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ICC-ES Evaluation Report

Reissued February 2022

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ESR-1233

This report is subject to renewal February 2023.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 25 00—Water-resistive Barriers/Weather Barriers
Section: 07 27 00—Air Barriers

REPORT HOLDER:

STO CORP.

EVALUATION SUBJECT:

STOGUARD® AIR BARRIER AND WATER-RESISTIVE BARRIER SYSTEM AND STOENERGY GUARD (STOGUARD WITH CONTINUOUS INSULATION)

1.0 EVALUATION SCOPE

1.1 Compliance with the following codes:

- 2021, 2018 and 2015 *International Building Code*® (IBC)
- 2021, 2018 and 2015 *International Residential Code*® (IRC)
- 2021, 2018 and 2015 *International Energy Conservation Code*® (IECC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)†

†The ADIBC is based on the 2009 IBC as referenced under the ADIBC.For evaluation for compliance with codes adopted by the Los Angeles Department of Building and Safety (LADBS), see ESR-1233 LABC and LARC Supplement.

Properties evaluated:

- Surface-burning characteristics
- Fire-resistance-rated construction
- Water-resistive barrier
- Air leakage
- Types I, II, III and IV Construction

1.2 Evaluation to the following green code(s) and/or standards:

- 2019 California Green Building Standards Code (CALGreen), Title 24, Part 11
- 2018, 2015 and 2012 *International Green Construction Code*® (IgCC)
- 2017, 2014 and 2011 ANSI/ASHRAE/USGBC/IES Standard 189.1–Standard for the Design of High-Performance Green Buildings, Except Low-Rise Residential Buildings
- 2020, 2015, 2012 and 2008 ICC 700 *National Green Building Standard*™ (ICC 700-2020, ICC 700-2015, ICC 700-2012 and ICC 700-2008)

Attributes verified:

See Section 3.1

2.0 USES

2.1 StoGuard® Air Barrier and Water-resistive Barriers:

Sto Gold Coat®, StoGuard® EmeraldCoat®, StoGuard® VaporSeal®, StoGuard® VaporSeal® R and Sto AirSeal® are alternatives to the water-resistive barrier specified in 2021 and 2018 IBC Section 1403.2 (2015 IBC Section 1404.2) and Section R703.2 of the IRC when installed over wood and gypsum-based sheathing. They are also used as air barrier materials in accordance with the IRC Section N1102.4 and IECC Sections C402.5 and R402.4.

Sto Gold Coat®, StoGuard® EmeraldCoat®, StoGuard® VaporSeal®, StoGuard® VaporSeal® R and Sto AirSeal® water-resistive barriers may be used in all types of construction, except that under the under the IBC for Types I, II, III, or IV construction, use is limited to exterior walls of buildings having a maximum height of 40 feet (12.2 m) above grade plane, in accordance with 2021 and 2018 IBC Section 1402.5 or 2015 IBC Section 1403.5, unless the exterior wall assemblies are installed as described in Section 4.8 of this report. For exterior walls of buildings of Types I, II, III, or IV construction that are greater than 40 feet (12.2 m) above grade plane, Sto Gold Coat®, StoGuard® EmeraldCoat®, StoGuard® VaporSeal®, StoGuard® VaporSeal® R and Sto AirSeal® water-resistive barriers may be used, in accordance with 2021 and 2018 IBC Section 1402.5 or 2015 IBC Section 1403.5, Exception 1. Sto Gold Coat®, StoGuard® EmeraldCoat®, StoGuard® VaporSeal®, StoGuard® VaporSeal® R and Sto AirSeal® may also be used in construction permitted under the IRC.

Sto Gold Coat® (with Sto Gold Fill and Sto Detail Mesh), when installed at a maximum thickness of 10 mils [0.01 inch (0.25 mm)], may be used in exterior walls of fire-resistance-rated construction assemblies recognized in the IBC Table 721.1(2), without changing the

assigned hourly rating of the assembly. Sto Gold Coat® and Sto AirlSeal® complying with ASTM E2570 can be used over sheathing where EIFS cladding is to be used. Sto Gold Coat® and Sto AirlSeal® may be used behind other wall covering materials.

A single layer of StoGuard® EmeraldCoat® is vapor-permeable and is equivalent to a 60-minute, Grade D barrier and may be used when installed in accordance with 2021 IBC Sections 2510.6.1 and 2510.6.2 or the Exception to 2018 and 2015 IBC Section 2510.6 and IRC Section R703.7.3 .

StoGuard® EmeraldCoat® is used over sheathing where EIFS cladding will not be used. StoGuard® VaporSeal® and StoGuard® VaporSeal® R are Class I vapor retarders which may be used where required in accordance with 2021 and 2018 IBC Section 1404.3, or 2015IBC Section 1405.3, IRC Section R702.7, or IECC R402.1.1.

2.2 StoEnergy Guard (StoGuard® Water-resistive Coatings with Continuous Insulation):

StoEnergy Guard may be used in all types of construction. When used in Types I, II, III and IV construction, the wall assemblies must comply with Section 4.8 of this report.

3.0 DESCRIPTION

3.1 General:

3.1.1 StoGuard Water-resistive Coatings: The StoGuard® water-resistive coating system consists of a sheathing joint treatment, a rough opening treatment and a water-resistive barrier coating. The joint treatment consists of: 80266 Sto Gold Fill® and 80919 Sto Detail Mesh (interchangeable with 80627 StoGuard Mesh or 80268 StoGuard Mesh, which vary in width only), or 81571 Sto RapidGuard™. The water-resistive barrier coating is either 80265 or 81636 Sto Gold Coat®, 80264 StoGuard® EmeraldCoat®, 80263 StoGuard® VaporSeal®, 81294 Sto VaporSeal® R or 81210 Sto AirSeal®. StoGuard® coating systems have a flame-spread index of 25 or less and a smoke-developed index of 450 or less when tested in accordance with ASTM E84.

The attributes of the StoGuard® water-resistive coating system have been verified as conforming to the requirements of (i) CALGreen Section 5.407.1 for water-resistive barriers; (ii) ICC 700-2020 Sections 602.1.8, 11.602.1.8, 1202.6 and 13.104.1.4; (iii) ICC 700-2015 Sections 602.1.8, 11.602.1.8 and 12.6.602.1.8; ICC 700-2012 Sections 602.1.8, 11.602.1.8 and 12.5.602.1.8; and (iv) ICC 700-2008 Section 602.9 for water-resistive barriers.

The attributes of the Sto Gold Coat, StoGuard® EmeraldCoat, StoGuard® VaporSeal®, StoGuard VaporSeal® R and Sto AirSeal® have been verified as conforming to the requirements of (i) CALGreen Section A4.407.5 for air barriers; (ii) 2018 IgCC Section 701.3.1 and 2015 and 2012 IgCC Section 605.1.2.1 for air barriers; and (iii) 2017 and 2014 ASHRAE 189.1 Section 7.3.1.1 and 2011 ASHRAE 189.1 Section 7.4.2.9 for air barriers.

Note that decisions on compliance for those areas rest with the user of this report. The user is advised of the project-specific provisions that may be contingent upon meeting specific conditions, and the verification of those conditions is outside the scope of this report. These codes or standards often provide supplemental information as guidance.

3.1.1.1 80266 Sto Gold Fill®: 80266 Sto Gold Fill® is a ready-mixed, flexible joint compound packaged in 5-gallon (19 L) pails, having a one-year shelf life when stored at temperatures between 38°F and 90°F (3.3°C and 32.2°C).

3.1.1.2 80265 Sto Gold Coat®: 80265 Sto Gold Coat® is a ready-mixed, flexible, polymer-based liquid coating packaged in 5-gallon (19 L) pails, having a one-year shelf life when stored at temperatures between 38°F and 90°F (3.3°C and 32.2°C).

3.1.1.3 81636 Sto Gold Coat®: 81636 Sto Gold Coat® is a ready-mixed, flexible, polymer-based liquid coating packaged in 5-gallon (19 L) pails, having a one-year shelf life when stored at temperatures between 38°F and 90°F (3.3°C and 32.2°C).

3.1.1.4 80919 Sto Detail Mesh: 80919 Sto Detail Mesh is a 4.2 oz/yd^2 (142 g/m^2), polymer-coated, glass-fiber reinforcing mesh packaged in 9-inch-wide-by-150-foot-long (229 mm by 46 m) rolls.

3.1.1.5 80207/80208 StoGuard Fabric: The fabric is a nonwoven cloth reinforcement packaged in 4-inch (102 mm) and 6-inch (152 mm) rolls.

3.1.1.6 80264 StoGuard® EmeraldCoat®: StoGuard EmeraldCoat® is a ready-mixed, flexible, polymer-based liquid coating packaged in 5-gallon (19 L) pails and having a one-year shelf life when stored at temperatures between 38°F and 90°F (3.3°C and 32.2°C).

3.1.1.7 80263 StoGuard® VaporSeal®: StoGuard® VaporSeal® is a ready-mixed polymer-based liquid coating packaged in 5-gallon (19 L) pails, having a one-year shelf life when stored at temperatures between 38°F and 90°F (3.3°C and 32.2°C).

3.1.1.8 81294 StoGuard® VaporSeal® R: StoGuard® VaporSeal® R is a ready-mixed polymer-based liquid coating packaged in 5-gallon (19 L) pails, having a one-year shelf life when stored at temperatures between 38°F and 90°F (3.3°C and 32.2°C).

3.1.1.9 81210 Sto AirSeal®: Sto AirSeal® is a ready-mixed polymer-based liquid coating packaged in 5-gallon (19 L) pails, having a one-year shelf life when stored at temperatures between 38°F and 90°F (3.3°C and 32.2°C).

3.1.1.10 81571 Sto RapidGuard™: Sto RapidGuard™ is a one component joint and seam filler used to seal rough openings, sheathing joints, seams, cracks, penetrations and other transitions in above grade wall construction. Packaged in 29 oz. (0.86L) cartridges or 20 oz. (0.6 L) sausages having one-year shelf life when stored at temperatures between 33˚F and 80˚F (0.6˚C and 27˚C).

3.1.2 StoEnergy Guard (StoGuard Water-resistive Coating with Continuous Insulation): When the StoGuard water-resistive coating system described in Section 3.1.1 is installed in conjunction with Dow Styrofoam Type IV foam plastic insulation complying with ESR-2142, the system is recognized as StoEnergy Guard.

3.2 Air Permeance:

When installed in accordance with Section 4.1 and tested in accordance with ASTM E2178, the Sto Gold Coat®, StoGuard® EmeraldCoat, StoGuard® VaporSeal®, StoGuard VaporSeal® R and Sto AirSeal® have an air leakage rate of less than 0.02 L/(sm^2) @ 75 Pa [0.004 cfm/ft^2 @ 0.3 inch w.g. (1.57 psf)].

3.3 Water Vapor Transmission:

The desiccant method water vapor transmission (WVT) values of the Sto Gold Coat®, StoGuard® EmeraldCoat, StoGuard® VaporSeal® and StoGuard® VaporSeal® R vapor permeable materials, as determined in accordance with ASTM E96 are as follows:

StoGuard® EmeraldCoat®:

- Single layer 8.5 Perms = 58.7 g/m^2 per 24 hours

- Double layer 3.5 Perms = 24.5 g/m^2 per 24 hours

Sto Gold Coat®:

- Single layer 1.8 Perms = 14.8 grams/m^2 per 24 hours

StoGuard® VaporSeal® R:

- Double layer 0.092 Perms = 0.59 g/m^2 per 24 hours

StoGuard® VaporSeal® :

- Single Layer (40-mils) 0.06 Perms = 0.48 g/m^2 per 24 hours
- Sto Gold Fill® with StoGuard Detail Mesh: 7.10 perm = 119 grams/m^2 per 24 hours

The water vapor transmission (WVT) value of the Sto Air Seal and Sto Gold Coat material, as determined in accordance with ASTM E96 (Water Method) is as follows:

- Sto AirSeal®: 14.2 perms = 93.4 grams/m^2 per 24 hours
- Sto Gold Coat®: 19.6 perms= 129.8 grams/m^2 per 24 hours

3.4 Substrates:

The use of StoGuard® water-resistive coating systems is limited to applications over the following substrates:

- Glass mat faced gypsum recognized in a current evaluation report as complying with ASTM C1177.
- Plywood, Exposure 1 exterior grade, complying with U.S. DOC PS-1, except as noted in Section 5.7.
- Oriented Strand Board (OSB), Exposure 1, complying with U. S. DOC PS-2, except as noted in Section 5.7.
- Concrete and masonry complying with the applicable code.

4.0 INSTALLATION

4.1 General:

Installation of StoGuard® water-resistive coating system must comply with this report and the manufacturer's published installation instructions. The manufacturer's published installation instructions must be available at the jobsite at all times during installation.

4.2 Substrate Preparation:

StoGuard® water-resistive barrier coating systems are installed on the exterior side of vertical exterior walls. Surfaces must be free of all bond-inhibiting materials, including dirt, oil and other foreign matter. StoGuard® water-resistive barrier coating systems must be applied only when the surface and ambient temperatures are 40°F (4°C) and rising during the application and drying period. Working time will decrease as surface and ambient temperatures increase.

StoGuard® water-resistive barrier coating systems must not be installed on damp surfaces, below-grade surfaces, or on surfaces subject to water immersion. Damaged sheathing must be removed and replaced. Sheathing must be installed as required by the applicable code. StoGuard® water-resistive coating system must be covered with an exterior wall finish complying with the requirements of the applicable code or a current evaluation report.

Sto Gold Fill® must be troweled over all sheathing joints, rough openings, and inside and outside building corners. Sto Detail Mesh shall be immediately embedded in the Sto Gold Fill® and troweled smooth. Sheathing joints require a minimum 4-inch (101 mm) width of mesh. Rough openings and corners require a minimum 9-inch (228 mm) width of mesh. Fastener heads and surface defects must be spot-coated with Sto Gold Fill®. The system must not be applied over irregular surfaces. The substrate to be coated must be continuous, without joints, holes, etc., exceeding $^1/_{32}$ inch (0.8 mm) in size. Surface defects larger than $^1/_{32}$ inch (0.8 mm) must be treated with Sto Gold Fill® prior to application of Sto Gold Coat®. The application thickness of Sto Gold Fill™ must not exceed $^1/_{16}$ inch (1.6 mm).

Sto RapidGuard™ is applied with a caulking gun along sheathing joints, or applied in a zig-zag pattern across and down the joints. Spread to a uniform thickness of 20-30 mils (0.5-0.8 mm) in a 2-inch (51 mm) wdith centered over sheathing joints before the materials skins. Follow same procedure for inside and outside corners. Apply a fillet bead of material at interior corners inside the opening to seal jamb/sill and jamb/head seams. Apply material in a zig-zag pattern along sill, jambs, and head to form a generous bead of material along the surface to be covered. Spread the material to a uniform thickness of 12-20 mils (0.3-0.5 mm) before the material skins. Treat the entire rough opening surface in this manner and overlap onto the face of the sheathing 2 inches (51 mm) minimum all the way around. After drying it is top coated with Sto Gold Coat®, StoGuard® EmeraldCoat® or Sto AirSeal® water-resistive coatings.

StoGuard Fabric may be used in lieu of Sto Gold Fill as a joint treatment. Sto Gold Coat®, StoGuard® EmeraldCoat Sto VaporSeal R™ or Sto AirSeal® is applied by spray, brush or roller to the joint area, and StoGuard Fabric is immediately embedded in the wet material by placing the fabric and then brushing or rolling over it. After drying, a second coat of Sto Gold Coat®, StoGuard® EmeraldCoat, StoGuard® VaporSeal® or StoGuard® VaporSeal® R or Sto AirSeal® is applied over the joint as described in Section 4.3, 4.4, or 4.5, respectively.

4.3 Sto Gold Coat® Application:

4.3.1 Sto Gold Coat® Application over Exterior Gypsum Sheathing, Glass Mat Faced Gypsum or Exterior Plywood: The substrate must be prepared as described in Section 4.2. Sto Gold Coat® must be applied with a nap roller in a single, uniform coat to a wet thickness of 10 mils [0.01 inch (0.25 mm)]. For application over glass mat faced gypsum sheathing, a $^3/_4$-inch (19.1 mm) nap roller must be used. For application over plywood and gypsum sheathing, a $^1/_2$-inch (12.7 mm) nap roller must be used. The coating must not be applied in rainy conditions.

4.3.2 Sto Gold Coat® Application over Oriented Strand Board (OSB): A two-coat application of Sto Gold Coat® is required over OSB. The first coat of Sto Gold Coat® must be applied over the substrate prior to treatment of sheathing joints, rough openings, and corners. The second coat of Sto Gold Coat® must be applied to the prepared substrate, as described in Section 4.2, with a $^3/_4$-inch (19.1 mm) nap roller. The substrate receiving the second coat of Sto Gold Coat® must be continuous, without joints, holes, etc., exceeding $^1/_{32}$ inch (0.8 mm) in size. The second coat of Sto Gold Coat® must be applied over the treated surface in a single, uniform coating to a wet thickness of 10 mils [0.01 inch (0.25 mm)]. The coating must not be applied in rainy conditions.

4.3.3 Sto Gold Coat® Application over Concrete and Concrete Masonry: The substrate must be prepared as indicated in Section 4.2 of this report. For concrete substrates, a single uniform coat is applied by spray or roller to a wet thickness of 10 mils [0.01 inch (0.25 mm)]. For concrete masonry substrates, two single uniform coats are applied by spray or roller to a wet thickness of 15 mils [0.015 inch (0.38 mm)] each, or there is one uniform spray application to a wet thickness of 30 mils [0.03 inch (0.76 mm)].

4.3.4 Curing and Drying: Sto Gold Coat® must be dry to the touch and may be over-coated within two to four hours after application, under normal conditions. Drying time

varies depending on temperature/humidity and surface conditions. A minimum of 24 hours is required before any adhesive attachment of exterior finish to the final StoGuard® system surface is made, if required. Surfaces must be protected from rain and freezing until completely dry.

4.4 StoGuard® EmeraldCoat® Application:

4.4.1 StoGuard® EmeraldCoat® Application over Sheathing: The substrate must be prepared as described in Section 4.2. StoGuard® EmeraldCoat® is applied with a nap roller or appropriate spray equipment in a single uniform coat to a wet thickness of 10 mils [0.01 inch (0.25 mm)]. For application over glass mat faced gypsum sheathing and orientated strand board (OSB) a $^3/_4$-inch (19.1 mm) nap roller is used. OSB sheathing may require touch-up with a second application of StoGuard® EmeraldCoat® where wood strands are raised. Surfaces must be inspected and touched up as needed before installation of wall covering materials. For application over plywood and gypsum sheathing, a $^1/_2$-inch (12.7 mm) nap roller is used. The coating must not be applied in rainy conditions.

4.4.2 StoGuard® EmeraldCoat® Application over Concrete and Concrete Masonry: The substrate must be prepared as indicated in Section 4.2 of this report. For concrete substrates, a single uniform coat is applied by spray or roller to a wet thickness of 10 mils [0.01 inch (0.25 mm)]. For concrete masonry substrates, two single uniform coats are applied by spray or roller to a wet thickness of 15 mils [0.015-inch (0.38 mm)] each, or there is one uniform spray application to a wet thickness of 30 mils [0.03 inch (0.76 mm)].

4.4.3 Curing and Drying: StoGuard® EmeraldCoat® must be dry to the touch and may be over-coated within two to four hours after application. Drying time varies depending on temperature/humidity and surface conditions. Surfaces must be protected from rain and freezing until completely dry.

4.5 StoGuard® VaporSeal®, StoGuard® VaporSeal® R and Sto AirSeal® Application:

4.5.1 StoGuard® VaporSeal®, StoGuard® VaporSeal® R and Sto AirSeal® Application over Approved Substrates: The substrate must be prepared as described in Section 4.2. StoGuard® VaporSeal®, StoGuard® VaporSeal® R and Sto AirSeal® is applied with appropriate spray equipment in a single uniform coat to a minimum wet thickness of 46 mils [0.046 inch (1.16 mm)] for StoGuard® VaporSeal® and StoGuard® VaporSeal® R and a minimum wet thickness of 40 mils [0.040 inch (1.00 mm)] for Sto AirSeal®. They may also be applied in multiple coats with a $^3/_4$-inch (19 mm) nap roller to achieve the same thickness. The coating must not be applied in rainy conditions.

4.5.2 Curing and Drying: StoGuard® VaporSeal®, StoGuard® VaporSeal® R and Sto AirSeal® must be dry to the touch and may be overcoated within two to four hours after application. Drying time varies depending on temperature/humidity and surface conditions. Surfaces must be protected from rain and freezing until the materials are completely dry.

4.6 StoEnergy Guard:

The StoGuard water-resistive coating must be installed over the substrates as described in Section 4.0 of this report. The Dupont Styrofoam foam plastic insulation board must be installed in accordance with ESR-2142. The foam plastic board may be installed directly over the framing or directly over the exterior wall sheathing or substrate. Installation of the exterior wall sheathing and exterior cladding must be done to the satisfaction of the code official.

4.7 Use on Exterior Walls in Types I, II, III and IV Construction:

When used in exterior walls of Types I, II, III and IV construction and when installed in accordance with this report, the assemblies shown in Tables 1 and 2 of this report comply with NFPA 285 and the provisions shown in IBC Section 2603.5, when using Dupont Styrofoam foam plastic insulation as described in Tables 1 and 2 of this report.

5.0 CONDITIONS OF USE

The StoGuard® air barrier and water-resistive barrier coating systems and StoEnergy Guard described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

5.1 Installation must comply with this report, the manufacturer's published instructions and the applicable code. In the event of a conflict between the manufacturer's published installation instructions and this report, this report governs.

5.2 For EIFS applications, special inspections are required at the jobsite in accordance with IBC Section 1705.15.1 . For other applications, special inspections are not required at the jobsite if installation is done by an installer or contractor trained by the manufacturer, and a certificate of installation is presented to the code official at the completion of each project; otherwise, special inspections are required at the jobsite in accordance with IBC Section 1705.1.1. Duties of the inspector include verifying field preparation of materials, expiration dates, installation of components, curing of components, installation of joints and sealants, applied dry-film thickness and interface of coating material with flashings. Special inspections are not required under the IRC.

5.3 The StoGuard® air barrier and water-resistive barrier systems and StoEnergy Guard are limited to installations on walls.

5.4 The StoGuard® water-resistive barrier coating system and StoEnergy Guard must be covered with an exterior wall finish or covering complying with the applicable code or a current evaluation report.

5.5 The StoGuard® water-resistive barrier coating system and StoEnergy Guard must not be used for repairing moving cracks, joints or cracks wider than $^1/_8$ inch (3.2 mm).

5.6 For exterior wall assemblies consisting of the StoEnergy Guard, the Dupont Styrofoam foam plastic insulation board must also be installed in accordance with the requirements set forth in ESR-2142.

5.7 The use of Sto AirSeal® with exterior stucco systems is limited to application over ASTM C1177 sheathing or concrete or masonry wall substrates under the IBC.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Water-resistive Coatings Used as Water-resistive Barriers over Exterior Sheathing (AC212), dated February 2015 (editorially revised July 2020).

6.2 NFPA 285 test and analysis.

7.0 IDENTIFICATION

7.1 Packages of the Sto system products described in this report must be identified by a label bearing the

manufacturer's name (Sto Corp.) and address, product name, identification of components, lot or batch number, quantity of material in packaged mix, storage instructions and shelf life, expiration date (when applicable) and the evaluation report number (ESR-1233).

DuPont Styrofoam foam plastic insulation must be labeled in accordance with ESR-2142.

7.2 The report holder's contact information is the following:

STO CORP.
3800 CAMP CREEK PARKWAY
BUILDING 1400, SUITE 120
ATLANTA, GEORGIA 30331
(404) 346-3666
www.stocorp.com

TABLE 1—STOENERGY GUARD WALL ASSEMBLIES FOR TYPES I, II, III AND IV CONSTRUCTION (XPS INBOARD OF SHEATHING)[1]

WALL COMPONENT	MATERIALS
Base Wall System—Use either 1, 2 or 3	1-Concrete wall 2-Concrete masonry wall 3-1 layer of $^5/_8$-inch-thick Type X gypsum wallboard (on interior), installed over steel studs (minimum $3^5/_8$-inch deep, minimum No. 18 gage, maximum 16-inch o.c.)
Floorline Firestopping	4 pcf, mineral wool insulation in each stud cavity and at each floorline- attached with Z-clips or equivalent
Stud Cavity Insulation—Use either 1, 2 or 3	1-None 2-Fibergalss batt insulation (faced or unfaced) 3-Any non-combustible material
Continuous Insulation—Use either 1 or 2	1-None 2-ASTM C578 Type IV, Dupont Styrofoam insulation board recognized in ESR-2142: $^1/_2$-inch minimum to 3-inch maximum; insulation board joints may be covered with 4-inch (maximum) wide asphalt or butyl-based flashing tape
Exterior Sheathing over Continuous Insulation No. 2 and Base Wall System No. 3—Use either 1 or 2. Exterior Sheathing over Base Wall System No. 3 without Continuous Insulation No. 2—Use either 1 or 2	1-$^5/_8$.inch thick Type X glass mat gypsum sheathing complying with ASTM C1177 2-$^1/_2$-inch thick glass mat gypsum sheathing *Note: Seal exterior sheathing joints with materials and procedures as identified in Section 3.0 of this report.*
Air and water-resistive barrier coating applied to Base Wall System 1 or 2 without Continuous Insulation No. 2 and without exterior sheathing—Use either 1, 2, 3, 4, 5 or 6. Air and water-resistive barrier coating applied to exterior sheathing of Base Wall System 3—Use either 1, 2, 3, 4, 5 or 6.	1-Sto Gold Coat® 2-StoGuard ®EmeraldCoat® 3-StoGuard® VaporSeal® R 4-StoGuard® VaporSeal® 5-Sto AirSeal®
Secondary water-resistive barrier membrane—Use either 1 or 2	1-None 2-No 15 asphalt-saturated felt complying with ASTM D226 for Type I 3-Grade D paper water-resistive barrier
Drainage Mat—Use either 1 or 2	1-None 2-Sto DrainScreen[2]
Exterior Veneer—Use either 1, 2, 3, 4, 5, 6, 7 or 8	1-Stucco-Minimum $^3/_4$-inch thick exterior cement plaster and lath complying with code. As an option, adhered masonry veneer, such as: thin brick, manufactured stone, ceramic or porcelain tile may be installed over the stucco. 2-Brick-Use standard 4-inch thick, clay brick. Use standard brick veneer anchors installed vertically on each stud at a maximum of 24-inch o.c. creating a 2-inch maximum air gap between the continuous insulation and the brick. 3-Concrete- Minimum 2-inch thick, with a maximum 2-inch air gap between continuous insulation and concrete. 4-Concrete masonry units- Minimum 4-inch thick with a 2-inch maximum air gap between the continuous insulation and the concrete masonry units. 5-Limestone- minimum 2-inch thick using any standard non-open joint installation such as ship lap. 6-Natural stone veneer- minimum 2-inch thick installed using any standard non-open joint installation such as ship lap. 7-Pre-cast artificial stone complying with ICC-ES AC51-minimum $1^1/_2$-inch thick installed using any standard non-open joint installation technique such as ship lap. 8-Terracotta cladding- minimum $1^1/_4$-inch thick installed using any standard non-open joint installation technique such as ship-lap.
Special Conditions	For Exterior Veneers 1 and 8 use header treatment as shown in Figure 1 of this report for all window and door openings. For Exterior Veneers 2 through 7 use header treatment as shown in Figures 5, 6 and 7 of ESR-2142 for all window and door openings.

[1]Wall components must be installed in accordance with the code or applicable ICC-ES evaluation report to the satisfaction of the code official.
[2]This material was evaluated only for compliance with NFPA 285, when used as part of the wall assemblies outlined in Table 1.

TABLE 2—STOENERGY GUARD WALL ASSEMBLIES FOR TYPES I, II, III AND IV CONSTRUCTION (XPS OUTBOARD OF SHEATHING)[1]

WALL COMPONENT	MATERIALS
Base Wall System—Use either 1, 2 or 3	1-Concrete wall 2-Concrete masonry wall 3-1 layer of $^5/_8$-inch thick Type X gypsum wallboard (on interior), installed over steel studs (minimum $3^5/_8$-inch deep, minimum No. 18 gage, maximum 16-inch o.c.)
Floorline Firestopping	4 pcf, mineral wool insulation in each stud cavity and at each floorline- attached with Z-clips or equivalent
Stud Cavity Insulation—Use either 1, 2 or 3	1-None 2-Fibergalss batt insulation (faced or unfaced) 3-Any non-combustible material
Exterior Sheathing applied to Base Wall System No. 3—Use either 1 or 2. Exterior sheathing is not required for Base Wall Systems 1 or 2.	1-$^5/_8$.inch thick Type X glass mat gypsum sheathing complying with ASTM C1177 2-$^1/_2$-inch thick glass mat gypsum sheathing *Note: Seal exterior sheathing joints with materials and procedures as identified in Section 3.0 of this report.*
Air and water-resistive barrier coating applied to Base Wall System 1, 2 or 3 (concrete, concrete masonry or exterior sheathing)—Use either 1, 2, 3, 4, 5 or 6	1-Sto Gold Coat® 2-StoGuard® Emerald Coat® 3-StoGuard® VaporSeal® R 4-StoGuard® VaporSeal® 5-Sto AirSeal®
Continuous Insulation adhesive—Use either 1 or 2	1-None 2-Sto TurboStick Adhesive[2]
Continuous Insulation—Use either 1 or 2	1-None 2-ASTM C578 Type IV, Dupont Styrofoam insulation board recognized in ESR-2142: $^1/_2$-inch minimum to 3-inch maximum; insulation board joints may be covered with 4-inch (maximum) wide asphalt or butyl-based flashing tape
Secondary water-resistive barrier membrane—Use either 1, 2 or 3	1-None 2-No. 15 asphalt-saturated felt complying with ASTM D226 for Type I 3-Grade D paper water-resistive barrier
Drainage Mat—Use either 1 or 2	1-None 2-Sto DrainScreen[2] installed either over the air barrier and water-resistive barrier coatings or over the continuous insulation
Exterior Veneer—Use either 1, 2, 3, 4, 5, 6, 7 or 8	1-Stucco-Minimum $^3/_4$-inch thick exterior cement plaster and lath complying with code. As an option, adhered masonry veneer, such as: thin brick, manufactured stone, ceramic or porcelain tile may be installed over the stucco. 2-Brick-Use standard 4-inch thick, clay brick. Use standard brick veneer anchors installed vertically on each stud at a maximum of 24-inch o.c. creating a 2-inch maximum air gap between the exterior insulation and the brick. 3-Concrete- Minimum 2-inch thick, with a maximum 2-inch air gap between exterior insulation and concrete. 4-Concrete masonry units- Minimum 4-inch thick with a 2-inch maximum air gap between the exterior insulation and the concrete masonry units. 5-Limenstone- minimum 2-inch thick using any standard non-open joint installation such as ship lap. 6-Natural stone veneer- minimum 2-inch thick installed using any standard non-open joint installation such as ship lap. 7-Pre-cast artificial stone complying with ICC-ES AC51-minimum $1^1/_2$-inch thick installed using any standard non-open joint installation technique such as ship lap. 8-Terracotta cladding- minimum 1¼-inch thick installed using any standard non-open joint installation technique such as ship-lap.
Special Conditions	For Exterior Veneers 1 and 8 use header treatment as shown in Figure 2 of this report for all window and door openings. For Exterior Veneers 2 through 7 use header treatment as shown in Figures 5, 6 and 7 of ESR-2142 for all window and door openings.

[1]Wall components must be installed in accordance with the code and applicable ICC-ES evaluation report.

[2]This material was evaluated only for compliance with NFPA 285, when used as part of the wall assemblies outlined in Table 2.

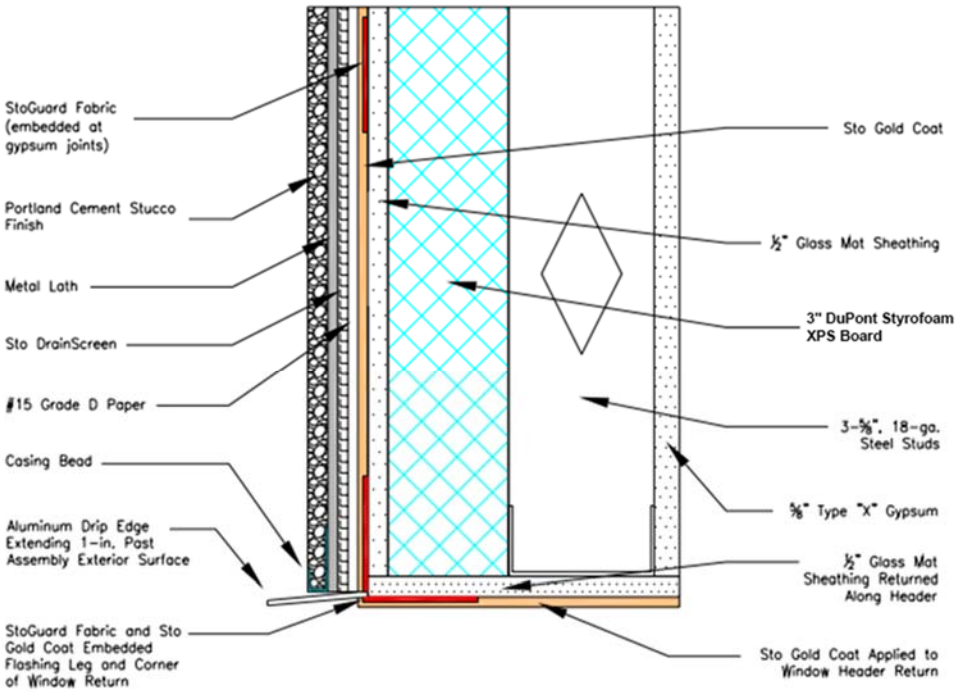

Figure A-6. Window Header Detail.

Figure 1

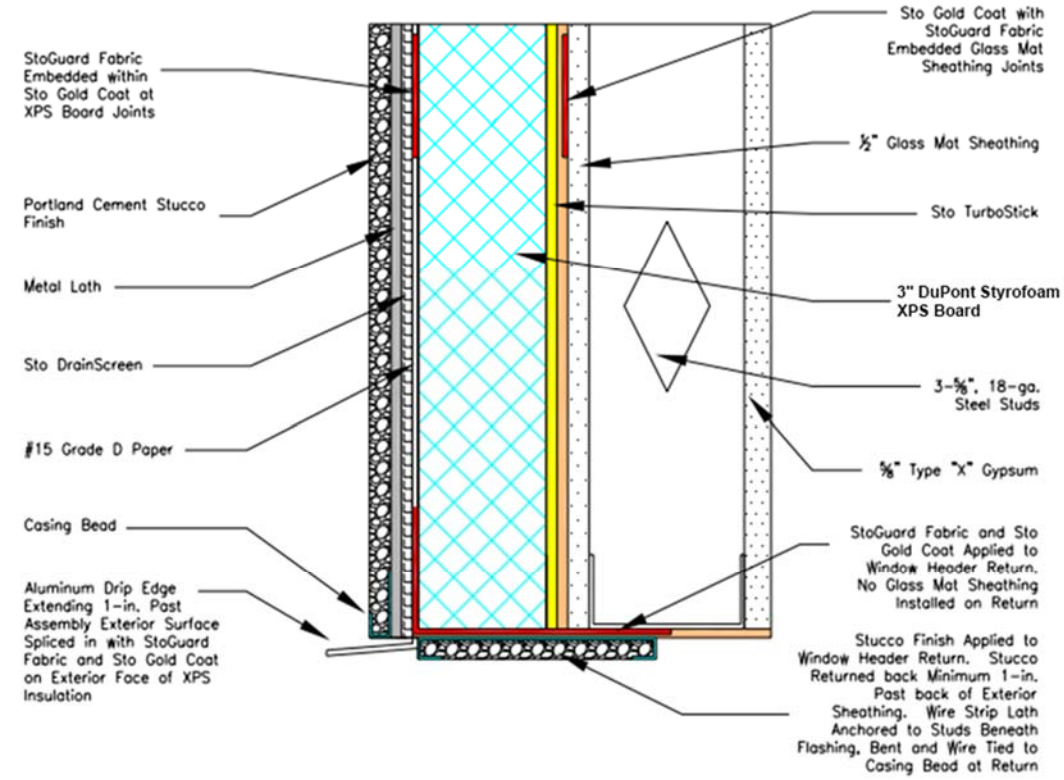

Figure A-6. Window Header Detail.

Figure 2

ICC-ES Evaluation Report

ESR-1233 LABC and LARC Supplement

Reissued February 2022
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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 25 00—Water-resistive Barriers/Weather Barriers
Section: 07 27 00—Air Barriers

REPORT HOLDER:

STO CORP.

EVALUATION SUBJECT:

STOGUARD® AIR BARRIER AND WATER-RESISTIVE BARRIER SYTEMS AND STOENERGY GUARD (STOGUARD WITH CONTINUOUS INSULATION)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the StoGuard® air and water-resistive barrier systems and StoEnergy Guard (StoGuard with Continous Insulation), described in ICC-ES evaluation report ESR-1233, have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2020 *City of Los Angeles Building Code* (LABC)
- 2020 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The StoGuard® water-resistive barrier systems, described in Sections 2.0 through 7.0 of the evaluation report ESR-1233, comply with the LABC Chapters 7, 14, 25 and 26, and the LARC Section R703, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The StoGuard® air and water-resistive barrier systems and StoEnergy Guard (StoGuard with Continous Insulation), described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-1233.
- The design, installation, conditions of use and identification of the StoGuard® water-resistive barrier systems are in accordance with the 2018 *International Building Code®* (IBC) and 2018 *International Residential Code®* (IRC) provisions noted in the evaluation report ESR-1233.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 14, 17 and 25 and LARC Section R703, as applicable.

This supplement expires concurrently with the evaluation report, reissued February 2022 and revised October 2022.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 25 00—Water-resistive Barriers/Weather Barriers
Section: 07 27 00—Air Barriers

REPORT HOLDER:

STO CORP.

EVALUATION SUBJECT:

STOGUARD® AIR BARRIER AND WATER-RESISTIVE BARRIER SYSTEM AND STOENERGY GUARD (STOGUARD WITH CONTINUOUS INSULATION)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the StoGuard® Air Barrier and Water-resistive Barrier System and StoEnergy Guard (StoGuard® with Continuous Insulation), described in ICC-ES evaluation report ESR-1233, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2022 and 2019 *California Building Code* (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 and 2019 *California Residential Code* (CRC)
- 2022 and 2019 *California Energy Code* (CEC)

2.0 CONCLUSIONS

2.1 CBC:

The StoGuard® Air Barrier and Water-resistive Barrier System and StoEnergy Guard (StoGuard® with Continuous Insulation), described in Sections 2.0 through 7.0 of the evaluation report ESR-1233, comply with CBC Chapters 7, 14, 25 and 26, provided the design and installation are in accordance with the 2021 and 2018 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 17 and 26, as applicable. Use as an air barrier must be in accordance with the CEC.

2.1.1 OSHPD:

The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA:

The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2 CRC:

The StoGuard® Air Barrier and Water-resistive Barrier System and StoEnergy Guard (StoGuard® with Continuous Insulation), described in Sections 2.0 through 7.0 of the evaluation report ESR-1233, comply with CRC Chapter 7, provided the design and installation are in accordance with the 2021 and 2018 *International Residential Code*® (IRC) provisions noted in the evaluation report. Use as an air barrier must be in accordance with the CEC.

This supplement expires concurrently with the evaluation report, reissued February 2022 and revised October 2022.

ICC-ES Evaluation Report

ESR-1233 FBC Supplement

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 25 00—Water-resistive Barriers/Weather Barriers
Section: 07 27 00—Air Barriers

REPORT HOLDER:

STO CORP.

EVALUATION SUBJECT:

STOGUARD® AIR BARRIER AND WATER-RESISTIVE BARRIER SYSTEM AND STOENERGY GUARD (STOGUARD WITH CONTINUOUS INSULATION)

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that StoGuard® air barrier and water-resistive barrier systems, StoEnergy Guard (StoGuard with Continous Insulation), described in ICC-ES evaluation report ESR-1233, has also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2020 *Florida Building Code—Building*
- 2020 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The StoGuard® air barrier and water-resistive barrier systems, StoEnergy Guard (StoGuard with Continous Insulation), described in Sections 2.0 through 7.0 of the evaluation report ESR-1233, comply with the *Florida Building Code—Building* and *Florida Building Code—Residential*. The design requirements shall be determined in accordance with the *Florida Building Code—Building* and *Florida Building Code—Residential*, as applicable. The installation requirements noted in ESR-1233 for the 2018 *International Building Code®* (IBC) meet the requirements of the *Florida Building Code—Building* and *Florida Building Code—Residential*, as applicable, with the following conditions:

1. StoGuard® air barrier and water-resistive barrier systems comply with ASTM E2570 as indicated in *Florida Building Code—Building* Section 1408.4.1.1.
2. For installation on exterior walls of Types I, II, III and IV construction exceeding 40 feet (12.2 m) in height above grade, installation of these products shall be in accordance with the assemblies described in Tables 1 and 2 of ESR-1233 or in compliance with Exception 1 of Section 1403.5 of the *Florida Building Code—Building*.

Use of the StoGuard® air barrier and water-resistive barrier systems, StoEnergy Guard (StoGuard with Continous Insulation) for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and *Florida Building Code—Residential* has not been evaluated and is outside the scope of this supplemental report.

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official, when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, reissued February 2022 and revised October 2022.