Foamed In-Place Insulation

STYROFOAM™ Spray Polyurethane Foam Insulation (MX Series)
SPEC NOTE: This guide specification is intended for use when specifying Dow spray-applied polyurethane foam insulation as a thermal barrier and an air/vapour barrier system in wall applications for projects located in the U.S.A....

SPEC NOTE: Make any required selections, such as insulation thickness, board sizes, etc. Where selection is indicated with an [OR] statement, select the appropriate paragraph and delete the inappropriate statement. Delete all SPEC NOTEs and [OR] statements prior to final printing.

DISCLAIMER: The manufacturer has reviewed the product information contained in this guide specification. The information is organized and presented to assist the specification writer working on a construction project to select the appropriate products and to save time in writing the project specification Section. The specification writer is responsible for product selection as well as the use and application of this information, and should contact the manufacturer to ensure that all options are available and that the associated specification information is valid and correct.

Proper handling and use is required to avoid exposure to reactive chemicals in their unreacted state. For more information, contact Spray Polyurethane Foam Alliance or the American Chemistry Council. Newly insulated areas have been shown to be safe for occupancy 24 hours after installation is complete.

For information on Health and Safety, refer to the Spray Polyurethane Foam Alliance Health and Safety guidance documents at

www.spraypolyurethane.com

PART 1 GENERAL

1.1 SECTION INCLUDES

Sprayed polyurethane foam insulation.

SPEC NOTE: Edit as required to suit project requirements.

1.2 RELATED SECTIONS

a. Section 03 30 00 - Cast-In-Place Concrete: wall substrate.
b. Section 04 22 00 - Concrete Unit Masonry: wall substrate.
c. Section 05 41 00 - Structural Metal Stud Framing: cold-formed structural metal framing.
d. Section 06 10 00 - Rough Carpentry: wood (sheathing) (blocking and framing).
e. (Section 07 21 13 - Board Insulation: rigid board cavity wall insulation.)
f. (Section 07 21 23 - Loose-Fill Insulation: loose-fill (mineral fibre) (cellulose) insulation.)
g. (Section 07 21 26 - Blown Insulation: blown (mineral fibre) (cellulose) insulation.)
h. (Section 07 21 29 - Sprayed Insulation: spray-applied mineral fibre insulation.)
i. Section 07 26 00 - Vapour Retarders.
j. Section 07 27 00 - Air Barriers.
k. Section 07 27 29 - Foamed-in-Place Air Barriers.
l. Section 07 40 00 - Roofing and Siding Panels.
m. Section 07 57 13 - Spray Polyurethane Foam Roofing.
n. Section 07 81 00 - Applied Fireproofing: spray-applied mineral fibre fireproofing.
o. Section 09 29 00 - Gypsum Board: wall sheathing.
1.3 REFERENCES

ASTM International (ASTM):
  c. ASTM D1621-[04a]: Test Method for Compressive Properties of Rigid Cellular Plastics.
  d. ASTM D1622-[03]: Test Method for Apparent Density of Rigid Cellular Plastics.
  e. ASTM D2126-[99]: Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
  g. ASTM E96/E96M-[05]: Test Method for Water Vapor Transmission of Materials.
  h. ASTM E 2357-[05]: Test Method for Determining Air Leakage of Air Barrier Assemblies.
  i. ASTM D6226: Standard Method for Open Cell Content of Rigid Cellular Plastics.
  j. Underwriters Laboratories Inc. (UL):
      a. UL 723: Surface Burning Characteristics of Building Materials.
  k. National Fire Protection Association (NFPA):

1.4 SYSTEM DESCRIPTION

A. Materials of this Section shall provide continuity of building enclosure thermal [and air] barriers:
   1. In conjunction with materials described under other Sections.
   2. To seal gaps between building enclosure components and wall and roof opening frames.

1.5 CERTIFICATES

A. Submit certificates as specified in Section (01 00 00)(01 40 00).
B. Submit a copy of foam contractor’s certification as per manufacturer.

1.6 REPORTS

A. Submit independent test reports as specified in Section (01 00 00)(01 40 00).
B. Test Reports: verifying qualities of insulation meet or exceed specified requirements

1.7 QUALITY ASSURANCE

A. Spray Polyurethane Foam Installation: Spray polyurethane foam installer shall be certified by spray foam manufacturer.
B. Pre-installation Meeting: Prior to commencement of application of spray polyurethane foam review and document methods and procedures related to installation, including the following:

2. Review wall framing assemblies for potential interference and conflicts and coordinate layout and support provisions for interfacing work.
3. Review spray polyurethane foam methods and procedures related to application, including manufacturer’s installation guidelines.
4. Review construction schedule and confirm availability of products, applicator personnel, equipment and facilities.
5. Review governing regulatory requirements, and requirements for insurance and certificates as applicable.
6. Review field quality control procedures.

1.8 MOCK-UP

A. Construct mock-up as specified in Section (01 00 00)(01 40 00).
B. Mock-Up: ((5)(10) square meter) ((50)(100) square feet) size, illustrating typical conditions, including window corner condition, door corner condition, inside corner and outside corner.
C. Conduct the following tests on the mock-up panel and report results for the following criteria:
   1. Core density
   2. Adhesion between transition sheet membrane and substrate, and
   3. Cohesion or adhesion between sprayed insulation and substrate.
D. Verify results comply with general contractor and manufacturers recommendations.
E. Mock-up may remain as part of finished work
F. Do not commence work until sample installation has been accepted.
G. Acceptance of sample preparation will be a reference for minimum acceptance of the work. Any need for deviation of the mock up acceptance shall be reported in writing.

1.9 DELIVERY STORAGE AND HANDLING

A. Refer to Section (01 00 00) (01 60 00).
B. Deliver and store Product in original packaging, bearing manufacturer’s name, quantity, expiry date, lot number, and other appropriate technical indicators and references.
C. Cold Weather Storage: Store materials during cold weather in heated storage areas following the manufacturer’s guidelines for minimum and maximum temperatures.

1.10 PROJECT CONDITIONS

A. Ventilate area as specified in Section (01 00 00)(01 50 00).
B. Ventilate area to receive insulation by introducing fresh air and exhausting air continuously during any 24 hours after application to maintain non-toxic, unpolluted, safe working conditions.
C. Provide temporary enclosures to prevent spray and noxious vapours from contaminating air beyond application area.
D. Protect workers as recommended by insulation manufacturer.
E. Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of insulation materials.

F. Dispose of waste foam daily in location designated by consultant and decontaminate empty drums in accordance with foam manufacturer’s instructions.

G. Prepare all surfaces in accordance to manufacturer’s recommendations.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Execute the work of this section when the temperature of the air and substrate are within the limits of the data sheet supplied by the manufacturer.

B. Apply the spray foam only when the relative humidity is lower than 80%.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers of sprayed polyurethane foam insulation having Product considered acceptable for use:

1. Dow Chemical

B. Substitutions: Approved equal

2.2 MATERIALS

A. Spray Polyurethane Foam: Two-component spray polyurethane cellular plastic foam, complying with the following methods and meeting the following physical properties:

4. Smoke Developed (ASTM E84, Class A): 450 or less.
5. Compressive Strength minimum (ASTM D1621, 10% parallel to rise): (20 psi)(182 kPa).
6. Closed Cell Content (ASTM D2856): minimum 95 percent.
8. Water Vapor Permeability maximum. (ASTM E96): [2.5 perm-inches] [3.6 ng/(Pa.s.m)].

B Acceptable Products

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C. Primers:

1. Follow manufacturer’s recommendations for surfaces conditions.

D. For oily steel surface like Z-bar, roof deck, curtain wall pan, aluminum tube or PVC pipes cleaning, etching or a primer may be needed before spraying polyurethane foam.
2.3 EQUIPMENT

A. Equipment shall be maintained and in good operating conditions and approved by the foam manufacturer for type of application.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions are ready to receive work
B. Ensure surfaces are free of frost, oil, grease, oxidation, dirt, loose paint, loose scale, or other deleterious material that would impair bond.
C. Ensure that items required to penetrate sprayed insulation are installed prior to installation of sprayed insulation.
D. Beginning of application implies acceptance of existing conditions.

3.2 PREPARATION

A. Mask and cover adjacent areas to protect from overspray.
B. Apply any required primers for special conditions as recommended by manufacturer.
C. Cover wide joints with transition sheet membrane as specified in Section 07 27 50.
D. Clean area of work prior to application of sprayed insulation.
E. Post all required warning signs.

3.3 APPLICATION

A. Must be installed by DOW Chemical Approved Applicator at time of bidding.
B. Apply SPF in accordance with ASTM C1029 and manufacturer’s installation guidelines: complying with preparation methods outlined in 3.02.
C. Apply sprayed foam insulation in consecutive layers of not less than (12 mm) (½ inch) and not more than (50 mm) (2 inch) thick each to achieve total thickness required (total thickness as indicated per application). For light gage steel and extruded polystyrene board first layer should be a skim coat of (12 mm) (½ inch) before adding extra layers. Ensure the substrate is well supported.
D. Avoid formation of sub-layer air pockets.
E. Apply product in overlapping layers, so as to obtain a smooth, uniform surface.
F. Maintain (75 mm) (3 inch) clearance around chimneys, heating vents, steam pipes, recessed lighting fixtures and other heat sources.
G. Do not apply Product to inside of exit openings or electrical junction boxes.

3.4 FIELD QUALITY CONTROL

A. Conduct field inspection and testing in accordance with manufacturers and general contractors instructions.
B. Test completed application daily for core density and cohesion/adhesion to substrate. Record results daily in daily work records.
3.5 SITE TOLERANCES

A. Maximum Variation in Applied Thickness: minus (6 mm) (1/4 inch), plus (10 mm) (5/8 inch).

3.6 CLEANING

A. Remove overspray from non-prescribed surfaces without causing damage to surfaces.
B. Remove protective covers from adjacent surfaces.

3.7 PROTECTION

A. Protect completed installation per manufacturer’s instructions.
B. Protect completed installation from damage Repair as required.
C. Any open flame or welding shall not be in contact with the Spray Polyurethane Foam.
D. All plastic insulation must be protected from interior occupancy space by an approved thermal barrier to meet the requirements of local Building Codes.