

SECTION 07 24 00
EXTERIOR INSULATION AND FINISH SYSTEMS

Revised entire
Section 6/5/14

PART 1 - GENERAL

1.01 SUMMARY

A. Section Includes:

1. This document is to be used in preparing specifications for an Exterior Insulation and Finish System (EIFS) with Moisture Drainage and an air and water-resistive barrier.

B. Related Requirements:

1. 3 30 00 Cast-in-place Concrete
2. 5 40 00 Cold-formed Metal Framing
3. 7 60 00 Flashing and Sheet Metal
4. 7 90 00 Joint Sealants
5. 3 40 00 Aluminum-framed Entrances and Storefronts

1.02 REFERENCES

A. Reference Standards:

1. ASTM Standards:

- a. ASTM B 117 Standard Practice for Operating Salt Spray Fog) Apparatus
- b. ASTM C 297 Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions
- c. ASTM D 968 Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
- d. ASTM D 1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
- e. ASTM D 2247 Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
- f. ASTM D 2898 Standard Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing
- g. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- h. ASTM D 4060 Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
- i. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
- j. ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials
- k. ASTM E 119 Standard Method for Fire Tests of Building Construction and Materials
- l. ASTM E 283 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen
- m. ASTM E 330 Test Method for Structural Performance of Exterior Walls by Uniform Static Air Pressure Difference
- n. ASTM E 331 Test Method for Water Penetration of Exterior

- Windows,
by Uniform Static
- o. ASTM E 2098 Test Method for Determining the Tensile Breaking
Strength of Glass Fiber Reinforcing Mesh
Class PB Exterior Insulation
- for use in
and Finish Systems
- (EIFS), after Exposure to Sodium Hydroxide
Solution
- p. ASTM E 2134 Test Method for Evaluating the Tensile-Adhesion
Performance of Exterior Insulation and
(EIFS)
Finish Systems
- q. ASTM E 2178 Standard Test Method for Air Permeance of
Materials
Building
- r. ASTM E 2273 Test Method for Determining the Drainage
Efficiency of Exterior Insulation and Finish
Systems (EIFS) Clad Wall Assemblies
- s. ASTM E 2357 Standard Test Method for Determining Air Leakage
Air Barrier Assemblies
of
- t. ASTM E 2485 Standard Test Method for Freeze-Thaw Resistance
Exterior Insulation and Finish
Systems (EIFS) and Water-Resistive Barrier
Coatings
- u. ASTM E 2486 Standard Test Method for Impact Resistance of
and PI Exterior Insulation and
Class PB
Finish Systems (EIFS)
- v. ASTM G 155 Standard Practice for Operating-Xenon Arc Light
Apparatus for Exposure of Nonmetallic
Materials
2. Building Code Standards:
- a. AC212 Acceptance Criteria for Water-Resistive Coatings Used
as Water-Resistive Barriers over Exterior Sheathing
- b. AC235 Acceptance Criteria for EIFS Clad Drainage Wall
Assemblies
3. National Fire Protection Association (NFPA) Standards:
- a. NFPA 268 Standard Test Method for Determining Ignitability of
Exterior Wall Assemblies Using a Radiant Heat Source
- b. NFPA 285 Standard Fire Test Method for Evaluation of Fire
Propagation Characteristics of Exterior Non-Load
Bearing Wall Assemblies Containing Combustible
Components
4. ANSI Standards:
- a. ANSI FM 4880 Evaluating Insulated Wall or Wall and
Roof/Ceiling Assemblies; Plastic Interior Finish
Materials; Plastic Exterior Building Panels;
Wall/Ceiling Coating Systems; Interior or Exterior
Finish Systems

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Pre-Installation Meetings
1. Work in this section requires coordination with related sections
and trades. A pre-installation meeting of all related sub-
contractors is required.

B. Sequencing

1. Provide jobsite grading prior to installation of Exterior Insulation and Finish System so that the system may be terminated at 8 in above grade or as required by code.
2. Coordinate installation of foundation waterproofing, roofing membrane, windows, doors, and other penetrations of the exterior walls to provide a continuous air and water-resistive barrier.
3. Provide protection of rough openings before installing windows, doors, and other penetrations of the exterior walls.
4. Coordinate installation of windows and doors so air and water-resistive barrier components are connected to them to provide a continuous barrier.
5. Install window and door head flashings immediately after windows and doors are installed.
6. Install diverter flashings wherever water can enter the wall assembly to direct water to the exterior.
7. Install copings and sealants immediately after installation of the Exterior Insulation and Finish System and when EIFS coatings are dry.
8. Attach penetrations through Exterior Insulation and Finish System to structural support and provide water-tight seals at penetrations.

1.04 ACTION SUBMITTALS / INFORMATIONAL SUBMITTALS

- A. Submit product data as required by Section 01 33 00, Shop Drawings, Product Data and Samples.
- B. Submit shop drawings for panelized EIFS showing wall layout, connections, details, expansion joints, and installation sequence.
- C. Submit two (2) samples of the Exterior Insulation and Finish System with Moisture Drainage for each finish, texture, and color to be used on the project. Use the same tools and techniques proposed for the actual installation. Make the samples of sufficient size to accurately represent each color and texture being utilized on the project.
- D. Submit a current copy of the manufacturer's Trained Contractor Certificate for the system specified.
- E. Submit Owner/Architect-requested test results verifying the performance of the Exterior Insulation and Finish System with Moisture Drainage. Refer to Outsulation Plus MD System Performance Criteria Data Sheet DS852.
- F. Submit a copy of the manufacturer's installation details and application instructions.

1.05 CLOSEOUT SUBMITTALS

- A. Submit a copy of the manufacturer's recommended maintenance and repair manual.
- B. Submit a copy of the Exterior Insulation and Finish System with Moisture Drainage manufacturer's standard warranty.

1.06 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 1. A member in good standing of the EIFS Industry Members Association (EIMA).
 2. Manufacture Exterior Insulation and Finish System materials at a facility covered by a current ISO 9001:2008 and ISO 14001:2004

certification. Certification of the facility is done by a registrar accredited by the American National Standards Institute, Registrar Accreditation Board (ANSI-RAB).

B. Contractor Qualifications:

1. Knowledgeable in the proper installation of the Exterior Insulation and Finish System with Moisture Drainage.
2. Possess a current EIFS Trained Contractor Certificate issued by EIFS manufacturer.
3. Successfully complete a minimum of three (3) projects of similar scope and scale to the specified project.

C Insulation Board Manufacturer Qualifications:

1. Listed by EIFS manufacturer and capable of producing the Expanded Polystyrene (EPS) in accordance with the current EIFS manufacturer's specification for Insulation Board.
2. Subscribe to the EIFS manufacturer's Third Party Certification and Quality Assurance Program.

D. Panel Fabricator Qualifications:

1. Experienced and competent in the fabrication of architectural wall panels.
2. Possess a current EIFS Trained Contractor Certificate issued by EIFS manufacturer.

E. Panel Erector Qualifications:

1. Experienced and competent in the installation of architectural wall panel systems.
2. Shall be:
 - a. The panel fabricator or
 - b. An erector approved by the panel fabricator or
 - c. An erector under the direct supervision of the panel fabricator

F. Regulatory Requirements:

1. Separate the EPS insulation board from the interior of the building by a minimum 15-minute thermal barrier.
2. Comply with local building codes for the use and maximum thickness of EPS insulation board.

H. Inspections:

1. Cooperate with independent, third-party inspectors when required by code or by contract documents.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Deliver all Exterior Insulation and Finish System components and materials to the job site in the original, unopened packages with labels intact.
- B. Inspect all Exterior Insulation and Finish System components and materials upon arrival for physical damage, freezing or overheating. Do not use questionable materials.
- C. Store all Exterior Insulation and Finish System components and materials at the jobsite in a cool, dry location, out of direct sunlight, protected from weather and other sources of damage. Maintain minimum and maximum storage temperature as stated in the product data sheets or specifications for the materials selected.
- D. Protect all products from inclement weather and direct sunlight.

1.08 SITE CONDITIONS

A. Ambient Conditions

1. Do not apply wet materials during inclement weather unless

- appropriate protection is provided. Protect materials from inclement weather until they are completely dry.
2. Verify the minimum air and wall surface temperatures at the time of application as stated in the product data sheets or specifications for the materials selected.
 3. Maintain these temperatures with adequate air ventilation and circulation for a minimum of 24 hours thereafter, or until the products are completely dry.

1.09 WARRANTY

- A. Manufacturer's Warranty
 1. Provide manufacturer's standard warranty.
- B. Contractor Warranty
 1. Sub-contractor to provide warranty of installation. Manufacturer assumes no liability for installation of Exterior Insulation and Finish System.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Basis of Design Product:
 1. Subject to compliance with requirements, provide Exterior Insulation and Finish System (EIFS) by Dryvit Systems, Inc., or a comparable product by another manufacturer.
- B. Substitution Limitations:
 1. All components of the EIFS shall be supplied or obtained from approved manufacturer or its authorized distributors. Substitutions or additions of materials manufactured or supplied by others will void the system warranty.
- C. Product Options:
 1. Field Applied: The EIFS is applied to the substrate system in place.

2.02 DESCRIPTION

- A. System Description:
 1. The following product system & accessories are used as the basis of comparison: The Dryvit Outsulation Plus MD System is an Exterior Insulation and Finish System (EIFS) with Moisture Drainage; consisting of:
 - a. A fluid-applied air/water-resistive barrier
 - b. Adhesive - installed in vertical ribbons to facilitate egress of incidental moisture
 - c. Expanded Polystyrene (EPS) insulation board
 - d. Base Coat
 - e. Reinforcing Mesh
 - f. Finish Coat
- B. Materials:
 1. Air and Water-Resistive Barrier:
 - a. Dryvit Backstop[®] NT[™] fluid-applied noncementitious air/water-resistive barrier
 - b. Dryvit Grid Tape[™] open weave fiberglass mesh tape with pressure-sensitive adhesive available in rolls 102 mm (4 in)

- wide by 91 m (100 yds) long
2. Flashing:
 - a. AquaFlash[®] fluid-applied water-based polymer coating.
 - b. AquaFlash polyester reinforcing mesh.
 3. Drainage:
 - a. Acceptable manufacturers of drainage track:
 - 1) Starter Trac STWP - without drip edge by Plastic Components, Inc.
 - 2) Starter Trac STDE - with drip edge by Plastic Components, Inc.
 - 3) Universal Starter Track by Wind-lock Corporation
 - 4) Sloped Starter Strip with Drip by Vinyl Corp.
 - c. Dryvit Drainage Strip[™] corrugated plastic strip.
 - d. Dryvit AP Adhesive[™] urethane-based adhesive used to attach Drainage Track and Dryvit Drainage Strip to the sheathing.
 4. Adhesives:
 - a. Liquid polymer-based adhesive field mixed with Portland cement.
 - 1) Dryvit Primus[®]
 - 2) Dryvit Genesis[®]
 - b. Ready mixed dry blend cementitious, copolymer-based adhesive field mixed with water.
 - 1) Dryvit Primus[®] DM
 - 2) Dryvit Genesis[®] DM
 5. Insulation Board:
 - a. Expanded Polystyrene; minimum thickness 25 mm (1 in); meeting Dryvit Specification DS131 and ASTM E 2430. Minimum R-value: 1/inch.
 6. Base Coat:
 - a. Liquid polymer-based adhesive field mixed with Portland cement.
 - 1) Dryvit Primus
 - 2) Dryvit Genesis
 - b. Ready mixed dry blend cementitious, copolymer-based adhesive field mixed with water.
 - 1) Dryvit Primus DM
 - 2) Dryvit Genesis DM
 7. Reinforcing Mesh:

- a. Open-weave, glass fiber fabric treated for compatibility with other system materials.

Reinforcing Mesh ¹ /Weight g/m ²	Minimum Tensile Strengths		EIMA Impact Classification	EIMA Impact Range Joules (in-	Impact Test Results Joules (in-
Standard -	27 g/cm	Standard	3-6	(25-49)	4 (36)
Standard	6 g/cm (200	Medium	5-10	(50-89)	6 (56)
Intermediate	4 g/cm (300	High	0-17	(90-150)	12 (108)
anzer [®] 15*	1 g/cm (400	Ultra High	>17	(>150)	18 (162)
anzer 20* -	8 g/cm (550	Ultra High	>17	(>150)	40 (352)
etail Mesh [□]	7 g/cm (150	n/a	n/a	n/a	n/a
orner Mesh [™] - 244	9 g/cm (274 lbs/in).	n/a	n/a	n/a	n/a
Used in conjunction with Standard Mesh (recommended for areas exposed to high traffic). . Colored blue for product identification bearing the Dryvit logo.					

8. Finish:

- a. Water-based, acrylic coating with integral color and texture; formulated with Dirt Pickup Resistance (DPR) chemistry.
- 1) Available textures:
- a) Sandpebble[®] DPR - pebble texture
 - e) Sandpebble[®] Fine - fine pebble texture

C. Jobsite-Mixed Materials:

1. Portland cement: verify is Type I or II, meeting ASTM C 150, white or gray in color, fresh and free of lumps.
2. Water: verify is clean and free of foreign matter.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verification of Conditions:

1. Verify access to electric power, clean water and a clean work area at the location where the Dryvit materials are to be applied.
2. Verify that wall surface on which Exterior Insulation and Finish System is to be installed is a manufacturer-approved substrate:
 - a. Exterior grade gypsum sheathing meeting ASTM C 1396.
 - b. Exterior glass-mat gypsum sheathing meeting ASTM C 1177.
 - c. Exterior fiber reinforced cement or calcium silicate boards.
 - d. APA Exterior or Exposure 1 Rated Plywood, Grade C-D or better, nominal 12.7 mm (1/2 in), minimum, installed with the C face out.
 - e. APA Exterior or Exposure 1 Fire Retardant Treated (FRT) Plywood, Grade C-D or better, nominal 12.7 mm (1/2 in), minimum, installed with the C face out.
 - f. APA Exposure 1 Rated Oriented Strand Board (OSB) nominal 12.7 mm

- (1/2 in), minimum.
- g. Unglazed brick, cement plaster, concrete or masonry.
3. Verify the deflection of the substrate is does not exceed 1/240 times the span.
 4. Verify substrate is flat within 6.4 mm (1/4 in) in a 1.2 m (4 ft) radius.
 5. Verify substrate is sound, dry, connections are tight; has no surface voids, projections, or other conditions that may interfere with the Exterior Insulation and Finish System installation or performance.
 6. Verify the slope of inclined surfaces are not less than 6:12 (27 °), and the length of the slope does not exceed 305 mm (12 in).
 7. Verify metal roof flashings have been installed in accordance with Sheet Metal and Air Conditioning Contractors National Association (SMACNA) standards.
 8. Verify all rough openings are flashed in accordance with the Exterior Insulation and Finish System manufacturer's installation details, or as otherwise necessary to prevent water penetration. Verify chimneys, balconies and decks have been properly flashed as necessary to prevent water penetration.
 9. Verify windows and doors are installed and flashed per manufacturer's requirements and installation details.
 10. Notify general contractor of all discrepancies prior to the installation of the Exterior Insulation and Finish System.
 11. Verify that expansion joints are installed:
 - a. Where expansion joints occur in the substrate system.
 - b. Where building expansion joints occur.
 - c. At floor lines in wood frame construction.
 - d. At floor lines of non-wood framed buildings where significant movement is expected.
 - e. Where the Exterior Insulation and Finish System abuts dissimilar materials.
 - f. Where the substrate type changes.
 - g. Where prefabricated panels abut one another.
 - h. In continuous elevations at intervals not exceeding 23 m (75 ft).
 - i. Where significant structural movement occurs, such as changes in roof line, building shape or structural system.

3.02 PREPARATION

- A. Protect the Exterior Insulation and Finish System materials by permanent or temporary means from inclement weather and other sources of damage prior to, during, and following application until completely dry.
- B. Protect adjoining work and property during installation of the Exterior Insulation and Finish System.
- C. Prepare the substrate to be free of foreign materials, such as oil, dust, dirt, form-release agents, efflorescence, paint, wax, water repellants, moisture, frost, and any other condition that may inhibit adhesion.

3.03 INSTALLATION

- A. Install the system in accordance with Dryvit Outsulation Plus MD System Application Instructions.
- B. Apply base coat sufficient to fully embed the mesh. The recommended

method is to apply the base coat in two (2) passes.

- C. Apply sealant only to base coat treated with Dryvit Demandit or Color Prime coatings.
- D. Install high impact mesh as specified at ground level, high traffic areas and other areas exposed to or susceptible to impact damage as designated on contract drawings.

3.04 SITE QUALITY CONTROL

- A. Exterior Insulation and Finish System manufacturer assumes no responsibility for on-site inspections or application of its products.
- B. EIFS sub-contractor to certify in writing the quality of work performed relative to the substrate system, details, installation procedures, and as to the specific products used.
- C. EPS supplier, if requested, to certify in writing that the EPS meets the Exterior Insulation and Finish System manufacturer's specifications.
- D. The sealant contractor, if requested, to certify in writing that the sealant application is in accordance with the sealant manufacturer's and the Exterior Insulation and Finish System manufacturer's recommendations.

3.05 CLEANING

- A. Remove all excess Exterior Insulation and Finish System materials from the job site by the contractor in accordance with contract provisions and as required by applicable law.
- B. Leave all surrounding areas, where the Exterior Insulation and Finish System has been applied, free of debris and foreign substances resulting from the EIFS sub-contractor's work.

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