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This specification utilizes the Construction Specifications Institute's (CSI) 3-Part formatting. The specification is a manufacturer-specific product specification to be used by design professionals as a guide specification. Editing notes are indicated in *red italics* and precede specification text. Delete editing notes in final specification. Metric conversion, where used, is soft metric conversion.

This specification specifies medium density, spray foam insulation by Icynene, Inc. Revise section number and title below to suit project requirements.

The specified product may contribute to the following credits/points for the respective rating system:

LEED NC Submittals:

- EA Credit 1: Optimize Energy Performance
- MR Credit 2: Construction Waste Management
- MR Credit 4: Recycled Content
- IEQ Credit 5: Indoor Chemical and Pollutant Source Control
- IEQ Credit 7.1: Thermal Comfort
- ID Credit 1: Innovation in Design

LEED for Homes Submittals:

- EA Credit 1.1: Performance of ENERGY STAR Homes (or EA 2-10 Pathway)
- EA Credit 2.1: Basic Insulation
- EA Credit 3: Air Infiltration
- EA Credit 5.1 and 5.2: Heating and Cooling Distribution System
- MR Credit 2.2 Environmentally Preferable Products (includes VOC's)
- MR Credit 3.2: Construction Waste Reduction
- EQ Credit 1: ENERGY STAR with Indoor Air Package (Pathway)
- EQ Credit 10: Garage Pollutant Protection

LEED for Schools Submittals:

- EA Credit Prerequisite 2: Minimum Energy Performance
- EA Credit 1: Optimize Energy Performance
- IEQ Credit 4: Low Emitting Materials
- IEQ Credit 7.1: Thermal Comfort – Design
- IEQ Credit 9: Enhanced Acoustical Performance
- IEQ Credit 10: Mold Prevention
- ID Credit 1: Innovation in Design

NAHB National Green Building Standard (ICC-700-08) Submittals:

- Credit 607.1: Resource - Efficient Materials
- Credit 701.4.5: Insulation and Air Sealing
- Credit 702: Performance Path (Energy) or 703 Prescriptive Path
- Credit 704.6.1: Performance Verification
- Credit 704.6.2: Third Party Testing
- Credit 704.6.2.1: Building Envelope Air Leakage
- Credit 901.3: Garages – Air Barrier
- Credit 901.11: Insulation – Emissions
- Credit 902.11: Perimeter of Living Space Sealed
- Credit 903.4: Conditioned Crawlspace is Sealed
- Credit 903.5: Building Materials – No Visible Mold

Collaborative for High Performance Schools (CHPS) Submittals:

- Credit LE 13.1: Innovation
- Credit EE 1.0: Minimum Energy Performance
- Credit EE 1.1: Superior Energy Performance
- Credit ME 2.1: Construction Site Waste Management
- Credit EQ 2.2: Low Emitting Materials
- Credit EQ 3.0: Minimum Acoustical Performance
- Credit EQ 3.1: Improved Acoustical Performance
- Credit EQ 4.0: ASHRAE 55, Thermal Comfort Code Compliance and Moisture Control

SECTION 07 21 19  
FOAMED-IN-PLACE INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including Contractual Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes: Water-blown, closed cell, polyurethane spray foam insulation.
- B. Related Sections:

*List sections here as applicable to Project*

1. Division 01 Section "LEED Requirements" for additional LEED requirements.
2. Division 07 Section \_\_\_\_\_
3. Division 07 Section \_\_\_\_\_
4. Division 07 Section \_\_\_\_\_
5. Division 07 Section \_\_\_\_\_
6. Divisions 21 through 23 Mechanical Documents

- C. Coordinate mechanical ventilation and fresh air supply with Mechanical sections and ASHRAE Guidelines for optimum indoor air quality.

### 1.3 REFERENCES

- A. American Society for Testing and Materials International (ASTM)
  1. ASTM C 518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
  2. ASTM C 1338: Standard Test method for Determining Fungi Resistance of Insulation Materials and Facings
  3. ASTM E 84: Test Method for Surface Burning Characteristics of Building Materials
  4. ASTM E 96: Standard Test Methods for Water Vapor Transmission of Materials
  5. ASTM E119: Standard Test Methods for Fire Tests of Building Construction and Materials
  6. ASTM E 2178: Standard Test Method for Air Permeance of Building Materials
  7. NFPA 285: Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non Load-Bearing Wall Assemblies Containing Combustible Components

### 1.4 SUBMITTALS

- A. Product Data for type of insulation product specified.
- B. Product test reports performed by a qualified third-party testing agency evidencing compliance of insulation products with specified requirements including those for thermal resistance, fire-test-response characteristics, water-vapor transmission, and other properties, based on comprehensive testing of current products.
- C. Evaluation Report: Evidence of compliance of foam-plastic insulations with International Building Code (IBC), International Residential Code (IRC), International Energy Conservation Code (IECC).
- D. Manufacturer's certificate certifying insulation provided meets or exceeds specified requirements.
- E. Installer's certificate showing the Icynene installation certification.
- F. LEED NC (v3) Submittals:
  - Edit the following for actual credits being achieved:*
  - 1. MR Credit 4, Recycled Content: Product data showing normalized pre- and post-consumer recycled content.
- G. LEED for Homes Rating System Submittals:
  - Edit the following for actual credits being achieved:*
  - 1. EA Credit 2, Basic Insulation: Product data showing R-value for sprayed insulation.

2. MR Credit 2.2, Environmentally Preferable Products: Product Data substantiating sprayed insulation complies with CA practice for testing of VOC's from building materials using small chambers.

H. LEED for Schools Rating System Submittals:

*Edit the following for actual credits being achieved:*

1. IEQ Credit 4: Low Emitting Materials: Product data showing compliance with California DHS/EHLB/R174.

I. NAHB National Green Building Standard (ANSI ICC-700-08) Submittals:

*Edit the following for actual credits being achieved:*

1. Credit 703 Prescriptive Path: Product Data confirming the sprayed insulation is Grade 1.
2. Credit 901.11: Insulation – Emissions: Product Data confirming sprayed insulation contains formaldehyde emission levels that comply with the requirements of CDPH/EHLB Section 01350.

J. Collaborative for High Performance Schools (CHPS-06) Submittals:

*Edit the following for actual credits being achieved:*

1. Credit EQ 2.2, Low Emitting Materials: Product Data confirming sprayed meets the CHPS Low Emitting Materials criteria Section 01350 - for use in a typical classroom as described in a CDPH/EHLB Standard Practice.

K. Sample warranty

## 1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Product produced in an ISO 9001 registered factory.
- B. Single Source Responsibility: Single source product from one manufacturer.
- C. Installer Qualifications: Engage an Icynene Licensed Contractor (installer) who has been trained and certified by Icynene.
- D. Fire-Test-Response Characteristics: Provide materials specified as determined by testing identical products per test method indicated below by a testing and inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.
  1. Surface-Burning Characteristics: ASTM E 84
  2. Rated Wall Assembly Testing: ASTM E119 and ASTM 285
- E. Toxicity/Hazardous Materials
  1. Provide products that contain no chemical blowing agents.
  2. Provide products that are "Low-emitting".
  3. Provide products that contain no PBDE's .
  4. Provide products that contain no urea-formaldehyde.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturers written instructions for handling and protection prior to and during installation.
- B. Store both components in a temperature controlled area between 60 and 85 degrees F. Do not allow product to freeze.
- C. Use only those components that are supplied by the Manufacturer.

1.7 PROJECT CONDITIONS

- A. Do not expose to sunlight, except to extent necessary for period of installation and concealment.

1.8 WARRANTY

- A. Residential projects: Manufacturer's standard limited lifetime warranty.
- B. Refer to [www.Icynene.com](http://www.Icynene.com) for full warranty terms.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Polyurethane Spray Foam Insulation: Icynene ProSeal Eco™ (MD-R-210) by Icynene Inc.

2.2 MATERIALS

- A. General: Provide insulating materials that comply with requirements and with referenced standards.
- B. Icynene ProSeal Eco™ (MD-R-210) Spray Foam Insulation: Medium-density, water-blown, conforming to the following:
  - 1. Thermal Resistance (for 1 inch of material) (R-Value/inch @75 deg F): ASTM C 518; 4.9 hr.sq ft.degree F/BTU
  - 2. Air Permeance (for 1.4 inch of material): ASTM E 2178: <0.00049 L/s.m<sup>2</sup> @75 Pa
  - 3. Water Vapor Transmission (for 2.4 inches of material): ASTM E 96; 0.87 perm
  - 4. Resistance to Fungal Growth: ASTM C 1338: no growth
  - 5. Product emissions: CA/DHS/EHLB Standard Method: low-emitting
  - 6. Flame Spread and Smoke Developed Rating: ASTM E 84
    - a. Flame Spread: 20
    - b. Smoke Development: 350
- C. FiFoil Thermal Barrier Blanket System (TBB), conforming to the following:

1. Reflective Insulation: ASTM C1224: meets specification
2. Emissivity: ASTM E 408: 0.03
3. Water Vapor Transmission (no-perf, micro-perf): ASTM E 96; 0.1 perm, 40 perm
4. Humidity resistance; ASTM C1258: passed
5. Resistance to Fungal Growth: ASTM C 1338: no growth
6. Critical Radiant Heat Flux: 1.12 W/cm<sup>2</sup>
7. Flame Spread and Smoke Developed Rating: ASTM E 84
  - a. Flame Spread: 5
  - b. Smoke Development: 0

### 2.3 SOURCE QUALITY CONTROL

- A. Product produced in an ISO 9001 registered factory.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates and conditions, under which work is to be performed. Do not proceed until unsatisfactory conditions have been corrected.
  1. Review placement area to determine final location will not be within 3 inches of any heat source where the temperature will exceed 180 deg F per ASTM C 411 or in accordance with authorities having jurisdiction.

### 3.2 PREPARATION

- A. Clean substrates and cavities of loose materials capable of interfering with insulation placement.

### 3.3 APPLICATION

- A. Site mix liquid components supplied by Icynene and installed by Independent Icynene Licensed Dealer.
- B. Apply insulation to substrates in compliance with manufacturer's written instructions.
- C. Apply insulation to produce thickness required for indicated R Value.
- D. Extend insulation in thickness indicated to envelop entire area to be insulated.
- E. Water-Piping Coordination: If water piping is located within insulated exterior walls, coordinate location of piping to ensure that it is placed on warm side of insulation and insulation encapsulates piping.

### 3.4 REPAIRS

- A. Any repairs must be effected by an Icynene Licensed Contractor.

3.5 PROTECTION

- A. Protect installed insulation from damage due to harmful weather exposures, physical abuse, and other causes. Provide temporary coverings where insulation is subject to abuse.

END OF SECTION 07 21 19