

ULTRALATION[®] SYSTEM



A Mechanically Fastened, Rugged, Exterior
Wall Insulation and Finish System

DS114

Ultralation System Specifications

**DRYVIT SYSTEMS, INC.
MANUFACTURER'S SPECIFICATIONS
SECTION 07240
ULTRALATION® EXTERIOR INSULATION AND FINISH SYSTEM CLASS PM**

PART I - GENERAL

1.01 Section Includes

- A. Exterior Insulation and Finish System - Type PM

1.02 Related Sections

- A. Unit Masonry - 04200
- B. Concrete - 03300
- C. Sheathing - 06100
- D. Light Gauge Cold-Formed Steel Framing - 05400
- E. Sealants- 07900

1.03 References

- A. DS109 Ultralation System Installation Details
- B. DS153 Expansion Joints And Sealants
- C. DS216 Ultralation System Application Pocket Guide
- D. DS400 Demandit® Product Data Sheet
- E. DS403 Starter®/Ultramesh® Product Data Sheet
- F. DS416 Finishes Product Data Sheet
- G. DS420 Stone Mist® Product Data Sheet
- H. DS434 Ameristone® Product Data Sheet

1.04 Definitions

- A. Applicator: The Contractor that applies the Ultralation System to the substrate*.
- B. Panel Fabricator: The Applicator that fabricates the panels and applies the Ultralation System to them.
- C. Panel Erector: The Contractor that installs the panels with the Ultralation System on the building.
- D. Substrate: The material to which the Ultralation System is affixed.
- E. Substrate System: The assembly, including the substrate, to which the Ultralation System is affixed.
- F. ANSI: American National Standards Institute
- G. ASTM: American Society of Testing and Materials
- H. Expansion Joint: A designed interruption in the continuity of

a material, assembly or system, which experiences movement.

- I. Control Joint: A designed interruption in the continuity of a material to minimize possible cracking due to expansion, contraction, and initial shrinkage.

1.05 System Description

- A. The Ultralation System is an exterior insulation and finish system, consisting of rigid insulation board, Ultramesh reinforcing fabric, mechanical fasteners, trim accessories, Starter base coat, and Finish or coating.
- B. Methods of installation
 - 1. Field applied: The Ultralation System is applied to the substrate system, in place.
 - 2. Panelized: The Ultralation System is shop-applied to prefabricated wall panels and erected on the building as prefinished panels.
- C. Design requirements
 - 1. General
 - a. Dryvit Systems, Inc. current published information shall be followed for suggested detail treatments.
 - b. At all termination locations, the insulation board edges shall be encapsulated by either casing beads or Dryvit Starter base coat.
 - c. The slope of inclined surfaces shall not be less than 6:12.
 - d. The length of inclined surfaces shall not exceed 250 mm (10 in).
 - e. All exterior wall components such as windows, doors, etc. shall be installed and flashed in accordance with the manufacturer's and building code requirements, so as to prevent water from

entering behind the Ultralation system.

- 2. Substrate/Substrate Systems
 - a. Shall be engineered by others, including but not limited to their connections.
 - b. The maximum deflection under full flexural design loads shall not exceed 1/240th of the span.
 - c. All substrates shall be flat within 6.4 mm (1/4 in) within a 1.2 m (4 ft) radius.
 - d. Acceptable substrates for the Ultralation System include but are not limited to:
 - 1) Brick
 - 2) Unit masonry
 - 3) Poured or precast concrete
 - 4) Plywood or Oriented Strand Board (OSB) sheathing meeting American Plywood Association Exposure I classification.
 - 5) Steel or wood framing covered with sub-sheathing, i.e. exterior grade gypsum sheathing.
 - e. It is the responsibility of the applicator to ensure the substrate is of a type, which is acceptable for application of the Ultralation System.
- 3. Expansion joints
 - a. Expansion and contraction of the Ultralation System and adjacent materials shall be taken into account in the design and location of expansion joints by the designer.
 - b. Continuous expansion joints shall be installed at the following locations:
 - 1) Where expansion joints occur in the substrate system.
 - 2) Where building expansion joints occur.
 - 3) At all Ultralation System terminations.

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- 4) Where the substrate changes.
- 5) Where significant structural movement is anticipated.
- 4. Control joints
 - a. Control joints shall be located as recommended in ANSI A42.3 Specifications for Lathing and Furring for Portland Cement Plaster, and shall be specified by the architect.
 - b. As a minimum, control joints shall be located as follows:
 - 1) Monolithic wall areas shall not exceed 13.4 m² (144 ft²).
 - 2) Dimensions between horizontal or vertical control joints shall not exceed 3.23 m. (12 ft).
 - 3) The length-to-width ratio of any area shall not exceed 2 1/2 to 1.
 - 4) At high stress areas such as corners of windows, doors, and other penetrations.
 - c. All control joints shall utilize a "Deep V" design, and be made of zinc or galvanized metal as specified by the architect, appropriate for local exposure conditions.
- 5. Outside corners shall be reinforced by wrapping Ultramesh continuously around the corner and installing welded wire corner reinforcement or expanded flange corner beads over the Ultramesh.

- 6. Corners of minor openings where it is not feasible to install control joints shall be additionally reinforced using a 223 mm (9 in) by (305 mm) (12 in.) "Butterfly" strip of Ultramesh laid at a 45° angle to the corner. Also, the insulation board shall be installed so that its joints do not coincide with the corners of the opening.
- 7. Sealant/Sealant Systems
 - a. Sealant system including the sealant, closed cell backer rod, bond breaker tape, primer and accessories, manufactured and installed by others.
 - b. When sealing to Ultralation products, the sealant shall have been tested for compatibility with those products. Refer to Dryvit Publication DS153 for current listing.
 - c. Ultralation System materials shall be fully cured prior to sealant system installation.
- 8. Terminations
 - a. The system shall be held back from adjoining materials a minimum of 19 mm (3/4 in) for sealant application.
 - b. The insulation board shall be terminated above grade.
- D. Testing: The Ultralation System shall meet or exceed the following test results:
 - 1. Physical and chemical tests

- a. Absorption/Freeze/Thaw: 60 cycles, immersed in water at +68 °F (+20 °C) for 4 days then cycled from +14 °F (-10 °C) for 2 hours to +68 °F (+20°C) for 2 hours; passed
- b. Salt Spray Resistance: ASTM B117, 300 hours; passed
- c. Impact Testing: ASTM D2794; over 160 inch-pounds; (18.1 N m)
- d. Compressive Strength: ASTM C109; 3730 psi (25715 kPa)
- e. Tensile Strength: ASTM C190: 700 psi (4826 kPa)
- f. Tensile Bond Strength: 51.8 psi (357 kPa)
- g. Flexural Strength: ASTM C203; 318 psi (2192 kPa)
- h. Mildew/Fungus Resistance: MIL STD-810B Method 508; passed
- i. Abrasion Resistance: ASTM D968, 500 liters; passed
- j. Accelerated Weathering: ASTM G23, 2000 hours; passed
- 2. Structural Tests
 - a. Impact Resistance: ASTM E695: 233 foot-pounds (316 N.m) L/133 deflection, no cracking
 - b. Full Scale Structural Tests: ASTM E330; refer to the table below for the maximum ultimate wind loads based on Dow® Styrofoam™ Insulation Board:

WIND LOAD TABLE		
	<u>IN.</u>	<u>(mm)</u>
Stud Spacing	16	406
Fastener Spacing	12	305
	<u>PSF</u>	<u>KPa</u>
Ultimate Loading (B)		
Negative	132	6.320
Positive (A)	170	8.140
NOTES:		
A. No failure of panel occurred. Capacity of vacuum was reached at 170 psf (8.14KPa)		
B. Refer to applicable building codes for minimum factor of safety.		

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3. Fire Tests:
 - a. The Insulation Board shall have been tested as follows:
 - 1) Surface Burning Characteristics:
ASTM E84 results:
Flame Spread Index less than 25.
 - b. The Ultralation coatings shall have been tested as follows:
 - 1) Surface Burning Characteristics:
ASTM E84 Results:
Flame Spread Index less than 25.
 - c. The Ultralation System shall have been tested as follows:
 - 1) Diversified Fire Test; High Intensity Modified ASTM E108; passed
 - 2) Multi-Story Fire Test; UBC 17-6; passed
 - 3) Full Scale Fire Test; CAN4-S101-M82; passed

1.06 Submittals

A. Samples

1. The Applicator shall submit to the designer two 61 m x 1.2 m (2' x 4') samples of the Ultralation System for each finish, texture and color to be used on the project.
2. One of the samples shall remain at the job site for use in comparing the approved appearance to that being applied. It is the responsibility of the applicator to ensure that the applied appearance is consistent with the approved sample appearance.

B. Shop Drawings

1. For panelized Ultralation System, complete drawings prepared by the panel fabricator showing wall layout, details, connections, expansion joints, the Ultralation System and erection sequence shall be submitted to the designer.

C. Reports

1. Copies of descriptive literature and selected test reports by independent laboratories verifying the

performance of the Ultralation System shall be submitted to the designer by the applicator, when requested.

1.07 Quality Assurance

A. Qualifications:

1. System Manufacturer:
Shall be Dryvit Systems, Inc. All materials shall be manufactured or sold by Dryvit and shall be purchased from Dryvit or its authorized distributor.
 - a. Materials shall be manufactured at a facility covered by a current ISO 9001:2000 certification. Certification of the facility shall be done by a registrar accredited by the American National Standards Institute, Registrar Accreditation Board (ANSI-RAB).
2. Applicator: Shall be knowledgeable in the proper installation of the Ultralation System and shall be experienced and competent in the installation of exterior insulation and finish systems generally.
3. Panel Fabricator: Shall be an Applicator experienced and competent in the fabrication of architectural wall panels and shall employ the proper equipment and manpower to fabricate such panels.
4. Panel Erector: Shall be the panel fabricator, or approved by and under the direct supervision of the panel fabricator and shall be experienced and competent in the installation of architectural wall panel systems and shall employ the proper equipment and manpower to install such panels.

B. Regulatory Requirements:

1. Foam plastic insulation shall be separated from

the interior of the building by a minimum 15-minute thermal barrier.

C. Approvals, Listings, Classifications:

1. The Ultralation System shall be approved for use on this project by the applicable model, state and/or local building code authorities.

1.08 Delivery, Storage and Handling

- A. All Ultralation materials shall be delivered to the job site in the original, unopened packages with labels intact. Upon arrival, materials shall be inspected by the applicator for physical damage, freezing, or overheating and Dryvit informed of any discrepancies. Questionable materials shall not be used.
- B. All Ultralation materials at the job site shall be stored in a cool, dry location, out of direct sunlight, protected from weather and other damage at a minimum temperature of 7 °C (45 °F) for Demandit®, Revyvit®, and Color Prime™; 10 °C (50 °F) for Ameristone and 4 °C (40 °F) for other wet products. For Custom Brick™ Finish, refer to Custom Brick Specification, DS151.
- C. All materials supplied by others such as; insulation board, fasteners, trim accessories, etc., shall be inspected and stored as per the manufacturer's instructions.

1.09 Job Conditions

- A. Existing Conditions: The Applicator shall have access to electric power, clean water, and a clear work area at the location where the Dryvit materials are to be installed.
- B. Environmental Conditions:
 1. Application of Ultralation wet materials shall be at a minimum ambient temperature of 4 °C (40 °F), 10 °C (50 °F) or 7 °C (45 °F) depending on product, and rising. For Custom Brick Finish, refer to Custom Brick Specification, DS151.

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These temperatures shall be maintained for a minimum of 24 hours (for Ameristone 48 hours) thereafter, or until completely dry.

C. Protection:

1. Adjacent areas/materials shall be protected from damage, drops, and spills during the application of the Ultralation materials.
2. The Ultralation materials shall be protected by permanent or temporary means from weather and other damage prior to, during, and immediately after application. Care must be taken to prevent condensation and/or heat buildup when using tarp or plastic to prevent damage to the Ultralation products.

D. Sequencing and Scheduling:

1. Installation of the Ultralation System shall be coordinated with the other construction trades.
2. Sufficient manpower and equipment shall be employed to ensure a continuous operation, free of cold joints, scaffold lines, texture variations, etc.

1.10 Limited Materials Warranty

- A. Dryvit Systems, Inc. shall provide a limited warranty against defective material upon written request. Dryvit shall make no other warranties, expressed or implied. Dryvit does not warrant workmanship. Full details are available from Dryvit Systems, Inc.

1.11 Design Responsibility

- A. It is the responsibility of both the specifier and the purchaser to determine if a product is suitable for their intended use. The Designer selected by the purchaser shall be responsible for all decisions pertaining to design, detail, structural capability, attachment details, shop drawings, and the like. Dryvit has prepared guidelines in the form of specifications, application details, and product sheets to facilitate the design process only. Dryvit is not

liable for any errors or omissions in design, detail, structural capability, attachment details, shop drawings, or the like, whether based upon the information prepared by Dryvit or otherwise, or for any changes which purchasers, specifiers, designers, or their appointed representatives may make to Dryvit's published comments.

1.12 Maintenance and Repair

- A. Repair shall follow the procedures noted in Ultralation Application Instructions, DS216.
- B. All Dryvit products are designed for minimum maintenance. However, as with all building products, depending on location, some cleaning may be required. See Dryvit Publication DS152 on cleaning and recoating.
- C. Sealants and flashings shall be inspected on a regular schedule and repaired or replaced as necessary.

PART II - PRODUCTS

2.01 General

- A. All Dryvit-supplied components of the Ultralation System shall be obtained from Dryvit Systems, Inc. or its authorized distributors. No substitutions or addition of other materials shall be permitted.

2.02 Components

- A. Insulation Board:
1. The insulation board shall be extruded polystyrene as follows:
 - a. Styrofoam™ - TG: Extruded polystyrene as manufactured by Dow® Chemical USA and conforming to ASTM C-578-85 Type IV.
 2. The insulation board shall be applied at a minimum thickness of 25 mm (1 in.) and at a maximum thickness of 51 mm (2 in.). Thicker insulation board may be used when approved by the local building official and Dryvit Systems, Inc.

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3. Insulation board thickness shall be as specified on the project drawings.
- B. Reinforcing Mesh
1. Ultramesh: treated, open weave glass fiber mesh used to reinforce the Starter base coat.
 2. Detail®: treated, open weave glass fiber mesh used to coat over expanded polystyrene insulation board shapes.
- C. Starter: Shall be an acrylic based admixture supplied by Dryvit Systems, Inc. and used as a component in the base coat.
- D. Ultrafibers®:
1. Chopped fiberglass reinforcing fibers supplied by Dryvit Systems, Inc.
- E. Finish:
- Shall be the type, color and texture as selected by the architect/owner and shall be one of the following types:
1. Standard DPR (Dirt Pickup Resistance)
 - a. Quarzputz®, Sandblast®, Freestyle®, Sandpebble®, and Sandpebble Fine.
 2. Specialty
 - a. Ameristone™
 - b. Stone Mist®
 3. Elastomeric DPR (Dirt Pickup Resistance)
 - a. Weatherlastic™ Quarzputz, Weatherlastic Sandpebble, Weatherlastic Sandpebble Fine, Weatherlastic Adobe™, and Weatherlastic Smooth™.
 4. Medallion Series PMR™ (Proven Mildew Resistance)
 - a. Quarzputz, Sandblast, Freestyle, Sandpebble, Sandpebble Fine, and Demandit®.
 5. Coatings, Primers and Sealers
 - a. Revyvit®, Color Prime™, Prymit®, and SealClear™.
- F. Fasteners
1. General:
 - a. Shall utilize 41 mm (1 5/8 in) diameter

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washers such as Wind-Lock ULP-302 Washer or other Dryvit approved equal.

2. Steel and Wood

Construction:

- a. Minimum No. 8 screw with yellow dichromate or Trucote PC-3 corrosion resistant coating (or equal) of appropriate length to penetrate minimum 19 mm (3/4 in) into the substrate.

3. Concrete or Masonry

Construction:

- a. Minimum No. 10 or 12 masonry screws with yellow dichromate or Trucote PC-3 corrosion resistant coating (or equal) of appropriate length to penetrate minimum 25 mm (1 in) into the substrate.
- b. One piece fastener consisting of 38 mm (1 1/2 in) nylon washer with a corrosion resistant nail with a mushroom head and expandable nylon sheath.

4. Pneumatically driven pin such as Pneutek, Inc. used in conjunction with the Pneutek PIW-362 washer.

G. Trim Accessories:

1. Control joints, corner beads, corner reinforcement and casing beads shall be zinc or galvanized metal.

H. Portland Cement: Shall be Type I, II, or I-II gray or white conforming to ASTM C150.

I. Sand:

1. Shall be dry bagged #40-45 sieve silica.
2. Bulk plaster sand may be used and shall be clean, dry, and conform to ASTM C897.

J. Water: Shall be clean, cool and potable.

PART III - EXECUTION

3.01 Inspection

A. Examination of Substrate

1. Prior to installation of the Ultralation System, it is the Applicator's responsibility to ensure the substrate meets the requirements of Section 1.05 C.2.

2. The Designer and General Contractor shall be advised by the applicator of all discrepancies in writing. Work shall not proceed until all unsatisfactory conditions are corrected.

3.02 System Installation

A. General: The Ultralation

System shall be installed in strict accordance with Dryvit System's Inc. Ultralation System Application Instructions, DS216, Installation Details, DS109 and this specification.

B. Insulation Board:

1. The insulation board shall be mechanically fastened to the substrate using one (1) fastener every .75 m² (8 ft²).
2. The fasteners shall be installed so that the insulation board is pulled snug to the wall and is slightly dimpled by the washer. The face of the washer shall sit no more than 1.6 mm (1/16 in) above or below the face of the insulation board.
3. At penetrations where control joints are not used, the insulation board shall be installed so that its edges do not coincide with the corners of the opening.
4. A 13 mm (1/2 in) wide by 19 mm (3/4 in) deep groove is cut into the insulation board to accommodate the "Deep V" control joints. The groove is cut so that a minimum of 6 mm (1/4 in) of insulation remains at the base of the groove.

C. Ultramesh:

1. Ultramesh shall be installed over the entire face of the wall and fastened through the insulation board and into the structural substrate. Ultramesh pieces shall overlap a minimum of 64 mm (2 1/2 in) to a maximum of 102 mm (4 in).
2. The remaining fasteners shall be installed to

complete a 305 mm (12 in) by 406 mm (16 in) pattern and installed so that the face of the washer sits not more than 1.6 mm (1/16 in) above or below the face of the insulation board.

3. Care shall be taken to ensure that Ultramesh lays flat and has no tears, wrinkles, waves or cuts.

D. Trim Accessories:

1. Control joints, corner reinforcing, and other trim accessories shall be properly located and fastened into the insulation board using all nylon fasteners.
2. At all control joint intersections, neutral cure silicone bedding sealant, such as DOW Corning 790, shall be applied in the routed groove, and the control joint is set into the sealant so that the gaps between the joints are completely sealed.

E. Starter Base:

1. General:

- a. Prior to application of the Starter base coat, the surface of the insulation board shall be inspected by the applicator as follows:
 - 1) Fasteners, control joints and other trim accessories are properly installed and spaced.
 - 2) The Ultramesh shall lay flat with no wrinkles, tears, waves or cuts.
 - 3) All insulation board gaps greater than 3.2 mm (1/8 in) shall be slivered with insulation board.
 - 4) There shall be no surface degradation of the insulation board due to weathering. Affected areas shall be corrected by replacing, sanding or high-pressure washing.

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2. Mixing:
 - a. Mix the Starter base coat in the following proportions in accordance with manufacturers written instructions: (1) 35 lb. (15.9 kg) pail Starter (1) 94 lb. (42.6 kg) bag Portland cement (1) 1 lb. (.45 kg) bag Ultrafibers 200 lb. (90.7 kg) Sand
 - b. No other additives, except water, of any kind shall be added.
 3. Level Base Coat Application:
 - a. Apply a tight coat of Starter mixture to fully embed the Ultramesh.
 - b. Immediately double back, adding additional material as needed to achieve a smooth surface 6 mm (1/4 in) to 10 mm (3/8 in) thick.
 - c. Strike to a smooth level plane using a rod, darby or similar tool.
 - d. Apply starter mixture to entire panels, without interruption, to avoid cold joints.
 4. Textured Base Coat Application:
 - a. Apply the level base coat as per (3) above.
 - b. The desired texture shall be applied to the set base coat using the Starter mixture. Depending on the desired aesthetics, the use of Ultrafibers is optional in the texture coat. **CAUTION: Ultrafibers must be used in the base coat.**
 5. Expanded Polystyrene Shapes:
 - a. General: Ornamental shapes shall be cut from expanded polystyrene (EPS) meeting Dryvit System's Specification DS131.
 - b. Mix the Primus® as per Ultralation System Application Instructions, DS216, and use to adhere the EPS shape to the set Starter base coat.
 - c. Apply a layer of Primus mixture over the shape and immediately embed Standard Reinforcing Mesh into it.
 - d. The Standard Mesh shall overlap the Starter base coat for a minimum of 64 mm (2 ½ in).
6. Dryvit Finish Application:
 - a. General:
 - 1) After stirring to a homogeneous consistency, the Finish shall be applied to distinct wall surfaces in a continuous application.
 - 2) Sufficient manpower, scaffolding and equipment shall be employed to ensure a continuous operation and a uniform appearance.
 - 3) Finish shall be protected from airborne contamination such as dust, soot, etc. and from weather and other damage until dry.
 - 4) No additives shall be added under any circumstances.
 - 5) Finish shall be applied utilizing the same tools and techniques to match the approved sample.
 - b. Flat Finish application over textured base coat.
 - 1) Smooth Coatings: Shall be applied utilizing a roller, brush or airless spray equipment in accordance with Ultralation Application Instructions, DS216.
 - c. Textured Finish application over level base coat.
 - 1) Finishes with integral texture shall be applied to the base coat utilizing a trowel or spray equipment in accordance with Ultralation Application Instructions, DS216,

and individual product application instructions.

3.03 Sealants and Flashings

- A. All sealants and flashings shall be installed as soon as practical after completion of system installation and shall be designed and installed so that no water enters behind the Ultralation system.
- B. Temporary protection shall be provided until sealants and flashings are installed to prevent damage from water entry behind the Ultralation System.

3.04 Field Quality Control

- A. Dryvit assumes no responsibility for on-site inspections. Dryvit Systems, Inc. and/or its distributors will provide field service support if reasonably requested by the Applicator for a particular problem. The Designer, General Contractor, or their appointed representative should make periodic on-site inspections to ensure that the Dryvit materials are being installed in strict accordance with Dryvit's specifications. The Applicator shall be responsible for the proper application of the Dryvit materials.
- B. If requested, the Applicator shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures and workmanship.
- C. If requested, the EPS supplier shall certify in writing that the EPS meets Dryvit's specifications.
- D. If requested, the sealant applicator shall certify in writing that the sealant application is in accordance with the sealant manufacturer's recommendations and is compatible for use with the Ultralation System.

3.05 Clean-Up

- A. Materials left over by the Applicator and/or Panel Erector at the job site shall be removed by either the Applicator or the Panel Erector.
- B. The Panel Erector and/or the Applicator shall clean adjacent materials and surfaces and the work area of foreign materials resulting from their work.
 - *Each applicator is an independent company experienced in the plastering trade and bears responsibility for its own workmanship. Dryvit Systems, Inc. assumes no liability for the workmanship of a contractor.

WARNING

The Ultralation System is designed as a barrier wall system, and is detailed to prevent water from entering the System. Specifications should be followed and proper details adhered to, in order to prevent water intrusion, resulting in possible damage to the System or other building elements. Care should be taken to insure that all building elements, including without limitations, roof designs, windows, flashings, sealants, etc., are compatible with this system.

DISCLAIMER

Information contained in this specification conforms to standard detail and product recommendations for the installation of the Ultralation System products as of the date of publication of this document and is presented in good faith. Dryvit Systems, Inc. assumes no liability, expressed or implied as to the architecture, engineering, or workmanship of any project. To insure that you are using the latest, most complete information, contact Dryvit Systems, Inc., at

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