

Gaco Western

S I N C E 1 9 5 5

Application Specification:

**GacoWallFoam 052N
Half-Pound Open Cell Foam
April 2014**

**Division: 07 21 19
GUIDE SPECIFICATION
GacoWallFoam 052N OPEN CELL INSULATION**

PART 1 – GENERAL

This guide specification discusses the application of Gaco Western, LLC sprayed in place polyurethane foam for use as a building envelope insulation system. This guide specification is intended as a starting point for professionals to develop more complete specifications. Each project should be assessed on an individual basis.

1.01 SCOPE OF WORK

Furnish all labor, materials, tools and equipment necessary for the application of Gaco Western's polyurethane foam. This includes accessory items subject to the general provisions of the contract.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Rough Carpentry Division 6 Section 061000
- B. Vapor Retarder Division 6 Section 06100
- C. Thermal Insulation, Division 7 Section 072100
- D. Thermal Barrier Section Division 7 Section 078400
- E. Foamed-in-Place, Division 7 Section 072119
- F. Fireproofing, Division 7 Section 078100
- G. Gypsum Board, Division 9 Section 09250
- H. Mechanical Division 15
- I. Electrical Division 16

1.03 REFERENCES

1. ASTM- E-84 Standard Test Method for Surface Burning Characteristics of Building Materials
2. ASTM- C518 Standard Test Method for Steady-State Thermal Transmission Properties
3. ASTM- E283 Standard Test Method for Determining Rate of Air Leakage
4. ASTM- D1622 Standard Test Method for Apparent Density of Rigid Cellular Plastics
5. ASTM- D1623 Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics
6. ASTM- D2126 Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging
7. ASTM- E96 Standard Test Methods for Water Vapor Transmission of Materials
8. ASTM- 2856 Standard Test Method for Open Cell Content of Rigid Cellular Plastics
9. ASTM- G21 Standard Test Method for Fungus Resistance

1.04 QUALITY ASSURANCE

- A. Regulatory Approvals: Provide products with ICC-ES 2478.
- B. All work is to be performed by contractors certified by Gaco Western and meet the Gaco Western applicator requirements.
 - 1) A member of the company must register for the SPFA PCP and pass the Assistant, Installer and Master Installer SPFA PCP written exams.

- 2) The company's installation techniques and experience must be approved by a member of the Gaco Wallfoam Technical Service team.
- 3) All Installers and Assistants must pass the free CPI On-line Health and Safety course.

1.05 SUBMITTALS

- A. Submittals: Submit in accordance with Division 1 requirements.
- B. Safety and handling instructions for storage, handling and use of the materials including Material Safety Data Sheets (MSDS) on each product intended for use.
- C. Field Quality Control Procedures to be utilized by the contractor/applicator to insure proper installation of the Gaco Western sprayed in place insulation system.
- D. Contact Gaco Western should there be any questions about the submittals.

1.06 MATERIALS, DELIVERY AND STORAGE

- A. Materials shall be delivered in the manufacturers original, tightly sealed containers or unopened packages clearly labeled with the manufacturer's name, product identification, safety information, approvals, and lot numbers where applicable.
- B. Containers shall be stored out of the weather and away from direct sunlight in a cool dry place at temperatures between 50 and 70 degrees F within the limits specified by the materials manufacturer.
- C. All materials shall be stored in compliance with local fire and safety codes.

1.07 ENVIRONMENTAL CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits. Do not install spray polyurethane foam before the rook assembly has been sufficiently installed to prevent an accumulation of water in the interior of the building.
- B. Do not apply the polyurethane foam when substrate temperature is below 40 degrees F (4.4 degrees C) and ambient air temperature is below 30 degrees F
- C. Or above 120 degrees F (49 degrees C) and relative humidity is greater than 85 percent unless advance means and methods are recommended by the manufacturer.

1.08 SEQUENCE OF SCHEDULING

In new construction projects, Gaco Western sprayed in place insulation system is installed when the primary structure of the walls and roof are in place to prevent the accumulation of water in the interior of the building and in coordination with other building trades.

1.09 SAFETY REQUIREMENTS

1. All non-essential personnel are restricted from access to the area where the Gaco Western Sprayed in place Insulation is applied.
2. Fire extinguishers shall be provided in the spray foam equipment area and the area where the spraying is being performed.
3. Review MSDS's with spray foam personnel and be familiar with chemicals and their hazards.
4. Post warning signs at all work area entrances to restrict entry by unauthorized personnel.

5. There shall be no welding or open flame within 100 feet of sprayer.
6. Attention should be paid to ground equipment to prevent sparking.
7. Seal off work area from adjacent rooms and ventilation ducts.
8. Restrict access of non-application personnel including other trades using caution tape.
9. All personnel involved with spraying shall wash hands thoroughly before eating or drinking.
10. Do not eat, drink, or smoke in work area.
11. Use engineering controls to ventilate the area if possible.
12. Wear Personal Protective Equipment (PPE) for breathing, body, exposed skin and eye protection during application.
13. Ventilation shall be provided in confined areas as needed for 24 hours minimum after the spraying has been completed.
14. Contact Gaco Western for guidance on ventilation time and re-occupancy for the formulation you are using.
15. Be aware of general safety regulations and recommendations when working around Electric, Hydraulic, Pneumatic and combustion equipment such as portable generators.
16. Apply Thermal Barriers and Vapor Retarders (if required) in accordance with local building code requirements

PART 2 – PRODUCTS

2.01 POLYURETHANE FOAM MANUFACTURER

- A. Acceptable Manufacturer: Gaco Western LLC, which is located 1245 Chapman Drive, Waukesha WI, 53186
- B. Substitution not permitted without approval
- C. Requests for substitutions will be considered in accordance with provisions of section 016000.

2.02 POLYURETHANE FOAM

A. Gaco 052N Open Cell Foam, is sprayed in place insulation shall be a two component system made by combining an isocyanate (A) component with a polyol (B) component and shall possess the following typical physical properties:

B. Gaco 052N Physical Properties:

- a. Density (D-1622): 0.45 – 0.55 lbs/ft³
- b. Open Cell Content (D-2856) : <0.4 %
- c. Aged R Value (C-518), tested at 75°F (23.9°C): R at 1 Inch: 4.2
R at 4 Inches: 16

NOTE: Federal Trade Commission regulations published in the Federal Register 16 CFR Part 460 require that “R” value testing of polyurethane foam insulation must be conducted on aged samples at a 75°F mean test temperature. Failure to comply can result in substantial fines by the FTC.

- d. Water Vapor Transmission (E-96) 13 perm-in
- e. Air Permeance (E-283) .0009 L/s-m² @ 75°F at 3.5” thick
.0007 L/s-m² @ 75°F at 5.5” thick

C. Fire Performance Testing:

a. Surface Burning Characteristics (ASTM E84)

Flame Spread Index: <25 Flame

Smoke Developed Index: <250 Smoke

(ASTM E84, Also known as ANSI 2.5, NFPA 255, UBC 8-1 (42-1) and UL 723)

Note: data as obtained from laboratory samples and actual value may vary under field conditions.

b. Report alternative thermal barrier performance per the IBC and NFPA 286 – as applicable

2.02 RELATED PRODUCTS

A. Single Component Polyurethane Foam Sealants and caulks for use around windows, doors etc. shall be as approved by Gaco Western. Transitional membranes in solid and liquid form shall be approved by Gaco Western.

B. Vapor Retarder (if required)

1. Asphaltic
2. Butyl
3. Chlorosulfonated Polyethylene
4. Polyethylene Film
5. Paints and Coatings
6. Other

PART 3 – EXECUTION

3.01 APPLICATION OF PRODUCTS

Gaco 052N Open Cell spray-applied polyurethane foam insulation intended use is as a nonstructural thermal insulating material on or in interior and exterior walls, floors, ceilings, and roofs. Insulation system must be applied within the manufacturer's guidelines for temperature, humidity and other atmospheric conditions. In addition, they must be sequenced so as to take into consideration substrate preparation, proper cure times and inter-pass adhesion.

3.02 EQUIPMENT

Equipment shall be capable of maintaining 1400 psi of pressure or higher and maintaining a minimum of 105 degrees at the A, B and Hose heaters. Equipment shall be capable of maintaining 1:1 ratio of A and B components on a continuous basis. Equipment shall be Graco, Gusmer, GlasCraft, PMC or other approved types of pumps and proportioners.

3.03 STORAGE OF MATERIALS

Materials shall be protected from freezing and should be stored in a controlled environment at a temperature of 60-100°F.

A and B chemical drum temperatures must be 60° - 80°F before and during spraying for the drum to be serviceable (ready to spray). Material temperatures below 60°F can result in proportioning errors and/or insufficient heat at the spray gun.

3.04 SURFACE PREPARATION

All surfaces that are to be insulated with foam shall be free of loose impediments such as dust, scale, peeling paint and oxidation. Surfaces shall be clean and free of moisture, snow, frost, oil and grease.

All surfaces not receiving foam shall be carefully masked to avoid overspray. This includes (but is not limited to) beams, floors, windows, doors, fireplaces, appliances, water closets, vanities, tubs and any other surface which could be damaged by Spray Polyurethane overspray.

3.05 SUBSTRATE CONSIDERATION AND PREPARATION

A. Wood

1. Wood shall contain no more than 18% water.
2. Most untreated and unpainted wood surfaces need not be primed. Spray polyurethane foam can be applied directly to the dry wood. Priming may be required in certain cases. Contact Gaco Western for further information.

B. Steel

1. Primed: If the primed metal surface is free of scale, rust or oils primer is not required. If rust is present remove using power tool cleaning methods. If oils are present remove by solvent wiping. Note: Stainless Steel requires primer. Contact Gaco Western for recommendations.
2. Previously painted: Clean the painted metal surface using hand or power tools to remove loose scale and rust. Grease, oil and other surface contaminants can be cleaned using a solvent wipe.
3. Galvanized: Primers shall be as recommended by Gaco Western. Galvanized studs adhered to backer usually do not require primer.

3.06 PRIMER APPLICATION

When required, the primer shall be applied to the properly prepared substrate in accordance with Gaco Western recommendations to achieve the design coverage rate.

Prime General Primer:

1. No rust: Apply 1 coat of GacoFlex E-5320 Primer at a rate of one gallon per 300 sq. ft.
2. Minimal rust: Apply 2 coats of GacoFlex E-5320 Primer at a rate one gallon per 300 sq. ft per pass, resulting in a total of one gallon per 150 sq. ft. of finished primer.
3. Pronounced rusting: Apply 2 coats of GacoFlex E-5320 Primer at one gallon per 150 sq. ft. per pass, resulting in one gallon per 75 sq. ft. of finished product.

3.07 SPRAY APPLIED GACO WESTERN FOAM INSULATION

Note: When applying Gaco Western polyurethane foam over gypsum board, the first pass shall be no more than one inch in thickness.

3.08 VAPOR RETARDER APPLICATION

A. Gaco 052N Open Cell polyurethane foam shall be processed at design temperatures and at a 1:1 ratio. See Gaco Western for specific instructions.

B. Gaco 052N Open Cell Foam polyol (B Component) must be mixed using a 3-Stage Collapsible Blade Mixer for 20 minutes prior to spraying. After initial mixing, turn mixer off to avoid frothing product with air bubbles. Mix once more during midday break for 20 minutes and turn mixer off again. See Gaco Western for specific instructions.

C. Gaco 052N Open Cell Foam insulation is spray-applied on the jobsite using a volumetric positive displacement pump.

D. Gaco 052N Open Cell polyurethane foam is designed to be sprayed over a wide range of substrate temperatures. For very cold conditions contact Gaco Western.

E. Atmospheric Conditions: Gaco 052N Open Cell Foam shall not be applied when the temperature is within 5 degrees F of the dew point. In an exterior application, Gaco 052N Open Cell shall not be applied when wind speeds exceed 15 - 20 miles per hour.

F. Gaco 052N Open Cell polyurethane foam shall be applied in a single passes, minimum 1" thick. For winter application consult Gaco Western technical personnel for specific instructions. The full thickness of Gaco Western polyurethane foam is to be applied in the same day.

3.08 VAPOR RETARDER APPLICATION

When required, a vapor retarder shall be applied to the warm in winter side of the Gaco Western insulation.

3.09 IGNITION BARRIER

When Gaco 052N Open Cell foam insulation is installed within attics and crawl spaces where entry is made only for service of utilities, a 5 minute ignition barrier must be installed. The ignition barrier must be consistent with the requirements for the type of construction required by the applicable local building code, and must be installed in a manner so the foam plastic insulation is not exposed.

Examples of 5 minute Ignition Barriers:

1. 3/8 Inch Gypsum Wall Board
2. 3/8 inch Particleboard
3. 1/4 Inch Hardboard
4. Corrosion Resistant Steel
5. 1/4 inch wood structural panels (OSB or Plywood)
6. Intumescent Coatings

3.10 THERMAL BARRIER APPLICATION

Gaco Western polyurethane foam must be separated from the interior living space with ½ inch gypsum or an approved 15 minute thermal barrier. The thermal barrier must be applied in accordance with the manufacturer's instructions and local building codes.

Examples of 15-Minute Rated Thermal Barriers or equivalent products.

1. Sprayed in place cementitious fire barrier
2. Sprayed in place fiber fire barrier
3. Minimum 1/2 inch gypsum board
4. Intumescent Coatings when tested as an assembly

3.10 CLEAN UP

After the installation of Gaco Western is complete, the installer is to remove all masking from protected surfaces. In stud wall applications, all studs are to be scraped to allow for the application of gypsum