevent water entry into the building or damage to the roof at flashings, terminations, and other attachment points due to winds. At no time should the ballast be removed from the roof in its entirety or the membrane penetrated with mechanical fasteners to keep the roof in position. The applicator should move only as much ballast as needed to expose individual work areas and temporary ballast added where necessary to retain sufficient weight on the roofing system. The Applicator, working in conjunction with the building owner or the building owner’s agent, assumes all liability for any damage to the roof or the building during installation as a result of insufficient ballast. Additionally, prior to the issuance of the manufacturer’s warranty, the owner will be required to sign an Overburden Waiver that provides for removal and replacement of ballast during the warranty period to expose the coating for inspection or repairs.

3.1 EXAMINATION

- A. A nuclear or infrared scan must be performed and any wet roofing materials must be removed and replaced.
- B. Repair to the structural components of the roof should be completed.
- C. Verify that the drains, vents, ducts, gutters, metal cap flashing or other penetrations have been replaced or modified.

3.2 PREPARATION

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., including any damage that may have occurred

during the 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' (0.91 m -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, roof drains. It is important to keep the surface wet until all 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.

NOTE: Up to three (3) passes with GacoWash may be necessary to ensure the membrane has been sufficiently cleaned. Wet and dry adhesion tests are strongly recommended prior to proceeding with the coating.

- 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 and 3 parts water, followed by a power washer rinse using clear water.
- D. Drying: Allow surfaces to thoroughly dry to prevent blistering of the S42 coating. Examine roof, paying attention to areas of physical damage to determine that residual water has in fact dried before applying GacoFlex S42 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. Primer: Apply GacoFlex E5320 2-Part Epoxy Primer/Filler at a rate of 1 gal per 600-800 ft² (55.7 to 74.3 m² / 3.78 L) for a Dry Film Thickness (DFT) of 1-2 mil. **Do not over-apply.** When properly mixed and applied, E5320 Primer should remain a translucent pink color in its cured state. Spray application of E5320 Primer (i.e., a non-continuous dusting) is preferred to achieve the required coverage rate, but roller application using a ¼" (6.35 mm) to ⅜" (9.5 mm) nap roller or nylon brush is permitted. Allow E5320 Primer to cure for a minimum of 6 hours (longer in overcast or humid conditions) before the application of the GacoFlex S42 Series Silicone Coating.
- C. 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 the S42 coating system.

- D. At all flashing seams, corners, and vertical/side laps, choose one of the following:

1. Apply GacoFlex S20 Series Silicone Coating by brush or roller at a minimum width of 6" (152.4 mm) centered on the seam at a minimum rate of 1.5 gallons per 100 ft² (24 wet mils – approximately 200 LF). Immediately embed a 4" (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 S20 Coating at a minimum rate of 1.5 gallons per 100 ft² to completely encapsulate the Polyester Mesh. Allow to cure for a minimum of 24 hours (longer in overcast or low humidity conditions) before applying S20 top coat.
2. Apply GacoFlex SF2000 SeamSeal applied at a minimum of 4" (102 mm) wide, crested and centered at the seam, with a minimum thickness at the center of 64 wet mils (approx. 70 LF / gal). Allow to cure for a minimum of 4 hours (longer in overcast or low humidity conditions) before applying a top coat of GacoFlex S20 Series Silicone Roof Coating.

3. Apply GacoPatch Silicone Roof Sealant at a minimum of 4" (102 mm) wide, crested and centered at the seam, with a minimum thickness at the center of 64 wet mils (approx. 70 LF / gal). Allow to cure for a minimum of 4 hours (longer in overcast or low humidity conditions) before applying a top coat of GacoFlex S20 Series Elastomeric Silicone Roof Coating.
- E. 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 a 100% silicone sealant. Curbs must be a minimum of 8" (203 mm) above the roofing membrane.
 - F. Any units that are sitting on 4" (102 mm) x 4" (102 mm) wooden sleepers will be lifted so that the membrane underneath the units can be cleaned, primed and coated. 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 warranty.

G. Coating:

For this specification, EPDM membranes with a gauge of 60-mil or greater do not require fabric reinforcement, and may receive a One Coat Application (see below). EPDM membranes having a gauge less than 60-mil must receive a Two Coat Application if the membrane is aged more than 20 years (or if the age of the membrane cannot be established). EPDM membranes less than 60-mil may receive a One Coat Application provided the membrane is aged 20 years or less. Membrane age may be demonstrated using an expired manufacturer's warranty, a membrane date stamp, or historical satellite imagery.

One (1) Coat Application (Membranes \geq 60-mil, or membranes $<$ 60-mil **and** aged \leq 20 years):

Apply one (1) coat of GacoFlex S20 Series Silicone Coating at the average rate of 2.75 gal per 100 ft² (10.4 L / 9.25 m²) to obtain a Wet Film Thickness (WFT) of 44 mil (resulting in a minimum Dry Film Thickness (DFT) of 42 mil). Coat all surfaces including expansion joint covers and flashings. At all edges and penetrations, an extra pass must be applied. Allow the coating to cure a minimum of 24 hours (longer in overcast or low humidity conditions) before covering with ballast protection mat.

Two (2) Coat Application (Membranes $<$ 60-mil **and** aged $>$ 20 years):

1. Base Coat: Apply GacoFlex S20 Series Silicone Coating at the average rate of 2 gal per 100 ft² (7.5 L / 9.25 m²). Wet film thickness shall be a minimum of 32 mil. While coating is still tacky, embed 36" (914.4 mm) wide GacoFlex 66S Reinforcing Polyester Mesh into the wet coating with a min. 2" (51 mm) overlap. Verify fabric is fully embedded into the coating. The 66S must be free of wrinkles, "fish mouths," blisters, and pin holes.
2. Top Coat: Once base coat with embedded fabric is dry, apply the GacoFlex S20 Series Silicone top coat at the average rate of 1.5 gal per 100 ft² (5.7 L / 9.25 m²). Coat all surfaces, including expansion joint covers and flashings. Wet film thickness of the top coat must be a minimum of 24 mil and an extra pass must be applied at all edges and penetrations. If the 66S fabric bridges or pulls away from the base coat while attempting to apply the top coat, discontinue application and allow additional drying time before resuming application of the top coat.

NOTE: The base coat shall be allowed to cure a minimum of 2 hours (longer in overcast or low humidity conditions), with a maximum of 6 hours before applying the top coat. The base coat with embedded fabric must be coated on the same day. The top coat must completely cover the base coat and encapsulate the 66S fabric. Allow the reinforced coating to cure a minimum of 24 hours (longer in overcast or low humidity conditions) before covering with ballast protection mat.

H. Ballast Protection Mat & Redistribution of Ballast

Overlay the cured coating with a suitable protection mat or filter fabric and redistribute the ballast rock according to the coverage rates recommended by the EPDM membrane manufacturer. Additional ballast may be needed to achieve the required coverage rate(s) across the entire roof.

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. Dry Film Thickness: The total dry mil thickness of the coating shall measure a minimum of 42 dry mil for one coat applications and 74 mil
- C. (including 66S reinforcement) for two coat applications. Gaco suggests adding a 10% variance factor to obtain the minimum dry mils required. It is the Applicator's responsibility to calculate the amount of coating needed to obtain the required minimum dry mils.
- D. 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.