



**evaluation scope**

Compliance with the following code:  
*BOCA National Building Code/1999*

**WEATHER PROTECTION**

- Section 1403.1 General
- Section 1404.3 Weather protection

**RADIANT HEAT EXPOSURE**

- Section 1407.2.1 Radiant heat exposure

**SURFACE-BURNING CHARACTERISTICS**

- Section 2603.3 Surface-burning characteristics
- Section 2603.6.5 Full-scale tests

**description**

Dryvit Ultralation™ Exterior Insulation and Finish System (EIFS) is a nonloadbearing, multi-component exterior wall veneer system, consisting of a foam plastic board, mechanical fasteners, glass-fiber fabric reinforcing mesh, latex-modified Portland cement base coat, and an acrylic polymer finish. Figure 1 at the end of this report illustrates the basic system components.

Ultralation® EIFS is mechanically fastened to the exterior face of exterior walls in buildings of combustible and noncombustible construction. **The system shall be limited to application to the exterior wall substrates of concrete and masonry construction.**

**Ultralation® EIFS components**

- **Foam Plastic Board:** A rigid extruded polystyrene (XPS) foam plastic with a nominal density of 2.0 lb/ft³ (32 kg/m³), produced in 24 × 96 in. (610 × 2439 mm) sheets, and thicknesses of 1 to 2 in. (25 to 51 mm). The foam plastic board is identified as Styrofoam®-TG produced by Dow Chemical Co.
- **Mechanical Fasteners:** Corrosion-resistant, with 1 3/4 in. (44 mm) diameter × 0.07 in. (1.78 mm) thick, polypropylene plates, identified as Type ULP 302, manufactured by Wind-Lock™ Corporation. Fastener length shall be sufficient to penetrate the substrate a minimum of 1 in. (25 mm).
- **Reinforcing Mesh:** An open-weave, glass fiber fabric, blue in color, and treated for alkali resistance. The mesh shall be installed so that it is completely embedded within the

(Continued on Page 2)

**conditions of use**

This report is limited to the applications and products stated herein. BOCA-ES intends that this report be used by the code official to determine that the subject of the report complies with the code requirements specifically addressed, provided that the products are installed in accordance with the following conditions:

- **The system shall be limited to application to the exterior wall substrates of concrete and masonry construction.**
- The Ultralation® EIFS shall be installed in accordance with the manufacturer's installation instructions, *Ultralation System*, Document DS216, dated 1992, revised June 6, 2000, which shall be available at the job site at all times, subject to the limitations of this report.
- Fastener type and spacing shall be established by a tension-load test program consisting of fastener withdrawal from the substrate. The minimum average withdrawal strength shall be at least six times the design wind pressure for the project location. A minimum of five tests per program shall be required with individual results varying by not more than 15 percent from the average. Where variation of greater than 15 percent occurs, a minimum of ten tests shall be performed. In no case shall the system be used where the maximum allowable design load for the system exceeds 66 lbf/ft² (3.2 kPa).
- Cement, sand, aggregate, retarders, accelerators, fillers, anti-freeze agents or any other additives shall not be added to any Ultralation® EIFS products, except as specifically referenced in this report.
- Installation of Ultralation® EIFS as a component of fire-resistance rated assemblies is outside the scope of this report.
- The system shall not be installed over surfaces that are wet, frozen, contain frost or loose material, or when the ambient temperature is below 40 degrees F (4 °C) before, during and 24 hours after application.
- The system shall be limited to application on vertical exterior wall surfaces.
- The maximum thickness of foam plastic shall be limited to 2 in. (51 mm). The minimum thickness shall not be less than 1 in. (25 mm).

Research Report  
**96•79.1**

**MANUFACTURER:**

**DRYVIT SYSTEMS, INC.**  
**ONE ENERGY WAY**  
**WEST WARWICK, RI 02893**

**DIVISION 07**  
**THERMAL AND MOISTURE**  
**PROTECTION**

**Section 07240**  
**Exterior Insulation and**  
**Finish Systems**

**EVALUATION SUBJECT:**

**Ultralation™ EIFS**

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**description***(Continued from Page 1)*

base coat. The mesh is manufactured in various weights and sizes. Table 1 of this report list the various mesh types. The mesh shall be mechanically fastened to the foam plastic board with fasteners, as described in this report. The edges of the mesh sheets shall be overlapped a minimum of 2 1/2 in. (64 mm) at all joints.

- **Base coat: Starter® Base**, is an acrylic polymer liquid combined with silica sand, Portland cement complying with ASTM C150 (Type I or II), and Dryvit Ultrafibers™ at the job site. The base mixture ratio shall be one 35 lb (16 kg) pail of liquid, 200 lb (91 kg) sand, 94 lb (43 kg) cement and 1 bag of fibers. The Ultrafibers™ consist of coated fiberglass strands. The mixture shall be trowel applied to the foam plastic board surface and reinforcing mesh to a minimum nominal thickness of 1/4 in. (6.4 mm).
- **Finish:** A ready-mixed 100 percent acrylic polymer coating containing an integral color and quartz sand aggregate, installed over the base coat.
- **Trim:** Minimum 0.016 in. (0.4 mm) (27 gage) thick galvanized steel or zinc alloy. Zinc alloy trim shall comply with the requirements of ASTM B69. Galvanized trim shall comply with the requirements of ASTM A446, with a minimum G90 galvanized coating. Woven wire corner reinforcement shall be manufactured from minimum 18 gage zinc-galvanized steel wire.
- **Sealants:** Low modulus, one-component silicone complying with ASTM D920, Type S, Grade NS, Class 25 or two-component polyurethane complying with ASTM D920, Type M, Grade NS, Class 25; movement capability of +/- 25 percent, or greater. Backer rods used in conjunction with sealants shall be closed cell type complying with ASTM C509, sized 33 percent larger than the joint opening.

**items requiring verification**

- ✓ Concrete and masonry substrates shall be flat, solid and comply with the applicable provisions of the *BOCA National Building Code/1999*.
- ✓ Control and expansion joints shall be installed as indicated on the drawings or, when not indicated, at a maximum spacing of 12 ft (3.7 m) horizontally or vertically to limit the maximum area between joints to 144 ft<sup>2</sup> (13.4 m<sup>2</sup>). Length to width ratio of the joint layout shall not exceed 2.5 to 1. See Figure 2 at the end of this report.
- ✓ Sealants shall not be installed until all EIFS materials have fully cured for a minimum of 72 hours. Application of sealants and backer rods shall be in accordance with the sealant manufacturer's installation instructions.
- ✓ The foam plastic shall be separated from the building interior by 1/2 in. (12.7 mm) gypsum wallboard or an equivalent approved thermal barrier material in accordance with Section 2603.4 of the *BOCA National Building Code/1999*.
- ✓ The extruded polystyrene foam plastic board used with Dryvit Ultralation™ EIFS shall bear a label in accordance with Section 1704.3 of the *BOCA National Building Code/1999* and contain the following information:

Nominal Density: 2.0 lb/ft<sup>3</sup> (32 kg/m<sup>3</sup>)

Material: Styrofoam®, manufactured by Dow Chemical Co.

Labeling Agency: Underwriters Laboratories Inc.

**application for permit**

To aid in the determination of code compliance with this research report, the following represents the minimum level of information to accompany the application for permit:

- The language "See BOCA Evaluation Services, Inc. Research Report No. 96-79" or a copy
- Fastener and plate type, fastener length and spacing;
- Fastener tension-load test report, signed and sealed by a registered design professional, establishing ability of the mechanically fastened system to withstand the allowable design wind load;
- Details of installation at wall openings, corners and panel terminations, including mesh reinforcement;
- Locations and details of all control joints;
- Details of all penetrations through system, including methods to prevent water penetration into the assembly;
- Detail section indicating all system components; and,
- Manufacturer's installation instructions for the exterior wall envelope.

**information submitted**

- United States Testing Co., Inc., Report No. 97450-8, dated February 22, 1987, containing results of wind-driven rain resistance testing of the system.
- United States Testing Co., Inc., Report No. 97450-4, dated December 28, 1988, containing results of absorption freeze-thaw cycle testing of the system.
- United States Testing Co., Inc., Report No. 97450-4, dated December 28, 1988, containing results of salt spray testing of the system.
- United States Testing Co., Inc., Report No. 97450-9, dated June 15, 1988, containing results of accelerated exposure testing of the system.
- Southwest Research Institute, Report No. 01-4890-015, dated December 8, 1992, containing results of radiant heat exposure testing, performed in accordance with Section 1407.2.1 of the *BOCA National Building Code/1999*.
- BOCA Evaluation Services, Inc., Research Report No. 95-33 containing data indicating that the Styrofoam® XPS foam plastic boards exhibited a flame spread index of 25 or less and a smoke-developed index of 450 or less.
- Southwest Research Institute, Report No. 01-1901-146-d, dated August 22, 1988, containing results of full-scale testing of the system.

**product identification**

All Dryvit Ultralation™ EIFS components, or the packaging, manufactured in accordance with this research report shall be marked at the plant with the identifying language:

- "See BOCA Evaluation Services, Inc., Research Report No. 96-79."



Table 1 – REINFORCING MESH

Mesh Type	Nominal Weight	Roll Size
Dryvit Ultramesh™ Reinforcing Fabric <sup>1</sup>	5.2 oz/yd <sup>2</sup> (176 g/m <sup>2</sup> )	38 in. x 150 ft (965 mm x 45.7 m)
Dryvit Detail™ Mesh <sup>2</sup>	4.3 oz/yd <sup>2</sup> (146 g/m <sup>2</sup> )	9.5 in. x 150 ft (241 mm x 45.7 m)

**Notes to Table 1:**

1. Minimum mesh type used to provide base coat reinforcement.
2. Mesh type used to provide reinforcement at all wall penetrations and special shapes.

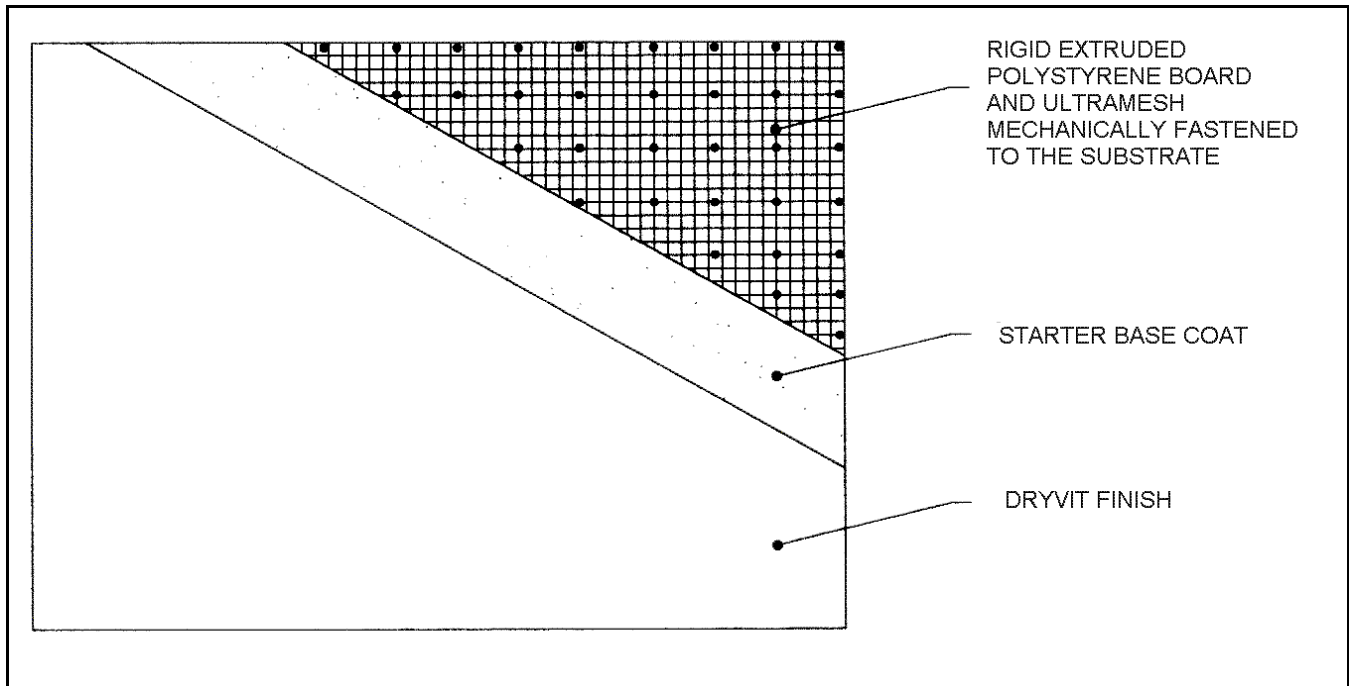
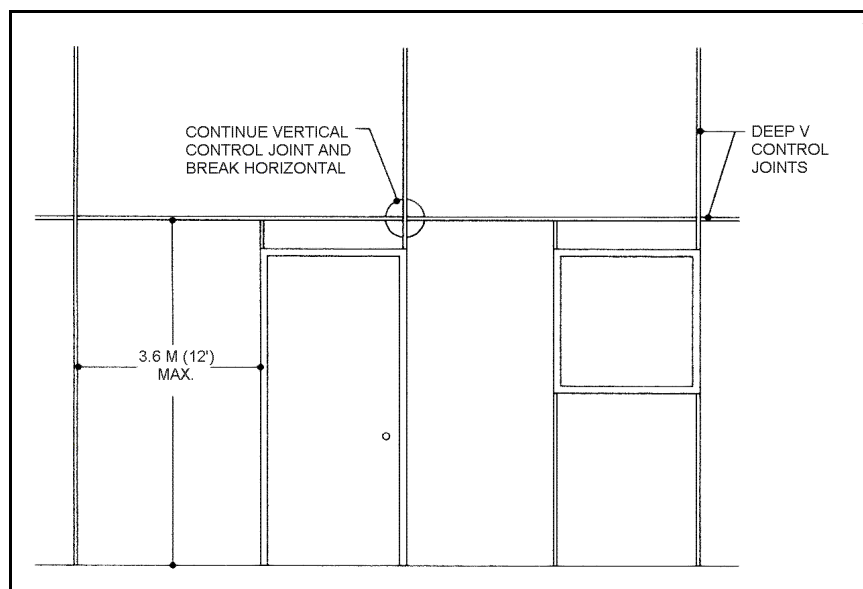


Figure 1\* – SYSTEM COMPONENTS



**Notes to Figure 2:**

1. Monolithic wall areas not to exceed 13 sq. m (144 sq. ft.).
2. Maximum horizontal or vertical dimension between control joints not to exceed 3.6 m (12'-0").
3. Length to width ratio of any area not to exceed 2.5 to 1.
4. Install neutral cure silicone bedding sealant at all control joint intersections.

Figure 2\* – CONTROL JOINT LOCATIONS

\*THESE DRAWINGS ARE FOR ILLUSTRATION PURPOSES ONLY. THEY ARE NOT INTENDED FOR USE AS CONSTRUCTION DOCUMENTS FOR THE PURPOSE OF DESIGN, FABRICATION OR ERECTION.

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