TECHNICAL DATA SHEET

MODIFIED PRIMUS®

Acrylic-Modified Masonry Veneer Adhesive for use in the Outsulation Masonry Veneer System DS1066

PRODUCT DESCRIPTION



Modified Primus is a field modified variation of Primus for use as a masonry veneer adhesive via the addition of water during mixing. The modification provides a stronger initial grab that allows the adhesive to more readily support the weight of masonry veneer units during installation. Refer to the Primus data sheet (DS414) for more information regarding non-modified Primus. Modified Primus may be used to adhere manufactured stone, thin brick and tile complying with AC51 and ASTM C1088.

BASIC USES

Modified Primus mixture is used as a tight skim coat over properly prepared substrates to receive approved masonry veneers as well as setting adhesive for veneer units.

FEATURES & BENEFITS

FEATURE

- Wet polymer modified
- Smooth consistency
- Versatility
- Vapor Permeable
- Free of solvents

BENEFIT

- Excellent durability, adhesion
- Trowels easily thus more production
- May be used as adhesive and base coat
- Does not allow moisture buildup
- Complies with VOC requirements

PROPERTIES

Working Time: After mixing, the working time of the Modified Primus mixture is approximately 1 to 3 hours depending on ambient conditions.

Drying Time: When used to approved masonry veneers to an acceptable substrate, a period of 24 hours must elapse to allow the Modified Primus mixture to form a positive bond. Drying time of the Modified Primus mixture is dependent on the air temperature and relative humidity. Under average drying conditions [70 °F (21 °C), 55% R.H.], the Modified Primus mixture will

dry in 24 hours. Protect work from rain for at least 24 hours. Being a cementitious product, the adhesive develops full strength in 28 days.

Testing Information: For individual test data on this product's properties, refer to the chart included with this document.

Application Procedure: Refer to the Outsulation Masonry Veneer System Application Instructions (DS976) for the application of the system in its entirety.

Job Conditions: Air and surface temperature for application of the Modified Primus mixture must be 40 °F (4 °C) or higher and must remain so for a minimum of 24 hours.

Temporary Protection: Shall be provided at all times until the adhesive, base coat, finish, and installation of permanent flashings, sealants, etc. are completed to protect the wall from inclement weather and other sources of damage.

Acceptable Substrates:

- Primus base coat of the Outsulation Masonry Veneer System.
- Properly prepared scratch and brown coat of stucco (cement plaster) systems.
- Exterior fiber reinforced cement or calcium silicate boards.
- Properly prepared concrete or concrete masonry unit (CMU) surfaces.

MASONRY VENEER MATERIAL REQUIREMENTS

A. The application of adhered masonry veneer is intended for use on vertical above grade walls.

   1. Wall assembly to which the masonry veneer shall be adhered shall be structurally engineered to limit deflection to 1/360 of the span.
   2. In framed wall assemblies, framing members such as vertical king studs, horizontal lintels and horizontal headers at wall penetrations shall be structurally engineered to limit deflection to 1/600 of the span.

B. Masonry Veneer Material Requirements:

   1. Manufactured Stone Masonry Veneer units shall be recognized in a current ICC ES Evaluation Report demonstrating compliance with ICC-ES AC51 Acceptance Criteria for Adhered Manufactured Stone Masonry Veneer.
   2. Manufactured Stone Masonry Veneer units shall have a minimum thickness of ¼ in. [6 mm] except those parts of a unit within 0.5 in. [13 mm] of the unit perimeter.
   3. The average thickness of each Manufactured Stone Masonry Veneer unit shall be less than or equal to 2 5/8 in. [66.7 mm].
   4. Thin Veneer Brick units shall demonstrate compliance with ASTM C1088 Standard Specification for Thin Veneer Brick Units Made from Clay or Shale.
   5. Ceramic porcelain tile shall demonstrate compliance with ANSI A137.1 and shall include a Letter of Compliance Certificate from the tile manufacturer.
   6. The thickness of the Thin Veneer Brick Unit shall not exceed 1 3/4 in. (44.45 mm), in accordance with ASTM C1088.
   7. Masonry veneer units shall not exceed 36 in. [915 mm] in any face dimension and shall not exceed more than 5 ft2 [0.46 m2] in total face area.
   8. Ceramic porcelain tile units weighing more than 3.5 pounds per square foot (0.17 kN/m2) shall not exceed 48 inches (1219 mm) in any face dimension nor more than 9 square feet (0.8 m2) in total face area and shall not weigh more than 6 pounds per square foot (0.29 kN/m2). Adhered units weighing less than or equal to 3.5 pounds per square foot (0.17 kN/m2) shall not exceed 72 inches (1829 mm) in any face dimension nor more than 17.5 square feet (1.6 m2) in total face area.
   9. Masonry veneer materials shall develop a shear bond strength with the Dryvit Primus Adhesive of not less than 50 psi (350 kPa) when tested in accordance with Test Method ASTM C482.
   10. Units shall have a maximum allowable saturated weight of 15 lb/ft² (70 kg.m²).
   11. Maximum allowable height above grade shall comply with local code requirements and/or substrate manufacturer testing limitations. Consult Dryvit Technical Services at 800-556-7752 / www.dryvit.com.
   12. Allowable plan radius geometry is directly dependent on the relationship of the plan radius to width of the selected veneer unit in order to maintain proper adhesive thickness and overall adhesion contact to the substrate. For radius applications, consult with Dryvit Technical Services at 800-556-7752.

C. Mortar/grout for Joint Treatment within the Masonry Veneer Requirements:

   1. Mortar/grout shall comply with ASTM C 270 Standard Specification for Mortar for Unit Masonry and ASTM C 1330 – Standard Specification for Pre-blended Dry Mortar Mix for Unit Masonry.

2. Mortar/grout shall comply with selected masonry veneer material manufacturer's requirements for the specific veneer installed.

D. Grout for Joint Treatment (where applicable) Requirements:

1. Shall comply with ANSI A118.6 Specifications for Standard Cement Grouts for Tile Installation and/or veneer manufacturer's requirements, whichever is more stringent.

SURFACE PREPARATION

- Surfaces must be above 40 °F (4 °C) and must be clean, dry, structurally sound and free of efflorescence, grease, oil, form release agents and curing compounds.
- A CSP greater than 2 is usually acceptable for the installation of masonry veneer over concrete and masonry assemblies. If necessary, cleaning may be done with power washing or mechanical methods (i.e. shot or bead blasting). If a bondable surface cannot be achieved, attach lath and scratch coat before installing masonry veneer. When installing masonry veneer over concrete or concrete masonry walls where good bond cannot be achieved or the concrete or concrete masonry is unsound, install adhered masonry over scratch coat & lath in accordance with applicable code requirements.
- Backup systems should be designed to limit out-of-plane deflections to L/360 when subjected to 42% of the components and cladding wind pressure.
- Verify that the surface to which the masonry veneer is to be installed is structurally sound, free of any coatings or materials that would inhibit bonding, and capable of supporting the intended masonry veneer system.
- See following section, "Direct Applied Masonry Veneer", for additional substrate requirements.

MIXING

- Prior to splitting Primus material and adding Portland cement, mix the material thoroughly. Use a "Twister" paddle or equivalent mixing blade powered by a 1/2 in (12.7 mm) drill, at 500 – 1200 rpm only. NOTE: A minimum 7 amp drill works best for Portland cement based materials. CAUTION: Do not over-mix or use other types of mixing blades as air entrapment and product damage may occur and result in workability and performance problems.
- Mix 30 lbs of Wet Primus with 30 lbs of fresh, lump free Type I, II or 1L Portland cement in a five-gallon bucket.
- When half the cement has been added, add 8 - 16 fluid oz maximum of water then continue adding the cement.
- Separate the mixture into two buckets – 25% in one bucket and 75% in the other.
    - The bucket with 25% material is to be used for skimming out the surface of the substrate prior to the adhesion of the masonry veneer. Add water as needed to obtain the consistency desired to skim. Blend mixture.
    - The bucket with 75% material will be used for the adhesive for the masonry veneer. No additional water is added.
- Allow both mixtures to set for a minimum of 10 minutes, mix again to break the initial set.
- Environmental conditions and selected masonry veneer shall dictate the amount of water to be added to the Modified Primus Adhesive. Modified Primus Adhesive must be of a thick and stiff consistency.

COVERAGE

- **Stack stone (dry stack):** 45 sq. ft.
- **Fieldstone with joints:** 50 sq. ft.
- **Thin brick:** 65-70 sq.ft.
- **Ceramic/Porcelain Tile:** 15-50 sq.ft. - Coverages will vary on size of tile

APPLICATION

MASONRY VENEER INSTALLATION

A. Application of Masonry Veneer

1. Inspect masonry veneer and mortar/grout for joint treatment (where applicable) and verify as acceptable for use based on the selected masonry veneer and mortar/grout for joint treatment current application instructions and requirements.
2. Clean and prepare surfaces of the masonry veneer units thoroughly prior to installation.

3. Moisten the bonding surface of the units prior to application ensuring that there is no free water on the surface.
4. Coordinate installation requirements for selected masonry veneer with manufacturer as applicable for applications as outlined herein including but not limited to veneer unit delivery, handling, storage, protection, inspection, preparation, layout, alignment, expansion joints, size, area, weight criteria, curing, mortaring (where applicable), cleaning and sealing (as required).
5. Apply Skim Coat Preparation Layer
    a. Using a steel trowel, apply a tight skim coat to the surface of the substrate, approximately 1/32" to 1/16" thick.
    b. Apply the Modified Primus Skim Coat in a workable area so the Modified Primus Skim Coat DOES NOT 'skim' over in advance of adhering the veneer units.
    c. Allow the Modified Primus Skim Coat to set for 1-2 minutes. The Primus Skim Coat must remain wet when adhering the veneer units.
6. Apply Adhesive
    a. Method 1: Apply Adhesive to the Veneer Units (Back-Butter)
        1) Apply the Modified Primus Adhesive to the back of the selected masonry veneer unit in a continuous layer with a thickness of 1/4" – 3/8" covering it completely leaving no voids, pockets or gaps when applied to the wet Primus Base Coat Substrate Preparation surface. See Section 3.D.1. for mixing of Dryvit Primus for application as the adhesive. The Dryvit Modified Primus Adhesive has specific mixing requirements.
        2) The buttered masonry veneer unit should be firmly worked onto the skim coat and slid slightly back and forth or with a slight rotating motion to set the masonry veneer unit. Adhesive squeeze out should be achieved that results in a full setting bed covering the skim coat. At mesh overlaps and edge conditions, additional material may be required to achieve full contact of the bedding coat with the skim coat. Where full contact is not observed, double check that the prepared base coat is within the flatness tolerance of this document and correct as required before proceeding.
        3) As soon as the Modified Primus Adhesive has started to bond, no further movement of the masonry veneer unit should be made as bonding will be broken. If the masonry veneer unit is inadvertently moved after initial set has begun, it should be removed, adhesive scraped off the back of the masonry veneer unit and skim coat, and the reinstalled following the application process. Ensure that the skim coat is wet as described in the MIXING INSTRUCTIONS section.
    b. Method 2: Apply Bonding Adhesive Directly to the Skim Coat
        1) Apply the Modified Primus Adhesive, using a trowel, to the wet skim coat on the wall in a continuous layer with a thickness of 1/4 in – 3/8 in (6.3 mm – 9.5 mm) covering the skim coat completely. At mesh overlaps and edge conditions, additional material may be required to achieve full contact of the bedding coat with the skim coat.
        2) The masonry veneer unit should be firmly worked onto the Modified Primus Adhesive and slid slightly back and forth or with a slight rotating motion to set the masonry veneer unit. Make periodic checks to ensure full adhesive contact is being achieved. Where full contact is not observed, double check that the prepared base coat is within the flatness tolerance of this document and correct as required before proceeding.
        3) As soon as the Modified Primus Adhesive has started to bond, no further movement of the masonry veneer unit should be made as bonding will be broken. If the masonry veneer unit is inadvertently moved after initial set has begun, it should be removed, adhesive scraped off the back of the masonry veneer unit and skim coat, and then reinstalled following the application process. Ensure that the skim coat is wet as described in the MIXING INSTRUCTIONS section.
    c. Remove adhesive from between adhered veneer unit(s) as needed.
7. Mortar/grout for Joint Treatment (where applicable)
    a. Follow instructions of selected masonry veneer manufacturer if mortar/grout for joint treatment is required.

DIRECT APPLIED MASONRY VENEER

A. When masonry veneer is to be direct-applied, application must be as follows:
    1. The substrate shall be free of foreign materials such as oil, dust, dirt, form-release agents, efflorescence, paint, wax, water repellents, moisture, frost, and any other materials that inhibit adhesion.
    2. The substrate shall be flat and level to ¼ in (6mm) within a 4 ft (1.2 m) radius, for tile level to ¼ in (6mm) 10 ft (3.05 m) radius, and be free of imperfections, recesses or protrusions that would interfere with the masonry veneer application.

3. Where applicable, the Dryvit Reinforcing Mesh shall be completely embedded in the Dryvit Primus Base Coat.
4. The masonry veneer must meet all the criteria and requirements of this document.
5. Acceptable substrates include:
    a. Unpainted Precast of Placed Concrete
        1) Shall have cured a minimum of 28 days.
        2) Remove form release agents and clean surface of all contaminants.
        3) Apply Genesis or Genesis DM mixture referenced herein above as a leveling coat as required to proivde a smooth level base for the masonry veneer direct application. Application thickness shall not exceed 1/8 in (3.2 mm) in a single pass (as applicable).
        4) Allow the Dryvit Genesis / Genesis DM mixture to cure a minimum of 24 hours until completely dry. Cool, humid conditions may require longer cure times.
        5) The surface shall be free of any imperfections prior to applying the Dryvit Modified Primus Skim Coat Substrate Preparation layer.
        6) The Dryvit Modified Primus Skim Coat Substrate Preparation layer shall be applied in advance of adhering the masonry veneer.
    b. Unpainted Concrete and Brick Masonry Units
        1) Mortar/grout joints shall have cured a minimum of 7 days.
        2) Apply a continuous layer of Genesis or Genesis DM mixture as referenced herein above over the entire wall surface to fill voids, level mortar joints and provide a smooth level base for the masonry veneer application. Application thickness shall not exceed 1/8 in (3.2 mm) in a single pass.
        3) Allow the Dryvit Genesis Leveling Coat mixture to cure a minimum of 24 hours until completely dry. Cool, humid conditions may require longer cure times.
        4) The surface shall be free of any imperfections prior to applying the Dryvit Modified Primus Skim Coat Substrate Preparation layer.
        5) The Dryvit Modified Primus Skim Coat Substrate Preparation layer shall be applied in advance of adhering the masonry veneer.
    c. Cement Board
        1) Height limitations for cement board applications shall be governed by cement board manufacturer or local building code requirements.
        2) Install cement board over the treated sheathing and Dryvit MD Spacers, or equivalent (see Cement Board MD Finish System details, DS190). Treat joints with detail mesh and Primus Base Coat.
        3) Apply a layer of Dryvit Standard or Intermediate Reinforcing Mesh embedded in Dryvit Primus Base Coat to the cement board substrate surface.
        4) Allow the Dryvit Primus Base Coat mixture to cure a minimum of 24 hours until completely dry. Cool, humid conditions may require longer cure times.
        5) The surface shall be free of any imperfections prior to applying the Dryvit Modified Primus Skim Coat Substrate Preparation layer.
        6) The Dryvit Modified Primus Skim Coat Substrate Preparation layer shall be applied in advance of adhering the masonry veneer.
    d. Insulated Concrete Form (ICF)
        1) Prepare ICF surface by sanding / rasping and cleaning.
        2) Dryvit Intermediate Reinforcing Mesh shall be completely embedded in Dryvit Primus Base Coat which is applied to the insulated form surface.
        3) Allow the Dryvit Primus Base Coat mixture to cure a minimum of 24 hours until completely dry. Cool, humid conditions may require longer cure times.
        4) The Dryvit Primus Base Coat shall be free of any imperfections prior to applying the Dryvit Modified Primus Skim Coat preparation layer.
        5) The Dryvit Modified Primus Skim Coat Substrate Preparation layer shall be applied in advance of adhering the masonry veneer.
    e. Conventional Cement Stucco
        1) Shall have cured a minimum of 7 days.

2) Stucco shall comply with ASTM C926 and Metal Lath shall comply with ASTM C1063.
3) The stucco shall be free of any imperfections prior to applying the Dryvit Modified Primus Skim Coat preparation layer.
4) The Dryvit Modified Primus Skim Coat Substrate Preparation layer shall be applied in advance of adhering the masonry veneer.

STORAGE

Primus must be stored at a minimum of 40 °F (4 °C) and a maximum of 100 °F (38 °C) in tightly sealed containers protected from weather and out of direct sunlight.

The shelf life is 2 years from date of manufacture when properly stored in unopened pails.

CAUTIONS & LIMITATIONS

- Clean potable water may be added to adjust workability. Do not add water until after the cement is thoroughly mixed. Do not over water.
- Use only Type I, II or 1L gray or white Portland cement.
- Always work on the shady side of the wall or protect the area with appropriate shading material.
- Refer to masonry veneer manufacturer for installation recommendations addressing conditions not listed.
- Do not subject masonry veneer to direct or frequent water contact, deicing salts, or in areas exposed to direct flame.

CLEAN UP

Clean tools with water while the Primus mixture is still wet.

TECHNICAL AND FIELD SERVICES

Available on request.

MODIFIED PRIMUS® TESTING

TEST	TEST METHOD	CRITERIA	Results
Surface Burning Characteristics	ASTM E 84	ICC and ANSI/EIMA 99-A-2001Flame Spread <25Smoke Developed <450	Passed
Water Vapor Transmission	ASTM E 96 Procedure B	ICC: Vapor PermeableNo ANSI/EIMA Criteria	26 Perms
Accelerated Weathering	ASTM G 154 Cycle 1 (QUV)	ANSI/EIMA 99-A-20012000 hours: No deleterious effects[1]	5000 hours: No deleterious effects[1]
	ASTM G 155 Cycle 1 (Xenon Arc)	ICC: 2000 hours: No deleterious effects[1]	2000 hours: No deleterious effects[1]
Freeze-Thaw Resistance	ASTM E 2485(formerly EIMA 101.01)	ANSI/EIMA 99-A-200160 cycles: No deleterious effects[1]	90 cycles: No deleterious effects[1]
Water Resistance	ASTM D 2247	ICC and ANSI/EIMA 99-A-200114 days: No deleterious effects[1]	42 days: No deleterious effects[1]
Tensile Bond[2]	ASTM C 297/E 2134(formerly EIMA 101.03)	ICC and ANSI/EIMA 99-A-2001Minimum 15 psi (104 kPa)– substrate orinsulation failure	>15 psi (104 kPa)
Ignitability	NFPA 268	No ignition at 12.5 kw/m² at 20 minutes	Passed
Shear Bond	ASTM C482	Minimum 50 psi	Passed
ANSI A118.4	Various	Pass all criteria for all applicable tests within the standard	Passed

MODIFIED PRIMUS® TESTING

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

2 Sample consists of 1" EPS adhered to various substrates

3 All Dryvit components remain intact – for higher wind loads contact Dryvit.

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

For more information on Dryvit or Continuous Insulation, visit www.dryvit.com

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