

TEXAS DEPARTMENT OF INSURANCE

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PRODUCT EVALUATION EC-49

Effective February 1, 2002

*The following product has been evaluated for compliance with the wind loads specified in **Section 120** of the Texas Department of Insurance Windstorm Resistant Construction Guide and **Section 103** of the Texas Windstorm Insurance Association Building Code for Windstorm Resistant Construction. This product shall be subject to reevaluation 3 years after the effective date.*

This product evaluation is not an endorsement of this product or a recommendation that this product be used. The Texas Department of Insurance has not authorized the use of any information contained in the product evaluation for advertising, or other commercial or promotional purpose.

This product evaluation is intended for use by those individuals who are following the prescriptive portions of either the Texas Department of Insurance Windstorm Resistant Construction Guide or the Texas Windstorm Insurance Association Building Code for Windstorm Resistant Construction. This product evaluation does not relieve a Texas licensed engineer of his responsibilities as outlined in the Texas Engineering Practice Act.

Master Wall Aggre-flex, Aggre-flex Drainage, and QRW1 Drainage Exterior Insulation and Finish (EIF) Systems, as manufactured by:

Master Wall Inc.
P.O. Box 397
Fortson, Georgia 30058
Telephone: (800) 755-0825

will be acceptable in designated catastrophe areas along the Texas Gulf Coast when installed in accordance with the manufacturer's installation instructions and this product evaluation.

PRODUCT DESCRIPTION

The following types of wall systems have been accepted for use: Aggre-flex, Aggre-flex Drainage, and QRW1 Drainage.

General:

Master Wall Systems are exterior wall finishing systems consisting of four basic components: (1) insulation board, (2) adhesive/base coat, (3) reinforcing mesh, and (4) finishing coat. The wall systems may be field installed to various substrates including wood structural panels and CMU. All wall systems must be applied to a solid substrate or sheathing. In addition, Aggre-flex Drainage and QRW1 Drainage Systems are applied over a secondary water barrier.

Insulation Board for Master Wall Systems:

The insulation board for the Aggre-flex and Aggre-flex Drainage System consists of channeled and non-channeled expanded polystyrene (EPS) with a nominal density of 1 pcf and complies with ASTM C578. It is supplied in 2 feet by 4 feet by 1 ½ inch or 1 inch thick sheets with a maximum thickness of 4". The insulation board is attached to the sheathing using either mechanical fasteners or an approved adhesive.

INSTALLATION INSTRUCTIONS

General Installation Requirements:

Reference Master Wall specifications for specific mixing and application instructions. All fasteners shall be corrosion resistant. Master Wall Systems shall not be used for wall bracing.

Base Coat Application:

Using a stainless steel trowel, the base coat shall be applied to the surface of the board to a nominal thickness of $\frac{1}{16}$ ".

Applications of Reinforcing Mesh:

The reinforcing fabric shall be placed against the wet base coat. The mesh shall be continuous at the corners and lapped $2\frac{1}{2}$ " at the edges. The base coat should be allowed to dry and harden before applying the finishing coat, approximately 10 to 12 hours.

Finish Application:

The finish coat shall be applied over the mesh-reinforced base coat to a nominal thickness of $\frac{1}{16}$ ".

Assembly No. 1

Aggre-flex Exterior Insulation and Finish Systems (Adhered to Wood Stud Wall Application)

Design pressure: -70 psf

Limitations:

Inland II Zone: The EIF system shall not be installed at heights greater than 50 feet above natural grade.

Inland I Zone: The EIF system shall not be installed at heights greater than 33 feet above natural grade.

Seaward Zone: The EIF system shall not be installed at heights greater than 33 feet above natural grade.

Installation:

Substrate: Wall studs shall be minimum 2x4 Stud SPF lumber. The studs shall be spaced a maximum of 16 inches on center with $\frac{5}{8}$ " thick plywood substrate. Wall bracing shall be installed as required by the applicable windstorm construction guidelines adopted by the Texas Department of Insurance. The sheathing on the exterior walls shall be fastened to wall framing members with minimum #6 x $1\frac{5}{8}$ " metal screws. The fasteners shall be spaced a maximum of 12 inches on center.

EPS board: Minimum 1-inch thick expanded polystyrene foam (EPS) 1.0 pcf density is adhered to the substrate.

Assembly No. 1 (Continued)

Application of EPS board: Master Wall Expanded Polystyrene Adhesive (EPSA) is used to attach the insulation board to the substrate. Refer to Master Wall specifications for specific mixing and application instructions. EPSA shall be applied to cover the entire back of the insulation board utilizing the approved $\frac{3}{8}$ " x $\frac{1}{2}$ " U notched trowel. The insulation board shall be applied immediately to the substrate. The base mixture should not be allowed to form a skin on the insulation board before installation. The insulation boards are placed into position on the substrate with a sliding motion and a uniform pressure is applied over the entire board surface to ensure uniform contact. All joints are butted tightly and vertical joints staggered. Vertical joints of insulation boards are staggered from all edges of wall openings. The final surface of the insulation board must be uniform along the exposed plane. Any gaps in the insulation board equal to or greater than $\frac{1}{16}$ inch must be filled with insulation.

Assembly No. 2

Aggre-flex Exterior Insulation and Finish Systems (Adhered to Masonry)

Design pressure: -75 psf

Limitations:

Inland II Zone: The EIF system shall not be installed at heights greater than 50 feet above natural grade.

Inland I Zone: The EIF system shall not be installed at heights greater than 33 feet above natural grade.

Seaward Zone: The EIF system shall not be installed at heights greater than 33 feet above natural grade.

Installation:

Substrate: Shall be installed over an 8" x 8" x 16" concrete masonry unit (CMU) substrate. The wall shall be constructed in a manner consistent with the windstorm construction guidelines adopted by the Texas Department of Insurance.

EPS board: Minimum 1 inch expanded polystyrene foam (EPS) 1.0 pcf density is adhesively attached to the substrate.

Application of EPS board: Master Wall Foam and Mesh Adhesive (F&M) is used to attach the insulation board to the substrate. Refer to Master Wall specifications for specific mixing and application instructions. F&M shall be applied to cover the entire back of the insulation board using the approved $\frac{3}{8}$ " notched trowel with the ribbons no further than $\frac{3}{4}$ " o.c. The back of the insulation board shall be covered with full beads that stand out $\frac{3}{8}$ " from the insulation board. The insulation board shall be applied immediately to the substrate. The base mixture should not be allowed to form a skin on the insulation board before installation. The insulation boards are placed into position on the substrate with a sliding motion and a uniform pressure is applied over the entire board surface to ensure uniform contact.

Assembly No. 3

Aggre-flex Exterior Insulation and Finish Systems (Mechanically Fastened Wood Stud Wall Framing)

Design pressure: -34 psf

Limitations:

Inland II Zone: The EIF system shall not be installed at heights greater than 30 feet above natural grade.

Inland I Zone: N/A

Seaward Zone: N/A

Installation:

Substrate: Wall studs shall be minimum 2x4 Stud grade SPF lumber. The studs shall be spaced a maximum of 16 inches on center. Wall bracing shall be installed as required by the applicable windstorm construction guidelines adopted by the Texas Department of Insurance. Sheathing shall be a minimum $\frac{1}{2}$ " plywood attached with a minimum $1\frac{3}{8}$ " ring shank nails spaced a maximum of 6" o.c.

EPS board: Minimum 1 inch expanded polystyrene foam (EPS) 1.0 pcf density is mechanically attached the substrate.

Application of EPS plates: The EPS insulation boards are attached to the plywood sheathing with Wind-Devil 2 plates fastened with Windlock W-1 #6-1 $\frac{5}{8}$ " long screws spaced a maximum of 4" along the perimeter and 8" in the field. A minimum of eight (8) fasteners shall be provided for a 2' x 4' board and a minimum of five (5) fasteners shall be provided for both 2' x 2' board sections, a minimum of 6 fasteners shall be provided for a 1' x 4', and a minimum of 4 fastener shall be provided for a 1' x 3' and a 1' x 1'. Vertical joints of insulation boards are staggered from all edges of wall openings. The final surface of the insulation board must be uniform along the exposed plane.

Assembly No. 4

Aggre-flex Exterior Insulation and Finish Systems (Adhered to Wood Stud Wall Application)

Design pressure: -90 psf

Limitations:

Inland II Zone: The EIF system shall not be installed at heights greater than 50 feet above natural grade.

Inland I Zone: The EIF system shall not be installed at heights greater than 33 feet above natural grade.

Seaward Zone: The EIF system shall not be installed at heights greater than 33 feet above natural grade.

Installation:

Substrate: Wall studs shall be minimum 2x4 Stud grade SPF lumber. The studs shall be spaced a maximum of 16 inches on center. Wall bracing shall be installed as required by the applicable windstorm construction guidelines adopted by the Texas Department of Insurance. Sheathing shall be a minimum $\frac{1}{2}$ " plywood attached with a minimum $1\frac{3}{8}$ " ring shank nails spaced a maximum of 6" o.c.

EPS board: Minimum $\frac{3}{4}$ inch expanded polystyrene foam (EPS) 1.0 pcf density is mechanically attached the substrate.

Assembly No. 4 (Continued)

Application of EPS board: Master Wall Expanded Polystyrene Adhesive (EPSA) is used to attach the insulation board to the substrate. Refer to Master Wall specifications for specific mixing and application instructions. EPSA shall be applied to cover the entire back of the insulation board utilizing the approved $\frac{3}{8}$ " x $\frac{1}{2}$ " U-notched trowel. The insulation board shall be applied immediately to the substrate. The base mixture should not be allowed to form a skin on the insulation board before installation. The insulation boards are placed into position on the substrate with a sliding motion and a uniform pressure is applied over the entire board surface to ensure uniform contact. All joints are butted tightly and vertical joints staggered. Vertical joints of insulation boards are staggered from all edges of wall openings. The final surface of the insulation board must be uniform along the exposed plane. Any irregularities equal to or greater than $\frac{1}{16}$ inch must be filled with insulation.

Assembly No. 5

Aggre-flex Exterior Insulation and Finish Systems (Adhered to Gypsum Substrate)

Design pressure: -66 psf

Limitations:

Inland II Zone: The EIF system shall not be installed at heights greater than 50 feet above natural grade.

Inland I Zone: The EIF system shall not be installed at heights greater than 33 feet above natural grade.

Seaward Zone: The EIF system shall not be installed at heights greater than 33 feet above natural grade.

Installation:

Substrate: Wall studs shall be minimum 2x4 Stud grade SPF lumber. The studs shall be spaced a maximum of 16 inches on center. Wall bracing shall be installed as required by the applicable windstorm construction guidelines adopted by the Texas Department of Insurance. Sheathing shall be a minimum $\frac{1}{2}$ " ASTM C-79 exterior gypsum substrate. The sheathing shall be fastened to the studs with 1 $\frac{3}{8}$ " ring shank nails at 6" o.c. in the field and perimeter.

EPS board: Minimum $\frac{3}{4}$ inch expanded polystyrene foam (EPS) 1.0 pcf density is adhesively attached to the substrate.

Application of EPS Board: Master Wall Foam and Mesh Adhesive (F&M) is used to attach the insulation board to the substrate. Refer to Master Wall specifications for specific mixing and application instructions. F&M shall be applied to cover the entire back of the insulation board using the approved $\frac{3}{8}$ " notched trowel with the ribbons no further than $\frac{3}{4}$ " o.c. The back of the insulation board shall be covered with full beads that stand out $\frac{3}{8}$ " from the insulation board. The insulation board shall be applied immediately to the substrate. The base mixture should not be allowed to form a skin on the insulation board before installation. The insulation boards are placed into position on the substrate with a sliding motion and a uniform pressure is applied over the entire board surface to ensure uniform contact.

Assembly No. 6

Aggre-flex Exterior Insulation and Finish Systems (Adhered to Stud Wall Application)

Design pressure: -80 psf

Limitations:

Inland II Zone: The EIF system shall not be installed at heights greater than 50 feet above natural grade.

Inland I Zone: The EIF system shall not be installed at heights greater than 33 feet above natural grade.

Seaward Zone: The EIF system shall not be installed at heights greater than 33 feet above natural grade.

Installation:

Substrate: Wall studs shall be minimum 2x4 Stud grade SPF lumber. The studs shall be spaced a maximum of 16 inches on center. Wall bracing shall be installed as required by the applicable windstorm construction guidelines adopted by the Texas Department of Insurance. Sheathing shall be a minimum $\frac{7}{16}$ " OSB. The sheathing shall be fastened to the studs with 1 $\frac{3}{8}$ " ring shank nails at 6" o.c. in the field and perimeter.

EPS board: Minimum $\frac{3}{4}$ inch expanded polystyrene foam (EPS) 1.0 pcf density is adhesively attached the substrate.

Application of EPS board: Master Wall Expanded Polystyrene Adhesive (EPSA) is used to attach the insulation board to the substrate. Refer to Master Wall specifications for specific mixing and application instructions EPSA shall be applied to cover the entire back of the insulation board utilizing the approved $\frac{3}{8}$ " x $\frac{1}{2}$ " U-notched trowel. The insulation board shall be applied immediately to the substrate. The base mixture should not be allowed to form a skin on the insulation board before installation. The insulation boards are placed into position on the substrate with a sliding motion and a uniform pressure is applied over the entire board surface to ensure uniform contact. All joints are butted tightly and vertical joints staggered. Vertical joints of insulation boards are staggered from all edges of wall openings. The final surface of the insulation board must be uniform along the exposed plane. Any gaps equal to or greater than $\frac{1}{16}$ inch must be filled with insulation.

Assembly No. 7

Aggre-flex Drainage Exterior Insulation and Finish Systems (Mechanically Fastened to Stud Wall Application)

Design pressure: -34 psf

Limitations:

Inland II Zone: The EIF system shall not be installed at heights greater than 30 feet above natural grade.

Inland I Zone: N/A

Seaward Zone: N/A

Installation:

Substrate: Wall studs shall be minimum 2x4 Stud grade SPF lumber. The studs shall be spaced a maximum of 16 inches on center. Wall bracing shall be installed as required by the applicable windstorm construction guidelines adopted by the Texas Department of Insurance. Sheathing shall be a minimum $\frac{1}{2}$ " plywood. The sheathing shall be fastened to the studs with 1 $\frac{3}{8}$ " ring shank nails at 6" o.c. in the field and perimeter. Two layers of Grade D building paper, or a single layer of Grade D building paper having a water resistance rating of 60 minutes may be used.

Assembly No. 7 (Continued)

EPS board: Minimum 1" thick expanded polystyrene foam (EPS) 1.0 pcf density is mechanically attached the substrate.

Application of EPS board: The EPS insulation boards are attached to the plywood sheathing with Wind-Devil 2 plates fastened with Windlock W-1 #6-1 $\frac{5}{8}$ " long screws spaced a maximum of 4" along the perimeter and 8" in the field. A minimum of 8 fasteners shall be provided for a 2 x 4 board and a minimum of 5 fasteners shall be provided for both 2' x 2' board sections, a minimum of 6 fasteners shall be provided for a 1'x4', and a minimum of 4 fastener shall be provided for a 1' x 3' and a 1' x 1'. Vertical joints of insulation boards are staggered from all edges of wall openings. The final surface of the insulation board must be uniform along the exposed plane.

Assembly No. 8

Aggre-flex Drainage Exterior Insulation and Finish Systems (Mechanically Fastened to Wood Stud-Wall Application)

Design pressure: -50 psf

Limitations:

Inland II Zone: The EIF system shall not be installed at heights greater than 50 feet above natural grade.

Inland I Zone: The EIF system shall not be installed on buildings with a mean roof height greater than 33' above natural grade.

Seaward Zone: The EIF system shall not be installed on buildings with a mean roof height greater than 27" above natural grade.

Installation:

Substrate: Wall studs shall be minimum 2x4 Stud grade SPF lumber. The studs shall be spaced a maximum of 16 inches on center. Wall bracing shall be installed as required by the applicable windstorm construction guidelines adopted by the Texas Department of Insurance. Sheathing shall be a minimum $\frac{1}{2}$ " thick plywood. The sheathing shall be fastened to the studs with 1 $\frac{3}{8}$ " ring shank nails at 6" o.c. in the field and perimeter. Two layers of Grade D building paper, or a single layer of Grade D building paper having a water resistance rating of 60 minutes may be used.

EPS board: Minimum 1 $\frac{1}{2}$ " thick expanded polystyrene foam (EPS) 1.0 pcf density is mechanically attached the substrate.

Application of EPS board: The EPS insulation boards are attached to the plywood sheathing with Wind-Devil 2 plates fastened with Windlock W-2 #6-2" long screws spaced a maximum of 4" along the perimeter and 8" in the field. A minimum of 8 fasteners shall be provided for a 2 x 4 board and a minimum of 5 fasteners shall be provided for both 2' x 2' board sections, a minimum of 6 fasteners shall be provided for a 1'x4', and a minimum of 4 fastener shall be provided for a 1' x 3' and a 1' x 1'. Vertical joints of insulation boards are staggered from all edges of wall openings. The final surface of the insulation board must be uniform along the exposed plane.

Assembly No. 9

QRW1 Drainage Exterior Insulation and Finish System (Mechanically Attached to Wood Stud-Wall Application)

Design pressure: -41 psf

Limitations:

Inland II Zone: The EIF system shall not be installed at heights greater than 50 feet above natural grade.

Inland I Zone: Not Allowed

Seaward Zone: Not Allowed

Installation:

Substrate: Wall studs shall be minimum 2x4 Stud grade SPF lumber. The studs shall be spaced a maximum of 16 inches on center. Wall bracing shall be installed as required by the applicable windstorm construction guidelines adopted by the Texas Department of Insurance. Sheathing shall be a minimum $\frac{7}{16}$ " thick OSB. The sheathing shall be fastened to the studs with $1\frac{3}{8}$ " ring shank nails at 6" o.c. in the field and perimeter. Two layers of Grade D building paper, or a single layer of Grade D building paper having a water resistance rating of 60 minutes may be used.

Celotex Quik-R Polyisocyanurate Insulation board (PISO): Celotex Quik-R insulation board, $\frac{5}{8}$ " thick, is mechanically attached to the sheathing following Master Wall's recommended pattern.

Application of Insulation board: The PISO insulation boards shall be attached to the OSB with WindLock ULP-302 plates and $1\frac{3}{8}$ " long screws spaced a maximum of 12" o.c. in the field and 8" o.c. around the perimeter fastened into wall studs. The final surface of the insulation board must be uniform along the exposed plane.

Note: The manufacturer's installation instructions shall be available on the job site during installation. All fasteners shall be corrosion resistant as specified in either the Texas Department of Insurance *Windstorm Resistant Construction Guide* or the Texas Windstorm Insurance Association *Building Code for Windstorm Resistant Construction* depending on the document that is applicable.