

OUTSULATION® X™ SYSTEM



An Exterior Wall Insulation and Finish System
With Moisture Drainage That Incorporates Continuous Insulation
Utilizing Dow® XENERGY™ Rigid Insulation Board



DS835

Outsulation X System Specifications

INTRODUCTION

This document contains the Manufacturer's Standard Specification for the Outsulation X System. These specifications follow the Construction Specification Institute's Master Format.

TAILORING THE DRYVIT MANUFACTURER'S SPECIFICATIONS TO YOUR PROJECT

These specifications cover all the common ways of using the Outsulation X System. Most projects use only a few of the possible combinations of these materials and methods. To tailor the specifications to your project, simply use those sections which apply. Also, it may be prudent to place certain parts of the Dryvit Outsulation X Specification in other parts of the project's total specification, such as sealants and framing. The project design professionals are responsible for ensuring that the project specifications are suitable for the project. For assistance in preparing your specification, contact your Dryvit Distributor or Dryvit Systems, Inc.

UNITS

Standard International Units (SI) are included in parentheses after the English equivalents thus:

1/2 in (12.7 mm) 1.0 pcf (16 Kg/m³)

Please note that the conversions may not be exact but rather represent commonly used equivalents.

WARNING

The Outsulation X System is designed as a drainage wall system and is detailed to discharge incidental moisture from within 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 envelope 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 Dryvit Outsulation X 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, visit our website at www.dryvit.com or contact Dryvit Systems, Inc., at

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* The Trained Contractor Certificate referenced in Section 1.06.A.3 indicates certain employees of the company have been instructed in the proper application of Dryvit products and have received copies of Dryvit's Application Instructions and Specifications. The Trained Contractor Program is not an apprenticeship or endorsement. Each trained contractor is an independent company experienced in the trade and bears responsibility for its own workmanship. Dryvit Systems, Inc. assumes no liability for the workmanship of a trained contractor.

DRYVIT SYSTEMS, INC.
MANUFACTURER'S SPECIFICATION
CSI MASTERFORMAT SECTION 07 24 19
OUTSULATION® X™ SYSTEM
EXTERIOR INSULATION AND FINISH SYSTEM

PART I - GENERAL**1.01 SUMMARY:**

- A. This document is intended to be used in preparing specifications for projects utilizing the Dryvit Outsulation X System Exterior Insulation and Finish System (EIFS) with moisture drainage provisions. For complete product description and usage refer to:
1. Dryvit Outsulation X System Application Instructions, DS836
 2. Dryvit Outsulation X System Installation Details, DS837
- B. Related Sections
1. Unit Masonry – Section 04 20 00
 2. Concrete – Sections 03 30 00 and 03 40 00
 3. Cold-Formed Steel Framing – Section 05 40 00
 4. Wood Framing – Section 06 11 00
 5. Joint Protection – Section 07 90 00
 6. Flashing – Section 07 60 00
 7. Water-Resistive Barriers – Section 07 25 00
 8. Vapor Retarders – 07 26 13
 9. Air Barriers – 07 27 26

1.02 REFERENCES

- A. Section Includes
1. ASTM B 117 (Federal Test Standard 141A Method 6061) Standard Practice for Operating Salt Spray (Fog) Apparatus
 2. ASTM C 67 Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
 3. ASTM C 150 Standard Specification for Portland Cement
 4. ASTM C 203 Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
 5. ASTM C 272 Standard Test Method for Water Absorption of Core Materials for Structural Sandwich Constructions
 6. ASTM C 273 Standard Test Method for Shear Properties of Sandwich Core Materials
 7. ASTM C 297 Standard Test Method for Flatwise Tensile Strength of Sandwich Constructions
 8. ASTM C 518 Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
 9. ASTM C 1177 Standard Specification for Glass Mat Gypsum Substrate for Use as Sheathing
 10. ASTM D 968 (Federal Test Standard 141A Method 6191) Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
 11. ASTM D 1621 Standard Test Method for Compressive Properties Of Rigid Cellular Plastics
 12. ASTM D 1622 Standard Test Method for Apparent Density of Rigid Cellular Plastics
 13. ASTM D 1623 Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics
 14. ASTM D 1970 Standard Specification for Self-Adhering Polymer Modified Bituminous Sheet Materials Used as Steep Roofing Underlayment for Ice Dam Protection
 15. ASTM D 2247 (Federal Test Standard 141A Method 6201) Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
 16. ASTM D 2863 Standard Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)
 17. ASTM D 2898 Standard Test Method for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing
 18. ASTM D 3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
 19. ASTM D 4060 Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
 20. ASTM E 72 Standard Test Methods of Conducting Strength Tests of Panels for Building Construction

21. ASTM E 84 Standard Test Method for Surface Burning Characteristics of Building Materials
22. ASTM E 96 Standard Test Methods for Water Vapor Transmission of Materials
23. 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
24. ASTM E 330 Test Method for Structural Performance of Exterior Windows, Doors and Curtain Walls by Uniform Static Air Pressure Difference
25. ASTM E 331 Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference
26. ASTM E 1233 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential
27. ASTM E 2098 Test Method for Determining the Tensile Breaking Strength of Glass Fiber Reinforcing Mesh for use in Class PB Exterior Insulation and Finish Systems (EIFS), after Exposure to Sodium Hydroxide Solution
28. ASTM E 2134 Test Method for Evaluating the Tensile-Adhesion Performance of Exterior Insulation and Finish Systems (EIFS)
29. ASTM E 2178 Standard Test Method for Air Permeance of Building Materials
30. ASTM E 2273 Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies
31. ASTM E 2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies
32. ASTM E 2485 (formerly EIMA Std. 101.01) Standard Test Method for Freeze-Thaw Resistance of Exterior Insulation and Finish Systems (EIFS) and Water-Resistive Barrier Coatings
33. ASTM E 2486 (formerly EIMA Std. 101.86) Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS)
34. ASTM E 2570 Standard Test Methods for Evaluating Water-Resistive Barrier (WRB) Coatings Used under Exterior Insulation and Finish Systems (EIFS) or EIFS with Drainage
35. ASTM G 154 Standard Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials
36. ASTM G 155 (Federal Test Standard 141A Method 6151) Standard Practice for Operating-Xenon Arc Light Apparatus for Exposure of Nonmetallic Materials
37. DS151, Custom Brick™ Polymer System Specifications for Use On Vertical Walls
38. DS152, Dryvit Cleaning and Recoating
39. DS153, Dryvit Expansion Joints and Sealants
40. DS159, Dryvit Water Vapor Transmission
41. DS455, Backstop® NT™
42. DS494, Dryvit AquaFlash® System
43. NFPA 268 Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source.
44. NFPA 285 Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components Using the Intermediate-Scale, Multistory Test Apparatus
45. AATCC 127 Water Resistance: Hydrostatic Pressure Test
46. M.O.A.T 22 UEAtc Directives for Assessment of External Insulation systems for Walls (Expanded Polystyrene Insulation Faced with a Thin Rendering)

1.03 DEFINITIONS

- A. Base Coat: Material used to encapsulate one or more layers of reinforcing mesh fully embedded that is applied to the outside surface of the Dow® XENERGY™ Rigid Insulation Board.
- B. Building Expansion Joint: A joint through the entire building structure designed to accommodate structural movement.
- C. Contractor: The contractor that installs the Outsulation X System to the substrate.
- D. Dryvit: Dryvit Systems, Inc., the manufacturer of certain components of the Outsulation X System, a Rhode Island corporation.
- E. Expansion Joint: A structural discontinuity in the Outsulation X System.
- F. Finish: An acrylic-based coating, available in a variety of textures and colors that is applied over the base coat.
- G. Insulation Board: Dow XENERGY Rigid Insulation Board with factory planed surfaces which is affixed to the substrate and creates a layer of continuous insulation.
- H. Panel Erector: The contractor who installs the panelized Outsulation X System.
- I. Panel Fabricator: The contractor who fabricates the panelized Outsulation X System.
- J. Reinforcing Mesh: Glass fiber mesh(es) used to reinforce the base coat and to provide impact resistance.
- K. Sheathing: A substrate in sheet form.

L. Substrate: The material to which the Outsulation X System is affixed.

M. Substrate System: The total wall assembly including the attached substrate to which the Outsulation X System is affixed.

1.04 SYSTEM DESCRIPTION

A. General: The Dryvit Outsulation X System is an Exterior Insulation and Finish System (EIFS), consisting of an air/water-resistive barrier coating, an adhesive, extruded polystyrene insulation board, mechanical fasteners, fiber reinforced polymer modified base coat with reinforcing mesh(es) and finish.

B. Methods of Installation:

1. Field Applied: The Outsulation X System is applied to the substrate system in place.

2. Panelized: The Outsulation X System is shop-applied to the prefabricated wall panels.

C. Design Requirements:

1. Acceptable substrates for the Outsulation X System shall be:

a. Exterior grade gypsum sheathing having a water-resistant core with fiberglass mat facers meeting ASTM C 1177 at the time of application of the Outsulation X System.

b. Exterior fiber reinforced cement or calcium silicate boards.

c. APA Exterior or Exposure 1 Rated Plywood, Grade C-D or better, nominal 1/2 in (12.7 mm), minimum, installed with C face out.

d. Unglazed brick, cement plaster, concrete, or masonry.

e. APA Exposure 1 rated Oriented Strand Board (OSB), nominal 1/2 in (12.7 mm). **Note: Applications over OSB sheathing requires a minimum of 2 coats of Backstop NT – Smooth or Spray. Backstop NT – Texture is not recommended for the field of wall application over OSB.**

f. Galvanized expanded metal lath 2.5 or 3.4 lbs/yd² (1.4 or 1.8 kg/m²) installed over a solid substrate.

2. Deflection of substrate systems shall not exceed 1/240 times the span.

3. The substrate shall be flat within 1/4 in (6.4 mm) in a 4 ft (1.2 m) radius.

4. The slope of inclined surfaces shall not be less than 6 in 12 (27°), and the length shall not exceed 12 in (305 mm).

5. At horizontal sealant joints and window sills projecting 4 in or less (102 mm), the slope shall not be less than 3:12.

6. All areas requiring an impact resistance classification higher than "Medium", as defined by ASTM E 2486 (formerly EIMA Standard 101.86), shall be as detailed in the drawings and described in the contract documents. Refer to Section 1.04.D.1.d of this specification.

7. Expansion joints:

a) Design and location is the responsibility of the designer. As a minimum, expansion joints are required at the following locations:

1) Where expansion joints occur in the substrate system.

2) Where building expansion joints occur.

3) At floor lines in wood frame construction.

4) Where the Outsulation X System abuts dissimilar materials.

5) Where the substrate type changes.

6) In continuous elevations at intervals not exceeding 50 ft (15 m).

7) Where significant structural movement occurs such as changes in roof line, building shape or structural system.

8) At floor lines of non-wood framed buildings where significant movement is expected.

9) Where prefabricated panels abut one another.

8. Terminations

a. Prior to applying the Dryvit Outsulation X System, wall openings shall be treated with Dryvit AquaFlash System or Flashing Tape. Refer to Dryvit Outsulation X Installation Details DS837.

b. The Outsulation X System shall be held back from adjoining materials around openings and penetrations such as windows, doors, and mechanical equipment a minimum of 3/4 in (19 mm) for sealant application. See Dryvit's Outsulation X System Installation Details DS837.

c. The system shall be terminated a minimum of 8 in (203 mm) above finished grade or 3/4 in (19 mm) above curbing and walkways.

9. Sealants

a. Shall be manufactured and supplied by others.

b. Shall be compatible with the Outsulation X System materials. Refer to current Dryvit Publication DS153 for listing of sealants tested by sealant manufacturer for compatibility.

c. The sealant backer rod shall be closed cell.

10. Vapor Retarders

a. Use and location of vapor retarders within a wall assembly is the responsibility of the project designer and shall comply with local building code requirements. Type and location shall be noted on the project drawings and specifications. Vapor retarders/barriers may be inappropriate in certain walls and climatic areas and can result in condensation within the wall assembly.

11. Dark Colors: The use of dark colors must be considered in relation to wall surface temperature as a function of local climate conditions. Use of dark colors in high temperature climates can affect the performance of the system.

12. Flashing: Shall be provided at all roof-wall intersections, windows, doors, chimneys, decks, balconies, and other areas as necessary to prevent water from entering behind the Outsulation X System.

D. Performance Requirements

1. The Outsulation X System shall have been tested as follows:

a. Air/Water-Resistive Barrier Coating

| TEST | TEST METHOD | CRITERIA | RESULTS |
|----------------------------------------|-----------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Tensile Bond | ASTM C 297/E 2134* | Minimum 15 psi (104 kPa) | Substrate: Minimum 19 psi (131 kPa) (Backstop NT) Flashing Minimum 431 psi (2970 kPa) (Backstop NT) |
| Freeze-thaw | ASTM E 2485 Method B* | No deleterious effects after 10 cycles | Passed - No deleterious effects after 10 cycles |
| Water Resistance | ASTM D 2247* | No deleterious effects after 14 days exposure ¹ | No deleterious effects after 14 days exposure |
| Water Vapor Transmission | ASTM E 96 Proc. B* | Vapor Permeable | Backstop NT: 7 Perms ² Backstop NT Spray: 7.9 Perms ² |
| Air Leakage | ASTM E 283 | No ICC or ANSI/EIMA Criteria | 0.002 cfm/ft ² (0.01 l/sec/m ²) (Backstop NT) |
| Air Permeance | ASTM E 2178 | No ICC or ANSI/EIMA Criteria | 1.2x10 ⁻⁴ cfm/ft ² @ 1.6 psf (0.0006 l/s/m ² @ 75Pa) (Backstop NT) |
| Air Barrier Assembly | ASTM E 2357 | No ICC or ANSI/EIMA Criteria | <0.001 cfm/ft ² @ 6.24 psf (0.05 l/sec m ² @300 Pa) (Backstop NT) |
| Nail Sealability | ASTM D 1970 | No ICC or ANSI/EIMA Criteria | Passed ABAA Criteria |
| Structural Performance | ASTM E 1233 Proc. A* | Minimum 10 positive cycles at 1/240 deflection; No cracking in field, at joints or interface with flashing | Passed |
| Racking | ASTM E 72* | No cracking in field, at joints or interface with flashing at net deflection of 1/8 in (3.2 mm) | Passed |
| Restrained Environmental | ICC-ES Procedure* | 5 cycles; No cracking in field, at joints or interface with flashing | Passed |
| Water Penetration | ASTM E 331* | No water penetration beyond the inner-most plane of the wall after 15 minutes at 2.86 psf (137 Pa) | Passed |
| Weathering UV Exposure | ASTM D 2898 Method B* | 210 hours of exposure | Passed |
| Accelerated Aging | ICC-ES Procedure* | 25 cycles of wetting and drying | Passed |
| Hydrostatic Pressure Test | AATCC 127* | ICC: 21.6 in (549 mm) water column for 5 hours | Passed |
| Surface Burning Characteristics | ASTM E 84 | Flame Spread < 25 Smoke Developed < 450 | Passed |

* ASTM E 2570 Standard Test Method for Evaluating Water-Resistive Barrier (WRB) Coatings Used Under Exterior Insulation and Finish Systems (EIFS) or EIFS with Drainage, also referred to as AC212 – Acceptance Criteria for Water-Resistive Coatings Used as Water-Resistive Barriers over Exterior Sheathing

1. No cracking, checking, rusting, crazing, erosion, blistering, peeling, or delamination when viewed under 5x magnification

2. Defined as a Class III vapor retarder per the 2009 IBC and IRC

b. Durability

| TEST | TEST METHOD | CRITERIA | RESULTS |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| Abrasion Resistance | ASTM D 968 | No deleterious effects after 528 quarts (500 liters) | No deleterious effects after 1056 quarts (1000 liters) |
| Accelerated Weathering | ASTM G 155 Cycle 1 | No deleterious effects after 2000 hours | No deleterious effects after 5000 hours |
| | ASTM G 154 Cycle 1 (QUV) | | No deleterious effects after 5000 hours |
| Freeze-Thaw Resistance | ASTM E 2485 Method A* (formerly EIMA 101.01) | No deleterious effects after 60 cycles | Passed - No deleterious effects after 90 cycles |
| | ASTM C 67 modified | No deleterious effects after 60 cycles | Passed - No deleterious effects after 60 cycles |
| | ASTM E 2485 Method B* | No deleterious effects after 10 cycles | Passed - No deleterious effects after 10 cycles |
| Mildew Resistance | ASTM D 3273 | No growth during 28 day exposure period | No growth during 60 day exposure period |
| Water Resistance | ASTM D 2247* | No deleterious effects after 14 days exposure | No deleterious effects after 42 days exposure |
| Taber Abrasion | ASTM D 4060 | N/A | Passed 1000 cycles |
| Salt Spray Resistance | ASTM B 117* | No deleterious effects after 300 hours exposure | No deleterious effects after 1000 hours exposure |
| Drainage Efficiency | ASTM E 2273 | Minimum Drainage Efficiency of 90% | Average Drainage Efficiency: 99.5% |
| Water Penetration | ASTM E 331* | No water penetration beyond the inner-most plane of the wall after 15 minutes at 2.86 psf (137 Pa) | Passed 15 minutes at 2.86 psf (137 Pa) |
| Water Vapor Transmission | ASTM E 96 Procedure B* | Vapor permeable | Base Coat ¹ 20 Perms Finish ² 40 Perms |
| Alkali Resistance of Reinforcing Mesh | ASTM E 2098 (formerly EIMA 105.01) | >120 pli (21dN/cm) retained tensile strength after exposure | Passed |
| Hygrothermal test | Moat 22 80 cycles heat/rain 5 cycles heat/cold | No visible cracks or other distress | Passed |
| Puncture Resistance | Lab Procedure | N/A | 30.6 lbs |
| * ASTM E 2568 Standard Specification for PB Exterior Insulation and Finish Systems. 1. Base Coat perm value based on Dryvit Genesis® 2. Finish perm value based on Dryvit Quarzputz | | | |

c. Structural

| TEST | TEST METHOD | CRITERIA | RESULTS |
|------------------------|-----------------------|------------------------------------------------------------|-------------------------|
| Tensile Bond | ASTM C 297/ E 2134 | Minimum 15 psi (104 kPa) – substrate or insulation failure | Min. 24.2 psi (167 kPa) |
| Transverse Load | ASTM E 330 | Metal framing at 16 in (406 mm) o-c | Min. 116 psf (5.55 kPa) |
| | | Wood framing at 16 in (406 mm) o-c | Min. 189 psf (9.05 kPa) |

d. Impact Resistance: In accordance with ASTM E 2486 (formerly EIMA Standard 101.86):

| Reinforcing Mesh ¹ /Weight oz/yd ² (g/m ²) | Minimum Tensile Strengths | EIMA Impact Classification | EIMA Impact Range | | Impact Test Results | |
|---------------------------------------------------------------------------------|------------------------------|-------------------------------|-------------------|--------|------------------------|--------|
| | | | (in-lbs) | Joules | (in-lbs) | Joules |
| Standard Plus – 6 (203) | 200 lbs/in (36 g/cm) | Medium | 50-89 | (6-10) | 76 | (9) |
| 1. It shall be colored blue for product identification bearing the Dryvit logo. | | | | | | |

e. Fire

| TEST | TEST METHOD | CRITERIA | RESULTS |
|-------------------------------------------|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| Ignitability | NFPA 268 | No ignition at 12.5 kw/m ² at 20 minutes | Passed |
| Intermediate Multi-Story Fire Test | NFPA 285 (UBC 26-9) | 1. Resist flame propagation over the exterior surface 2. Resist vertical spread of flame within combustible core/component of panel from one story to the next 3. Resist vertical spread of flame over the interior surface from one story to the next 4. Resist lateral spread of flame from the compartment of fire origin to adjacent spaces | Passed |
| Surface Burning Characteristics | ASTM E 84 | All components shall meet NFPA Class A: Flame Spread ≤ 25 Smoke Developed < 450 | Passed |

f. Physical Properties Dow XENERGY Rigid Insulation Board

| TEST | TEST METHOD | VALUE |
|------------------------------|-------------|-----------------------------------------------------------------------------|
| Density | ASTM D 1622 | 1.5 lb/ft ³ (24 kg/m ³) |
| Thermal Resistance | ASTM C 518 | 5.0 °F·ft ² ·h/Btu (0.88 m ² ·°C/W) @ 75 °F (23.9 °C) |
| Water Absorption | ASTM C 272 | 0.5 % by volume |
| Compressive Strength | ASTM D 1621 | 20 psi (140 kPa) min. |
| Shear Strength | ASTM C 273 | 25 psi (170 kPa) |
| Shear Modulus | ASTM C 273 | 300 psi (2068 kPa) |
| Tensile Strength | ASTM D 1623 | 50 psi (340 kPa) min. |
| Flexural Strength | ASTM C 203 | 40 psi (276 kPa) min. |
| Flexural Modulus | ASTM C 203 | 1500 psi (10342kPa) |
| Flame Spread Index | ASTM E 84 | 15 |
| Smoke Developed Index | ASTM E 84 | 165 |
| Oxygen Index | ASTM D2863 | Min. 24% |
| Water Vapor Permeance | ASTM E96 | Max. 1.5 Perm for 1 in (25.4 mm) thickness |

1.05 SUBMITTALS

- A. Product Data: The contractor shall submit to the owner/architect the manufacturer’s product data sheets describing products, which will be used on this project.
- B. Shop Drawings for Panelized Construction: The panel fabricator shall prepare and submit to the owner/architect complete drawings showing: wall layout, connections, details, expansion joints, and installation sequence.
- C. Samples: The contractor shall submit to the owner/architect two (2) samples of the Outsulation X System for each finish, texture and color to be used on the project. The same tools and techniques proposed for the actual installation shall be used. Samples shall be of sufficient size to accurately represent each color and texture being utilized on the project.
- D. Test Reports: When requested, the contractor shall submit to the owner/architect copies of selected test reports verifying the performance of the Outsulation X System.

1.06 QUALITY ASSURANCE

A. Qualifications:

1. System Manufacturer: Shall be Dryvit Systems, Inc. All materials shall be obtained from Dryvit Systems, Inc. or its authorized distributors.
 - a. Materials shall be manufactured at a facility covered by a current ISO 9001:2008 and ISO 14401:2004 certification. Certification of the facility shall be done by a registrar accredited by the American National Standards Institute, Registrar Accreditation Board (ANSI-RAB).
2. Insulation Board: Shall be Dow XENERGY Rigid Insulation Board with planed surfaces.
3. Contractor: Shall be knowledgeable in the proper installation of the Dryvit Outsulation X System and shall be experienced and competent in the installation of exterior insulation and finish systems. Additionally, the contractor shall possess a current Outsulation X System trained* contractor certificate, issued by Dryvit.

B. Regulatory Requirements:

1. The insulation board shall be separated from the interior of the building by a minimum 15-minute thermal barrier.
2. The use and maximum thickness of insulation shall be in accordance with the applicable building codes and Dryvit requirements.

C. Mock-Up

1. The contractor shall, before the project commences, provide the owner/architect with a mock-up for approval.
2. The mock-up shall be of suitable size as required to accurately represent each color and texture to be utilized on the project.
3. The mock-up shall be prepared with the same products, tools, equipment and techniques required for the actual applications. The finish used shall be from the same batch as that being used for the project.
4. The approved mock-up shall be available and maintained at the job site.

1.07 DELIVERY, STORAGE AND HANDLING

A. All Dryvit materials shall be delivered to the job site in the original, unopened packages with labels intact.

B. Upon arrival, materials shall be inspected for physical damage, freezing or overheating. Questionable materials shall not be used.

1. Materials shall be stored at the job site, and at all times, in a cool, dry location, out of direct sunlight, protected from weather and other sources of damage. Minimum storage temperature shall be as follows:
 - a. DPR, PMR™, HDP™, Weatherlastic® and E™ Finishes, Color Prime™, Primus®, Genesis® and NCB™: 40 °F (4 °C).
 - b. For other products, refer to specific product data sheets.
2. Maximum storage temperature shall not exceed 100 °F (38 °C). **NOTE: Minimize exposure of materials to temperatures over 90 °F (32 °C). Finishes exposed to temperatures over 110 °F (43 °C) for even short periods may exhibit skinning, increased viscosity and should be inspected prior to use.**

C. Protect all products from inclement weather and direct sunlight.

1.08 PROJECT CONDITIONS

A. Environmental Requirements

1. Application of wet materials shall not take place during inclement weather unless appropriate protection is provided. Protect materials from inclement weather until they are completely dry.
2. At the time of Dryvit product application, the air and wall surface temperatures shall be from 40 °F (4 °C) minimum to 100 °F (38 °C) maximum for the following products:
 - a. DPR, PMR, HDP, Weatherlastic and E Finishes™, Color Prime, Primus, Genesis and NCB.
 - b. For other products, refer to specific product data sheets.
3. These temperatures shall be maintained with adequate air ventilation and circulation for a minimum of 24 hours (48 hours for Weatherlastic Finishes, Ameristone, TerraNeo and Limestone) thereafter, or until the products are completely dry. Refer to published product data sheets for more specific information.

B. Existing Conditions: The contractor shall have access to electric power, clean water and a clean work area at the location where the Dryvit materials are to be applied.

1.09 SEQUENCING AND SCHEDULING

- A. Installation of the Otsulation X System shall be coordinated with other construction trades.
- B. Sufficient manpower and equipment shall be employed to ensure a continuous operation, free of cold joints, scaffold lines, texture variations, etc.

1.10 WARRANTY

- A. Dryvit Systems, Inc. shall provide a written moisture drainage and limited materials 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.
- B. The applicator shall warrant workmanship separately. Dryvit shall not be responsible for workmanship associated with installation of the Otsulation X System.

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

- A. Maintenance and repair shall follow the procedures noted in the Dryvit Otsulation X System Application Instructions, DS836.
- B. All Dryvit products are designed to require minimal 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 basis and repairs made as necessary to maintain a weathertight envelope.

PART II PRODUCTS**2.01 MANUFACTURER:**

- A. All components of the Otsulation X System shall be obtained from Dryvit or its authorized distributors. Substitutions or additions of materials other than specified will void the warranty.

2.02 MATERIALS

- A. Mechanical Fasteners (3 per 2 ft x 4 ft [600 mm x 1200 mm] insulation board installed while the adhesive is still wet) consist of a 2 in (51mm) diameter polypropylene washer with key openings for base coat penetration used in conjunction with a corrosion resistant fastener.
 - 1. Washer
 - a. Shall be Wind-lock Wind Devil 2 Plate.
 - 2. Screws
 - a. Wood Based Substrates and Light Gauge Metal (20 – 26 ga).
 - 1) Shall be minimum No. 6, bugle head Type S, corrosion resistant screws.
 - 2) The screws shall be of sufficient length to penetrate wood substrates a minimum of 3/4 in (19 mm), and metal framing a minimum of 3/8 in (9 mm).
 - b. Steel Framing (12 – 20 ga)
 - 1) Shall be minimum No. 6 bugle head corrosion resistant screws, drill point.
 - 2) The screws shall be of sufficient length to penetrate the steel framing a minimum of 3/8 in (9 mm).
 - 3. Brick, CMU and Concrete
 - a. Anchors shall be a minimum 3/16 in (4.8 mm) diameter and corrosion resistant.
 - b. Anchors shall be of sufficient length to penetrate the substrate a minimum of 1 in (25 mm).
 - c. Pullout values shall be substantiated for the particular substrate and fastener used.

- B. Portland Cement: Shall be Type I or II, meeting ASTM C 150, white or gray in color, fresh and free of lumps.
- C. Water: Shall be clean and free of foreign matter.

2.03 COMPONENTS

- A. Air/Water-Resistive Barrier Components:
 - 1. Dryvit Backstop NT: A flexible, polymer-based noncementitious water-resistive and air barrier coating available in Texture, Smooth, and Spray.
 - 2. Dryvit Grid Tape™: An open weave fiberglass mesh tape with pressure sensitive adhesive available in rolls 4 in (102 mm) wide by 100 yds (91 m) long.
- B. Flashing Materials: Used to protect substrate edges at terminations.
 - 1. Liquid Applied: An extremely flexible water-based polymer material, ready for use.
 - a. Shall be AquaFlash and AquaFlash Mesh
 - 2. Sheet Type:
 - a. Shall be Flashing Tape and Surface Conditioner
 - 1) Dryvit Flashing Tape™: A high density polyethylene film backed with a rubberized asphalt adhesive available in rolls 4 in (102 mm), 6 in (152 mm) and 9 in (229 mm) wide by 75 ft (23 m) long.
 - 2) Dryvit Flashing Tape Surface Conditioner™: A water-based surface conditioner and adhesion promoter for the Dryvit Flashing Tape.
- C. Dryvit AP Adhesive™: A moisture cure, urethane-based adhesive used to adhere the Dryvit Drainage Strip.
- D. Dryvit Drainage Strip™: A corrugated plastic sheet material, which provides drainage.
- E. Adhesive: Used to adhere the insulation board to the air/water-resistive barrier: Shall be compatible with the air/water-resistive barrier and the insulation board.
 - 1. Shall be Genesis: A liquid polymer-based material, which is field mixed with Portland cement.
- F. Insulation Board: XENERGY Rigid Insulation Board manufactured by Dow Chemical USA.
 - 1. Thickness shall be minimum 1 in (25 mm) and maximum 4 in (102 mm). Installed board size: 2 ft x 4 ft (600 mm x 1200 mm).
 - 2. All insulation board faces shall be factory planed.
- G. Base Coat: Shall be compatible with the insulation board and reinforcing mesh(es).
 - 1. Shall be Genesis: A liquid polymer-based material, which is field mixed with Portland cement.
 - 2. Shall by Dryflex: A liquid polymer-based material, which is field mixed with Portland cement intended for high moisture areas.
- H. Reinforcing Mesh
 - 1. Shall be a balanced, open weave, glass fiber fabric treated for compatibility with other system materials.

Note: Reinforcing meshes are specified by weight as listed in the Table below:

| Reinforcing Mesh/Weight oz/yd² (g/m²) |
|------------------------------------------------------------------------|
| Standard Plus 6 (203) |
| Intermediate 12 (407) |
| Panzer® 15*** 15 (509) |
| Panzer 20*** 20.5 (695) |
| Detail Mesh® Short Rolls 4.3 (146) |
| Corner Mesh 7.2 (244) |

- *** Shall be used in conjunction with Standard Plus as a minimum.
- 2. Shall be colored blue for product identification and bearing the Dryvit logo.
- I. Finish: Shall be the type, color and texture as selected by the architect/owner and shall be one or more of the following:
 - 1. Standard DPR (Dirt Pickup Resistance): Water-based, acrylic coating with integral color and texture and formulated with DPR chemistry:
 - a. Quarzputz® DPR: Open-texture
 - b. Sandblast® DPR: Medium texture
 - c. Freestyle® DPR: Fine texture
 - d. Sandpebble® DPR: Pebble texture
 - e. Sandpebble® Fine DPR: Fine pebble texture

2. Hydrophobic (HDP™) Finishes: 100% acrylic coating with integral color and texture and formulated with hydrophobic properties:
 - a. Quarzputz® HDP
 - b. Sandblast® HDP
 - c. Sandpebble® HDP
 - d. Sandpebble® Fine HDP
3. E: Water-based, lightweight acrylic coating with integral color and texture and formulated with DPR chemistry:
 - a. Quarzputz® E
 - b. Sandpebble® E
 - c. Sandpebble® Fine E
4. Specialty: Factory mixed, water-based acrylic:
 - a. Ameristone: Multi-colored quartz aggregate with a flamed granite appearance.
 - b. Stone Mist®: Ceramically colored quartz aggregate.
 - c. Custom Brick: Acrylic polymer-based finish used in conjunction with a proprietary template system to create the look of stone, brick, slate or tile.
 - d. TerraNeo: 100% acrylic-based finish with large mica chips and multi-colored quartz aggregates.
5. Elastomeric DPR (Dirt Pickup Resistance): Water- based, elastomeric acrylic coating with integral color and texture and formulated with DPR chemistry:
 - a. Weatherlastic® Quarzputz
 - b. Weatherlastic® Sandpebble
 - c. Weatherlastic® Sandpebble Fine
 - d. Weatherlastic® Adobe
6. Medallion Series PMR™ (Proven Mildew Resistance): Water-based, acrylic coating with integral color and texture and formulated with PMR chemistry:
 - a. Quarzputz® PMR
 - b. Sandblast® PMR
 - c. Freestyle® PMR
 - d. Sandpebble® PMR
 - e. Sandpebble® Fine PMR
7. Coatings, Primers and Sealers:
 - a. Demandit® Smooth
 - b. Demandit® Sanded
 - b. HDP™ Water-Repellent Coating
 - c. Weatherlastic® Smooth
 - d. Tuscan Glaze™
 - e. Color Prime
 - f. Prymit®
 - g. SealClear™

PART III EXECUTION

3.01 EXAMINATION

- A. Prior to installation of the System, it is the Contractor's responsibility to ensure that:
 1. The substrate is of a type listed in section 1.04.C.1
 2. The substrate is flat within 1/4 in (6.4 mm) in a 4 ft (1.2 m) radius.
 3. The substrate is sound, connections are tight, and there are no surface voids or projections, or other conditions that may interfere with the Outsulation X System installation.
 4. Metal roof flashing has been installed in accordance with the manufacturer's requirements, Asphalt Roofing Manufacturers Association (ARMA) Standards and Dryvit Outsulation X Installation Details, DS837, or as otherwise necessary to maintain a watertight envelope.
 5. Openings are properly flashed as necessary to prevent water penetration behind the Outsulation X System and into the wall.
 6. Decks have been properly flashed.

3.02 PREPARATION

- A. The Otsulation X materials shall be protected 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 Otsulation X installation.
- C. The substrate shall be prepared as 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. The system shall be installed in accordance with the Dryvit Otsulation X System Application Instructions, DS836.
- B. The base coat shall be applied at the recommended coverage of 120 sf/pail (11.1 m²) and such that the mesh is fully embedded. The base coat shall be applied in two (2) passes.
- C. Sealant shall not be applied directly to textured finishes or base coat surfaces. Dryvit Otsulation X System surfaces in contact with sealant shall be coated with Demandit Smooth or Color Prime.
- D. High impact meshes shall be installed as specified at ground level, high traffic areas and other areas exposed to or susceptible to impact damage.

3.04 FIELD QUALITY CONTROL

- A. The contractor shall be responsible for the proper application of the Otsulation X materials.
- B. Dryvit assumes no responsibility for on-site inspections or application of its products.
- C. If required, the contractor shall certify in writing the quality of work performed relative to the substrate system, details, installation procedures, workmanship and as to the specific products used.
- D. If required, the sealant contractor shall certify in writing that the sealant application is in accordance with the sealant manufacturer's and Dryvit's recommendations.

3.05 CLEANING

- A. All excess Otsulation X System materials shall be removed from the job site by the contractor in accordance with contract provisions and as required by applicable law.
- B. All surrounding areas, where the Dryvit Otsulation X System has been applied, shall be left free of debris and foreign substances resulting from the contractor's work.

3.06 PROTECTION

- A. The Otsulation X System shall be protected from inclement weather and other sources of damage until dry and permanent protection in the form of flashings, sealants, etc. are installed.