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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, HFC 365/227 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 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 Perquisite 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

SPRAYED INSULATION

Icynene ProSeal™ (MD-C-200v3) - USA
Latest Revision: February 11, 2014

07 21 19-1

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: HFC 365/227-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

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- 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 CDPH/EHLB/Standard Method v1.1-2010 (CA Section 01350).

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 CA/DHS 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 CA/DHS 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 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 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 for full warranty terms.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Polyurethane Spray Foam Insulation: Icynene ProSeal™ (MD-C-200v3) by Icynene Inc.

2.2 MATERIALS

- A. General: Provide insulating materials that comply with requirements and with referenced standards.
- B. Icynene ProSeal™ (MD-C-200v3) Spray Foam Insulation: Medium-density, HFC 365/227 blown, conforming to the following:
 - 1. Thermal Resistance (for 1 inch of material) (R-Value/inch @75 deg F): ASTM C 518; 7.0 hr.sq ft.degree F/BTU
 - 2. Air Permeance (for 1.4 inch of material): ASTM E 2178: <0.00151 L/s.m² @75 Pa
 - 3. Water Vapor Transmission (for 1.5 inches of material): ASTM E 96; 0.97 perm
 - 4. Resistance to Fungal Growth: ASTM C 1338: no growth
 - 5. Flame Spread and Smoke Developed Rating: ASTM E 84
 - a. Flame Spread: Less than 25
 - b. Smoke Development: Less than 300
- C. Product Description:
 - 1. Collaborative for High-Performance Schools (CHPS) "Low-emitting material" per CA Section 01350 Criteria

2.3 SOURCE QUALITY CONTROL

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

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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. Apply first pass to maximum of 3 inches. Additional passes to be 2 inches maximum.
- 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