



## SECTION 07211

InsulStar®Light OPEN CELL POLYURETHANE BUILDING INSULATION  
050825

### **InsulStar® Light** GENERAL

#### 1.1 SECTION INCLUDES

- A. Spray Polyurethane Foam (SPF).
- B. DC315 Intumescent Coating

#### 1.2 RELATED SECTIONS

- A. Section 06100 - Rough Carpentry: Wood framing.
- B. Section 07210 - Fiberglass Building Insulation: Supplemental blanket, batt and roll insulation.
- C. Section 07260 - Vapor Retarders: Vapor retarder materials to adjacent insulation.
- D. Section 07270 - Air Barriers: Air seal materials to adjacent insulation.
- E. Section 07620 - Sheet Metal Flashing and Trim: Requirements for flashings.
- F. Section 07900 - Joint Sealers: Rod and sealant at control and expansion joints.
- G. Section 07810 - Fire and Smoke Protection: Insulation installed in conjunction with fire stopping or smoke containment systems.
- H. Section 09200 - Plaster and Gypsum Board: Insulation installed in conjunction with interior wall and ceiling finish systems.

#### 1.3 REFERENCES

- A. ASTM C 518 - Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- B. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.
- C. ASTM E 96 - Standard Test Methods for Water Vapor Transmission of Materials.
- D. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials
- E. ASTM E 283 - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
- F. ASTM E 2178 – Standard Test Method for Air Permeance of Building Materials

- G. ASTM D 1621 - Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
- H. ASTM D 1622 - Standard Test Method for Apparent Density of Rigid Cellular Plastics.
- I. ASTM D 6226 - Standard Test Method for Open-Cell Content of Rigid Cellular Plastics.
- J. NFPA 285 – Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components Using the Intermediate-Scale, Multistory Test Apparatus
- K. UL 263 - Fire Tests of Building Construction and Materials
- L. International Code Council – ICC 1100 (pending publication 2019)

#### 1.4 PERFORMANCE REQUIREMENTS

- A. Conform to applicable code for insulation values, flame spread/smoke developed index and concealment requirements.
- B. Refer to CCRR-0323 Code Compliance Report for the current details of all code compliance approvals.

#### 1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
  - 4. Appropriate Fire Resistance Assembly approval per Type Building Construction and Wall design. (NFPA 285, ASTM E119, UL 263)
- C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

#### 1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company producing spray polyurethane foam insulation systems under an ANSI accredited Quality Control program.
- B. Installer Qualifications: Company specializing in performing Work of this section.
  - 1. Installer must be an NCFI certified insulation contractor or have manufacturer's certification for the application.
  - 2. Installer completed training by American Chemistry Council for High-Pressure SPF-Safety Training.
  - 3. Installer possesses and operates per the NCFI Product Stewardship Program, including the required equipment proper installation including high-pressure plural component proportioning pump, heated hoses of suitable length, spray gun, drum pumps or other material feeding system, all required Personal Protective Equipment and other ancillary equipment required for the Work.

#### 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products under cover in manufacturer's unopened and labeled packaging until ready for installation.
- B. Storage temperatures should not exceed 90°F for any extended period of time. Do not store in direct sunlight. Store above 35°F.
- C. Keep the temperature of the chemicals near 70°F for several days prior to use. Cold chemicals can cause pump cavitation and incorrect metering. Keep drums tightly closed when not in use and under dry gas pressure of 2-3 psi after they have been opened.
- D. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

## 1.8 PRE-INSTALLATION MEETINGS

- A. Convene pre-installation meeting a minimum of two weeks prior to commencing work of this section.
- B. Attendance (as needed for the project application): Architect, Contractor, framer, electrical/plumbing contractor, wall/ceiling finish applicator and SPF applicator.
- C. Agenda: Review installation sequence, safety requirements and scheduling.

## 1.9 COORDINATION

- D. Ensure that the installation of products of this section is coordinated with affected trades to prevent interruption of construction progress.
- E. Complete electrical, plumbing, internet/security wiring or any other material penetrations or access requirements prior to installing the spray foam.

## 1.10 PROJECT CONDITIONS

- F. 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.
- G. Do not install when the ambient temperature is less than 50°F without specific authorization of the manufacturer.
- H. Cordon off area for spray foam application and post warning signs as necessary to prevent entry to the area by other persons not wearing appropriate Personal Protective Equipment (PPE).

## PART 2 PRODUCTS

### 2.1 MANUFACTURERS

- I. Acceptable Manufacturer: Barnhardt Manufacturing Company, dba NCFI Polyurethanes, Mount Airy, NC 27030-1528; 336-789-9161; Email: [info@ncfi.net](mailto:info@ncfi.net); Web: [www.NCFI.com](http://www.NCFI.com)
- J. Requests for substitutions will be considered in accordance with provisions of Section 01600.

## 2.2 MATERIALS

- A. Spray Polyurethane Foam (SPF): InsulStar®Light open cell spray polyurethane foam (SPF) insulation:
  - 1. Physical Properties:
    - a. Core Density: 0.4 – 0.5 lbs/ft<sup>3</sup> when tested in accordance with ASTM D1622.
    - b. Water Vapor Transmission: 28 perm at 1 inch thick when tested in accordance with ASTM E96, Procedure A – Desiccant Method
    - c. Maximum Service Temperature: 180°F.
    - d. Air Leakage: Infiltration/exfiltration, ≤0.004 CF/min/SF at 1.57 psf when tested in accordance with ASTM E2178.
    - e. Flame Spread Index: Less than or equal to 25 when tested in accordance with ASTM E84 for 4 inch (102 mm) thickness.
    - f. Smoke Developed Index: Less than or equal to 450 when tested in accordance with ASTM E84 at 4 inch (102 mm) thickness.
    - g. Certified low VOC – Intertek Certified Clean Air Gold issued 05 08 2025
    - h. No Fungal Growth – ASTM C1338 - Pass
  - 2. R-Value: R-Value when tested in accordance with ASTM C518.
    - a. R-Value: 3.7. Average Thickness 1 inch (25 mm).
    - b. R-Value: 13. Average Thickness 3.5 inches (89 mm).
    - c. R-Value: 21. Average Thickness 5.5 inches (139 mm).
    - d. R-Value: 31 Average Thickness of 8 inches (267 mm)

## 2.3 MISCELLANEOUS MATERIALS

- B. Transition Air Barrier materials as required to create a continuous Air Barrier from the InsulStar®Light termination and adjacent building materials.
- C. Sealant foams: Single component polyurethane sealants from DAP, Touch n'Seal, Great Stuff or equivalent.
- D. Foam Repair Kit: two part kits from Fomo Products, Touch n'Seal, Convenience Products, or other equivalent Class 1 Fire Rated polyurethane foam kits in Type V construction.
- E. Moisture Detection Paper (MDP) Strips: MDP Strips manufactured by NCFI Polyurethanes, Mount Airy, NC.
- F. Intumescent Coatings approved and listed in CCRR-0323

## PART 3 EXECUTION

### 3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

### 3.2 PREPARATION

- A. Clean surfaces thoroughly of any dust, moisture or materials that interfere with the adhesion of the spray foam to the substrate prior to installation.

- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Proceed with InsulStar®Light foam application after substrate inspection, substrate penetration work, and related electrical and plumbing work has been completed.
- D. Remove sawdust and other debris from areas to be sprayed by blowing with compressed air or vacuuming with a shop vacuum.
- E. All metal substrates must be free of oil, grease, rust, etc. Primers should be used where necessary. Test for proper spray foam adhesion or check with spray foam manufacturer for additional application guidance.
- F. Verify that substrate is dry by checking surface for moisture with Moisture Detection Paper (MDP) strips.
- G. Mask off all areas not to receive spray foam with suitable covering.
- H. Review NCFI Product Stewardship Manual for ventilation and Personal Protective Equipment requirements and ensure unauthorized workers are not in the area during the spray foam application.
- I. At the start of work, spray-apply SPF to an area of approximately 100 ft<sup>2</sup> at the specified thickness. Proceed with work only after ensuring proper foam thickness and full adhesion to the substrate.

### 3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. All surfaces to be sprayed with SPF must be free of all moisture and ice.
- C. Do not apply SPF when ambient temperature and humidity are outside the ranges prescribed by the manufacturer.
- D. Apply the SPF to an average thickness indicated on the Drawings or specified in the schedule at the end of this section.
- E. Where possible apply SPF into stud wall cavities in a single pass technique. If necessary additional passes may be applied after the foam surface has cooled and dried enough to ensure proper adhesion of the second layer.
- F. Do not apply SPF to fill gaps between framing and doors or windows. Use non-expanding foam for those applications.
- G. Apply SPF to fill voids around accessible service and equipment penetrations.
- H. Apply SPF to seal voids at truss ends to prevent wind scouring of ceiling insulation.
- I. In Vented Attic construction, seal plumbing stacks, electrical wiring and other penetrations into the attic to control air leakage.
- J. Remove overspray from adjacent surfaces.
- K. Where damage occurs which violates the spray foam's air seal and thermal boundary layer, re-spray as needed using the InsulStar®Light.

- L. If the foam membrane must be cut for installing electrical/plumbing utilities after the foam installation, the small seams, holes, or gaps in the foam may be re-sealed with a fire rated polyurethane sealant foam.
- M. If Required, Spray apply Intumescent Coating per guidelines in CCRR-0323

#### 3.4 ACCESSORY APPLICATION

- A. Joint Filler Foam and Caulk: Use joint filler foam and/or caulk to seal around windows, doors, chimneys, electrical raceways, sill plates, multiple studs, etc. Note that the expansion of joint filler foam in a confined space can tighten window frames and door jambs to the point that they will not open or close properly. Care must be used in these areas to avoid distortion of these members.
- B. Supplemental Insulation: If the stud wall cavity is not completely filled with spray polyurethane foam, supplemental insulation may be installed to increase the wall total R- value. Supplemental insulation is specified in Section 07210.
- C. Vapor retarders as specified in Section 07260.
- D. Transition Air barrier membranes as specified in Section 07270.

#### 3.5 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

#### 3.6 CLEANING

- A. Remove excess SPF.
- B. Replace defective SPF.
- C. Clean soiled surfaces with cleaning solution.

#### 3.7 SCHEDULES

**InsulStar®Light** For the following locations, apply the average R-value (apply thickness as necessary to achieve the scheduled R-value)

- 1. Stud wall cavity R-value: R \_\_\_\_\_
  - 2. Attic floor/top of ceiling: R \_\_\_\_\_
  - 3. Garage ceiling between joists and over air ducts: R \_\_\_\_\_
  - 4. Cathedral ceilings: R \_\_\_\_\_
  - 5. Unvented roof spaces: R \_\_\_\_\_
  - 6. Voids in overhangs/bay windows/ cantilevered floors: R \_\_\_\_\_
  - 7. Floor headers: R \_\_\_\_\_
- B. For the following locations in lieu of the code prescribed Thermal Barrier covering, apply the Intumescent Coating to the required thickness.
    - 1. Interior wall insulation
    - 2. Interior roof deck insulation
    - 3. Other locations as may be needed

- C. For the following locations in lieu of the code prescribed Ignition Barrier covering, apply DC 315 Coating over all exposed spray foam surfaces with minimum one gallon for 400 ft<sup>2</sup> (minimum of 7 wet mils – 5 dry mils). This approval is listed in CCRR-0323.
1. Vented attic floors (only when foam exceeds 12 inch thickness)
  2. Exposed foam in unvented roof spaces.
  3. Exposed foam in crawl space area.

END OF SECTION