

SECTION 07 21 19
BUILDING INSULATION



Part 1 General

1.1 Section includes

- A. Foam-in-place insulation in cavities of Concrete Masonry Unit (CMU) walls, wythe area of exterior walls and exterior stud-framed walls.
- B. Foam-in-place sound control insulation for interior and exterior walls.

1.2 Related Sections

Section 07 05 00 – Masonry Cell Insulation

1.3 References

- A. ASTM E-84 “Standard Test Method for Surface Burning Characteristics of Building Materials.”
- B. ASTM C-518 “Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.”

1.4 Submittals

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer’s data on product, including:
 - 1. “Product Information” Sheet from Manufacturer.
 - 2. Material Safety Data Sheet for Core Foam Masonry Foam Insulation.
 - 3. Copies of test data showing compliance of product with referenced standards upon request.

1.5 Quality Assurance

- A. Installer Qualifications: A firm with experience installing insulation systems of the type specified.
 - 1. Approved or certified by the foam manufacturer to install the specified system, or
 - 2. Able to provide reference projects similar in scope and nature to the one proposed including locations and contact information.

1.6 Delivery, Storage and Handling

A. Delivery

1. Materials shall be delivered to installer in manufacturer's original, unopened, undamaged packages with identification labels intact.
2. Installer will blend resin and foaming catalyst according to manufacturer's instructions prior to arriving at the jobsite and/or may blend material while at the jobsite, at his discretion.

B. Storage and Handling

1. Materials should be stored in original paper packages and boxes protected from moisture until used by installer.
2. Once blended with water by installer, materials must be maintained at a minimum temperature of 75°F.

1.7 Project/Site Conditions

- A. The wall assembly must be essentially dry with no standing water in the CMU cores and no visible wetness on the exterior surface.
- B. Mortar must be adequately cured prior to installation of foam insulation.
- C. Wall assembly should be maintained above 32°F to allow insulation to cure without freezing.

Part 2 Products

2.1 Manufacturers

A. Acceptable Manufacturer:

cfiFOAM, Inc., PO Box 10393, Knoxville, TN 37939.
Telephone: 800-656-3626. Fax: 865-588-6607.
Email: info@cfifoam.com. Website: www.cfifoam.com.

2.2 Materials

A. Core Foam Masonry Foam Insulation (Foam-in-Place Building Insulation)

1. Formulation: Cellular plastic insulation comprised of a spray-dried polymeric resin and a foaming catalyst concentrate which are combined with water and then injected, along with compressed air, into the wall cavity by the installer.
2. ASTM E-84 Surface Burning Characteristics:
 - a. Flame Spread: 25 or Less
 - b. Smoke Generated: Less than 450
 - c. Thickness: 3.5 inches (maximum thickness allowed by test apparatus)

- d. Tests performed by an independent, certified laboratory located within the United State of America.
- e. Flammability Clafficiation: Class A or Class I
- 3. Thermal Conductivity of Foam Insulation:
 - a. k-value 0.20-0.25 BTU/(hr ft² °F in); 0.22, on average at 25 °F
 - b. R-Value 4.0-5.0 (hr ft² °F in)/BTU; 4.9 per inch at 25 °F
- 4. Shrinkage
 - a. 2 percent, maximum
- 5. Density of Foam:
 - a. Wet Foam 12x12x12 box weight: 2 ½ -3 ¼ lbs.
 - b. Upon final curing: 0.5-1.0 lb/ft³

2.3 Product Substitutions

A. Substitutions: No substitutions permitted.

Part 3 Execution

3.1 General

A. Comply with the instructions and recommendations of the foam-in-place building insulation manufacturer.

3.2 Examination

A. Site Verification

- 1. Verify that the wall assembly is essentially dry.
- 2. Verify that mortar has adequately cured.
- 3. Verify that temperature of wall assembly is above 32°F.

3.3 Preparation

A. Select the best location(s) for foam injection:

- 1. Preferentially in a wall surface that will be covered.
- 2. 5/8"-7/8" holes to be drilled in masonry joints or directly in CMU surface. Hole diameters up to 2" may be required for injection in stud cavity assemblies.

3.3 Installation Guidelines

- A. All open cells and voids within each wall shall be filled with foam insulation as specified on the drawings.
- B. Walls can be filled using either top-fill or, more commonly, pressure-injection techniques.
 - 1. For top-fill, the installer must use an extension tube to begin installing foam from the bottom of the cavity, withdrawing the extension tube as foam fills the cavity.

2. For pressure-injection, holes are drilled in each CMU—3/8” holes for visually sensitive areas for use with a low-volume touch-up gun, 5/8” holes for use with a standard foam gun, or 7/8” holes for use with a high-volume production gun—at an approximate height of four feet from finished floor level. Normally each vertical core is drilled and injected with foam in 10’-24’ lifts, although in 8” CMU, alternating cores can be used.
 3. Core Foam Masonry Foam Insulation is injected until it completely fills each vertical core of block cells, evidenced by foam exiting the adjacent injection hole. Repeat steps 1 and 2 at an approximate height of 10’-14’ above the initial row of injection holes, or as needed, until the wall is completely filled.
- C. After foam insulation sets, remove excess foam from outside of cavity, sweeping the wall and floor as needed. Cured foam is an inert material and, therefore, can be disposed of with other construction waste in accordance with local regulations.
- D. Patch holes with mortar to resemble existing surface.

3.4 Field Quality Control

A. Testing

1. Verify insulation density by random sampling of foam
 - a. Fill a 12x12x12 box with foam
 - b. Foam weight should be 2 ½ - 3 ¼ lb.

B. Inspection

1. Verify complete filling of voids by drilling block face upon request.
2. Correct any portion of the foam installation found not to be in compliance with manufacturer’s requirements.

3.5 Protection

- A. Product should be protected from excess moisture during initial 24-hour curing period after installation. A 72-hour curing period is normally required prior to painting, however, in each case the coatings contractor should test the walls to confirm the surface is suitable prior to paint application.

END of SECTION