

1. **Design Criteria:**

- a. The Design Consultant is responsible for selecting which sections and areas of the building envelope shall incorporate specific products and systems and confirming their compatibility as part of the air and thermal barrier design. This section is not intended to dictate what types of insulation shall be used. Types of insulation may be described in the following text, but no preference is meant to be conveyed.
- b. Insulation systems shall be designed to maintain continuity and reduce or avoid thermal breaks to the greatest extent possible.
- c. Insulation fasteners shall be selected to reduce thermal bridging and reduce air leakage through the air barrier layer of the envelope.
- d. NFPA 285 requirements must be met when it applies to the project.
- e. Insulation systems shall be designed to minimize condensation potential in exterior wall assemblies.
- f. This section does not cover insulation for mechanical systems.
- g. When spray applied foam insulation is used, the open cell type shall only be permitted in interior partitions where there is no risk of contact with water. The closed-cell type shall be allowed in exterior walls.
- h. Sustainability is a factor for project design on all UVM projects so the Design Consultant shall consider the environmental impact of the production, shipment, and lifecycle of insulation materials. Review sustainability goals with the UVM project manager to determine when these factors will play a role in the project (ie: LEED, embodied energy, carbon sequestration).
- i. If spray foam insulation is to be used, FM Global review and approval is required by UVM.
- j. All insulation products shall comply with the current energy code.

2. **References**

- a. NFPA 285 – Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.
- b. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
- c. Compressive Strength: ASTM D1621

Revision Date: 07/29/2021

- d. ASTM E84 – Fire Performance
- e. ASTM E136 – Fire Performance
- f. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.
- g. ASTM C423 – Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method; 2017.
- h. ASTM C553 – Standard Specification for Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications; 2013.
- i. ASTM C578 – Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation; 2015a.
- j. ASTM C612 – Standard Specification for Mineral Fiber Block and Board Thermal Insulation; 2014.
- k. ASTM C1289 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board; 2014.
- l. ASTM D621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics; 2010.
- m. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials; 2015a.
- n. ASTM E96/E96M – Standard Test Methods for Water Vapor Transmission of Materials; 2014.
- o. ASTM E1414/E1414M – Standard Test Method for Airborne Sound Attenuation Between Rooms Sharing a Common Ceiling Plenum; 2016.

3. **Required Submittals:**

- a. All equipment, product, and warranty information.
- b. Product Data: Manufacturer’s data including instructions, recommendations, and restrictions.
- c. Spray Foam – Test Substrates: Submit written reports for spray foam substrate tests.
- d. Products, Materials & Equipment: If the project is under consideration for LEED certification, all products shall meet or exceed the LEED requirements for the LEED program being used on that specific project. Design consultant to confirm with the project LEED consultant.

Revision Date: 07/29/2021

4. **Installation, Fabrication, and Construction:**

- a. Building insulation is a critical component of the building envelope. It serves multiple purposes and relies on continuity, quality of placement, and compatibility with adjacent materials. The design consultant shall provide specifications that include information regarding proper installation as well as requirements for testing. If the building envelope will be commissioned, the requirements of the contractor shall be included in the specifications.
- b. Mock-ups are useful tools for coordinating the proper assembly of the insulation system. They are recommended when the project can accommodate them and for all new buildings or additions. Review insulation system mockups with the UVM project manager during design regarding key elements such as roof/wall/foundation intersections, fenestration details, placement and size of the mock up.

5. **Warranties:**

- a. Manufacturer's standard warranty on products and equipment
- b. Installer's standard one-year warranty on installation and workmanship