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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 blown 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 for Building Design and Construction (BD+C)

LEED for Homes

National Green Building Standard (NGBS, ICC-700)

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: 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 09 Section 099646 Intumescent Painting
 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 E 119: Standard Test Methods for Fire Tests of Building Construction and Materials
 6. ASTM E 331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
 7. ASTM E 2178: Standard Test Method for Air Permeance of Building Materials
 8. ASTM E 2357: Standard test Method for Determining Air Leakage of Air Barrier Assemblies
 9. 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.

LEED BD+C 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.

F. LEED for Homes 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.

G. National Green Building Standard (NGBS, 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 CA/DHS 01350.

H. Low Chemical Emissions Certification Submittals:

Edit the following for actual credits being achieved:

1. Credit EQ 2.2, Low Emitting Materials: Product Data confirming sprayed insulation is certified to Greenguard Gold (UL Environment).

I. Sample warranty

1.5 QUALITY ASSURANCE

- A. Manufacturer's Qualifications: Product produced in an ISO 9001 registered factory.
- B. Single Source Responsibility: Single source insulation 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 NFPA 285
- E. Toxicity/Hazardous Materials
 1. Provide products that are "Low-emitting".
 2. Provide products that contain no PBDE's .
 3. 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 insulation components in a temperature controlled area between 60 and 85 degrees F, out of direct sunlight and avoid cold temperatures less than 60 F.
- C. Use only those insulation components that are supplied by the Manufacturer.

1.7 PROJECT CONDITIONS

- A. Do not expose insulation 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 for full warranty terms.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Polyurethane Spray Foam Insulation: Icynene ProSeal LE™ by Icynene Inc.
- B. Intumescent paint:
 - 1. DC-315 by International Fireproof Technology Inc.
 - 2. Flame Seal TB by Flame Seal Products Inc.
 - 3. Fireshell F10E by TPR² Corp.
- C. Transition Membranes – Self-Adhered:
 - 1. Blueskin SA by Henry Company
 - 2. AirShield by W.R. Meadows
- D. Transition Membranes – Liquid:
 - 1. AirShield LM by W.R. Meadows
 - 2. Fast Flash by Prosoco
 - 3. Dymonic 100 by Tremco

2.2 MATERIALS

- A. General: Provide insulating materials that comply with requirements and with referenced standards.
- B. Icynene ProSeal LE™ Spray Foam Insulation: Medium-density, closed-cell, conforming to the following material performance:
 - 1. Thermal Resistance (for 1 inch of material) (R-Value/inch @75 deg F): ASTM C 518; 7.1 hr.sq ft.degree F/BTU

2. Air Permeance (for 1 inch of material): ASTM E 2178; less than 0.02 L/s*m² @75 Pa
3. Air Barrier System (for 1 inch of material): ASTM E 2357; less than 0.0106 L/s*m² @75 Pa
4. Water Vapor Transmission (for 1.5 inches of material): ASTM E 96; 0.97 perm
5. Water-Resistive Barrier (for 1 inch of material): ASTM E331 evaluated per ICC-ES AC71; Pass
6. Resistance to Fungal Growth: ASTM C 1338: no growth
7. Flame Spread and Smoke Developed Rating: ASTM E 84
 - a. Flame Spread: 25
 - b. Smoke Development: 300
8. Greenguard Gold Certified

2.3 SOURCE QUALITY CONTROL

- A. Insulation product components 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 installation instructions. Apply to maximum of 7 inch pass, in either a full 7 inch lift, or a combination of a 3 inch, 2 inch, and/or 1inch lifts, in immediate succession. Consult manufacturer's installation instructions for thicknesses greater than 7 inches.
- 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.
- F. If required, install intumescent paint to required wet or dry mil thickness or coverage rate as confirmed by assembly tests, in accordance with manufacturer's instructions, by brush, roller, conventional or airless spray.

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