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ICC-ES Report

ESR-1748

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Reissued 10/2015
This report is subject to renewal 10/2016.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
SECTION: 07 24 00—EXTERIOR INSULATION AND FINISH SYSTEMS
SECTION: 07 24 19—WATER-DRAINAGE EXTERIOR INSULATION AND FINISH SYSTEMS

REPORT HOLDER:

STO CORP.

1400 CAMP CREEK PARKWAY, SUITE 120
ATLANTA, GEORGIA 30331

EVALUATION SUBJECT:

STOTHERM® ci®

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REPORT HOLDER:

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www.stocorp.com

EVALUATION SUBJECT:

STOTHERM® ci®

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2015, 2012 and 2009 *International Building Code®* (IBC)
- 2015, 2012 and 2009 *International Residential Code®* (IRC)

Properties evaluated:

PROPERTY	IBC Chapter	IRC Chapter
Exterior insulation and finish systems (EIFS)	14	R7
Fire-resistance-rated construction	7	R3
Weather resistance	14	R7
Special inspections, Types I-IV (noncombustible) construction	17	NA
Structural – transverse wind load resistance	16	R6
Types I-IV (noncombustible) construction	26	NA
Surface burning characteristics	26	R3
Ignition resistance	26	NA

2.0 USES

StoTherm® ci® systems are exterior insulation and finish systems (EIFS) complying with IBC Section 1408 and IRC Section R703.9. The systems comply with the requirements of IBC Section 1408.4.1 and IRC Section R703.9 as EIFS with drainage.

StoTherm® ci® systems may be used in fire-resistance-rated construction when installed in accordance with Section 4.6 of this report; and in any construction type (IBC Types I through V) when installed in accordance with Section 4.5.

3.0 DESCRIPTION

3.1 System Components:

StoTherm® ci® systems consist of a water-resistve barrier, adhesively applied flat insulation board, reinforcing mesh, base coat, and finish coat. See Table 1 for system components.

3.2 Insulation Board:

The insulation boards must be one of the following:

a. Expanded polystyrene (EPS) complying with ASTM C578, Type I, and ASTM E2430, produced by a molder with a current ICC-ES evaluation report.

b. EPS insulation board produced by a molder who participates in an approved third-party quality-assurance program. EPS must comply with ASTM C578, Type I, and ASTM E2430.

c. Sto Insulation Board, EPS complying with ASTM C578, Type I, and ASTM E2430.

d. Dow Styrofoam Panel Core Type X recognized in ESR-2142 (for use with the StoTherm ci XPS system noted in Table 1).

EPS insulation boards must 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 or UL 723.

3.3 Substrates:

Substrates must be one of the following:

a. Gypsum sheathing board complying with ASTM C1396 or ASTM C1177. When used as part of a fire-resistance-rated assembly, the gypsum board must be Type X with a minimum thickness of $^5/_8$ inch (15.9 mm).

b. Concrete masonry complying with the code.

c. Concrete complying with the code.

d. Exterior plaster complying with the code.

e. Exterior or Exposure 1 wood structural panels complying with DOC PS-1 or PS-2.

***Revised November 2015**

3.4 Sealants:

Sealants must comply with ASTM C920, Type S or M, minimum Grade NS, minimum Class 25 and Use O.

4.0 DESIGN AND INSTALLATION

4.1 General:

StoTherm ci must be installed in accordance with the manufacturer's installation instructions, specifications and details, which are available at www.stocorp.com:

- http://www.stocorp.com/continuous-insulation-systems/
- http://www.stocorp.com/sto_systems/stothermci-xps-lotusan/
- http://www.stocorp.com/sto_systems/stothermci-classic/
- http://www.stocorp.com/sto_systems/stothermci-lotusan/
- http://www.stocorp.com/sto_systems/stothermci-xps-essence/
- http://www.stocorp.com/sto_systems/stothermci-xps-classic/
- http://www.stocorp.com/sto_systems/stothermci-essence/

4.2 Drainage:

StoTherm ci provides drainage through the application of vertical ribbons of adhesive over the water-resistive barrier coating system identified in Table 1.

Additional installation and compliance information for the StoGuard Gold Coat water-resistive barrier system is provided in ESR-1233 and at www.stocorp.com.

4.3 Wind Design:

Table 3 presents specific StoTherm ci assemblies for which test data has been submitted. Other StoTherm ci assemblies may be considered for approval by local officials, based on testing and/or calculations provided by a qualified design professional.

4.4 Weather Protection:

StoTherm ci systems comply with IBC Section 1403.2 and IRC Section R703.1.1.

4.5 Use in Types I through IV (Noncombustible) Construction:

Table 4 describes the assemblies qualified for use in Types I through IV construction (IBC).

4.6 Fire-resistance-rated Construction:

Table 5 describes the assemblies qualified for use in nonload-bearing fire-resistance-rated construction.

In addition, in Type V construction, any StoTherm ci system listed in this report may be attached to the surface of combustible exterior fire-resistance-rated assemblies described in 2015 and 2012 IBC Table 721.1(2) [2009 IBC Table 720.1(2)] without changing the assigned hourly rating of the assembly. The exterior wall must have a minimum 10-foot (3048 mm) separation distance from adjacent construction.

4.7 Special Inspection:

For recognition under the IBC, special Inspections of the water-resistive barrier must be conducted in accordance with 2015 IBC Section 1705.16 (2012 IBC Section 1705.15 and 2009 IBC Section 1704.14). Refer to Sto Corp. third-party inspection guidelines for verifying field preparation of materials.

5.0 CONDITIONS OF USE

The StoTherm ci EIFS systems 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 installation instructions and the applicable code. In the event of a conflict between the manufacturer's instructions and this report, this report governs.

5.2 The insulation board must be separated from the building interior by a thermal barrier complying with the applicable code.

5.3 Installation must be by applicators listed by Sto Corp.

5.4 Termination of the systems must not be less than 6 inches (152 mm) above finished grade in accordance with 2015 and 2009 IBC Section 2603.8 (2012 IBC Section 2603.9) and IRC Section R318.4.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with ASTM E2568 and ASTM E2273.

6.2 Data in accordance with the ICC-ES Acceptance Criteria for EIFS Clad Drainage Wall Assemblies (AC235), dated January 2015.

6.3 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2015.

7.0 IDENTIFICATION

Each container or package of the coating or reinforcing mesh used as part of the StoTherm EIFS ci systems must be labeled with the manufacturer's name (Sto Corp.) and address; the product name; lot or batch number; quantity of material; storage instructions; pot life; expiration date; and the evaluation report number (ESR-1748).

Sto insulation board must be labeled on the edge of each board with the Sto Corp. name, the plant identification number, and the evaluation report number (ESR-1748).

Sto Turbostick adhesive must be labeled with the Sto Corporation company name and product name designation.

Other foam plastic insulation must be labeled in accordance with the current ICC-ES evaluation report in which it is recognized, or in accordance with IBC Section 2603.2 or IRC Section R316.2, as applicable.

TABLE 1—STOTHERM ci SYSTEM COMPONENTS[1,2]

SYSTEM	WATER-RESISTIVE BARRIER	ASTM C578 INSULATION BOARD TYPE	ADHESIVES	BASE COATS	FINISH
StoTherm ci Classic	StoGuard Gold Coat (see ESR-1233)	Type I	Sto BTS Plus Sto BTS Silo Sto BTS Xtra Sto TurboStick	Sto BTS Plus Sto BTS Silo Sto BTS Xtra Sto RFP	Stolit
StoTherm ci Premier	StoGuard Gold Coat (see ESR-1233)	Type I	Sto BTS Plus Sto BTS Silo Sto BTS Xtra Sto TurboStick	Sto BTS Plus Sto BTS Silo Sto BTS Xtra Sto RFP	StoSilco Lit
StoTherm ci Essence	StoGuard Gold Coat (see ESR-1233)	Type I	Sto Primer/Adhesive Sto Primer/Adhesive-B Sto TurboStick	Sto Primer/Adhesive Sto Primer/Adhesive-B	Sto DPR Finish
StoTherm ci Lotusan	Sto Guard Gold Coat (see ESR-1233)	Type I	Sto BTS Plus Sto BTS Silo Sto BTS Xtra Sto TurboStick	Sto BTS Plus Sto BTS Silo Sto BTS Xtra Sto RFP	Stolit Lotusan
StoTherm ci XPS	Sto Guard Gold Coat (see ESR-1233)	Type X	Sto TurboStick	Sto BTS Plus Sto BTS Xtra Sto Primer/Adhesive Sto Primer/Adhesive-B	Stolit Stolit Lotusan

[1]All base coats are reinforced with the appropriate Sto Mesh product listed in Table 2.
[2]Sto Primer is an optional component of the systems listed above.

TABLE 2—REINFORCING MESH PRODUCTS

PRODUCT NO.	PRODUCT NAME[1]	NOMINAL WEIGHT, oz/yd^2 (g/m^2)
80920E	Sto Mesh	4.5 (153)
80919	Sto Detail Mesh	4.2 (142)
80985	Sto 6-oz. (170 g) Mesh	6.0 (170)
80918	Sto Intermediate Mesh	11.0 (373)
80921	Sto Armor Mat	15.0 (509)
80922	Sto Armor Mat XX	20.0 (678)
80921A	Sto Cormer Mat	7.6 (258)

[1]Other listed mesh products may be used for detail construction or to supplement impact resistance of the EIFS.

TABLE 3—WIND LOAD DESIGN[1]

FRAMING MEMBERS[2]				SHEATHING			WIND LOAD CAPACITY, psf (Pa)		SYSTEM
Wood, min. size (inches)	Metal		Maximum Spacing (inches)	Type	Thickness (inch)	Maximum Fastener Spacing[3], (inches)	Neg.	Pos.	
	Min. Depth (inches)	Min. Gage							
2x4 (nominal)	--	--	16	Wood-based	3/8	8	20	36	Classic Premier
--	3 1/2	18	16	Wood-based	3/8	8	38	60	Essence
--	3 1/2	18	16	Gypsum	1/2	8	20	35	Classic PremierEssence Lotusan
--	3 1/2	18	16	Gypsum	5/8	8	38	60	Essence
--	6	18	16	Gypsum	5/8	6	40	50	Classic Premier Essence Lotusan (with Turbo Stick Adhesive and Type I EPS)
--	6	18	16	Gypsum	5/8	6	63	58	StoTherm ci XPS
Concrete or masonry substrates							54	54	Classic Premier Lotusan

For **SI:** 1 inch = 25.4 mm, 1 psf = 0.0479 kPa.

[1]Applicable to all StoTherm materials listed in Tables 1 and 2.
[2]Deflection limitation 1/240, designed in accordance with applicable code.
[3]Fasteners must be No. 6, flathead, corrosion-resistant screws [minimum 0.292-inch (7.4 mm) head diameter].

TABLE 4—ASSEMBLIES FOR USE IN TYPES I THROUGH IV CONSTRUCTION

FRAMING MEMBERS[5,8]			INTERIOR SHEATHING[1,7] (TYPE X GYPSUM)		EXTERIOR SHEATHING (TYPE X GYPSUM)		MAX. INSULATION BOARD THICKNESS, (inches)	SYSTEM
Metal		Max. Spacing (inches)	Min. Thickness (inch)	Max. Fastener Spacing (inches)	Min. Thickness (inch)	Max. Fastener Spacing (inches)		
Min. Depth (inches)	Min. Gage							
3 1/2	18	16	1/2	8 at perimeter 12 in field[2]	1/2	6 at perimeter 8 in field[3]	12	Essence
3 1/2	18	16[6]	1/2	6[4]	5/8	6 at perimeter 8 in field[3]	12	Classic Premier
3 1/2	18	16[6]	5/8	8 at perimeter 12 in field	5/8	8 at perimeter 12 in field	9	Classic with Turbo Stick adhesive and Type I EPS
3 1/2	18	16[6]	5/8	8 at perimeter 12 in field	5/8	8 at perimeter 12 in field	6	StoTherm ci XPS with Sto BTS Xtra base coat and Stolit finish

For **SI:** 1 inch = 25.4 mm.

[1]All board joints backed by framing.
[2]Fasteners are minimum No. 8, Type S, corrosion-resistant screws, with sufficient length to penetrate framing a minimum of 3/8 inch (9.5 mm).
[3]Fasteners are No. 6 drywall screws having sufficient length to penetrate framing a minimum of 3/8 inch (9.5 mm).
[4]Fasteners are No. 6 by 1 1/4-inch-long (31.7 mm), buglehead drywall screws.
[5]Stud cavities at floor levels are blocked with Thermafiber insulation (as described in a current ICC-ES evaluation report), 4 lb/ft^3 (64 kg/m^3) density, 4 inches (102 mm) thick and 2 feet (610 mm) wide.
[6]Stud cavities must be filled with R-11 fiberglass insulation.
[7]All joints must be taped and treated with joint compound. Intermediate fastener heads are treated with joint compound in accordance with ASTM C840 or GA216.
[8]Openings must be framed with minimum 0.0428-inch-thick steel framing.

TABLE 5—FIRE-RESISTANCE-RATED ASSEMBLIES[1,2]

FIRE-RESISTANCE RATING (hrs)	FRAMING MEMBERS			INTERIOR SHEATHING			EXTERIOR SHEATHING			MAXIMUM EPS INSULATION BOARD THICKNESS (inches)
	Min. Depth (inches)	Mi.n Gage	Max. Spacing (inches)	Type	Min. Thickness (inch)	Max. Fastener Spacing (inches)	Type	Min. Thickness (inch)	Max. Fastener Spacing[5] (inches)	
1	$3^1/_2$	18	16	Type X gypsum[5]	$^5/_8$	8 o.c. on perimeter 12 o.c. in field[3]	Type X gypsum	$^5/_8$	6 at perimeter 8 in field[4]	4
2	$3^1/_2$	18	16	Two layers of Type X gypsum[5]	$^5/_8$	Base layer at 24 o.c. Face layer at 8 o.c.[6]	Two layers of Type X gypsum	$^5/_8$	Base layer at 24 o.c. Face layer at 8 o.c.[6]	4

For **SI:** 1 inch = 25.4 mm.

[1]Applicable to all StoTherm ci materials listed in Table 1, except to StoTherm ci systems which use the Sto Turbo Stick adhesive.
[2]All board joints must be blocked
[3]Fasteners are minimum No. 6, $1^1/_4$-inch-long (32 mm), self-tapping, corrosion-resistant bugle head screws.
[4]Fasteners are No. 6 drywall screws having sufficient length to penetrate framing a minimum of $^3/_8$ inch (9.5 mm).
[5]Interior wallboard joints must be covered with tape and joint compound. Interior fastener heads are covered with joint compound in accordance with ASTM C840 or GA 216.
[6]Fasteners for the base layer of gypsum board are No. 6, $1^1/_4$-inch-long, self-tapping, corrosion-resistant bugle-head screws. Fasteners for the face layer are $1^7/_8$-inch-long, self-tapping, corrosion-resistant bugle-head screws.

ICC-ES Evaluation Report

ESR-1748 FBC Supplement*

Reissued October 2015

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ATLANTA, GEORGIA 30331
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EVALUATION SUBJECT:

STOTHERM® ci®

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that StoTherm® ci® systems, recognized in ICC-ES master evaluation report ESR-1748, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2014 and 2010 *Florida Building Code—Building*
- 2014 and 2010 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The StoTherm® ci® systems, described in Sections 2.0 through 7.0 of the master evaluation report ESR-1748, comply with the 2014 and 2010 *Florida Building Code—Building* and 2014 and 2010 *Florida Building Code—Residential*, provided the design and installation are in accordance with the *International Building Code®* (IBC) provisions noted in the master report under the following condition:

Design wind loads must be based on Section 1609, using the load combinations of Section 1605.3, of the 2014 or 2010 Florida Building Code—Building or the design wind loads in Section R301.2.1 of the 2014 or 2010 Florida Building Code—Residential, as applicable.

Use of the StoTherm® ci® for compliance with the High-Velocity Hurricane Zone provisions of the 2014 and 2010 *Florida Building Code—Building* and the 2014 and 2010 *Florida Building Code—Residential* has not been evaluated and is outside the scope of this evaluation report.

For products falling under Florida Rule 9N-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 master report, reissued October 2015 and revised November 2015.

***Revised November 2015**