



ICC-ES Evaluation Report ESR-1030

Reissued December 2022
Revised December 20, 2022

This report is subject to renewal December 2023.

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 CORPORATION

EVALUATION SUBJECT:

STO RAINSCREEN AND STO RAINSCREEN II CLASS PB EXTERIOR INSULATION AND FINISH SYSTEMS WITH DRAINAGE

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018 and 2015 *International Building Code*® (IBC)
- 2021, 2018 and 2015 *International Residential Code*® (IRC)

For evaluation for compliance with codes adopted by Los Angeles Department of Building and Safety (LADBS), see [ESR-1030 LABC and LARC Supplement](#).

Properties evaluated:

PROPERTY	IBC Chapter	IRC Chapter
Exterior insulation and finish systems (EIFS)	14	R7
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

The Sto RainScreen and RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage comply with 2021 and 2018 IBC Section 1407 (2015 IBC Section 1408) and IRC Section R703.9. The systems comply with the requirements of 2021 and 2018 IBC Section 1407.4.1 (2015 IBC Section 1408.4.1) and IRC Section R703.9 as EIFS with drainage.

Sto RainScreen and RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage may be installed in buildings of any construction type under the IBC (Types I through V) and dwelling under the IRC when installed in accordance with the applicable sections of Section 4.0.

3.0 DESCRIPTION

3.1 System Components:

Sto RainScreen and RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage consist of a water-resistive barrier, mechanically attached grooved or 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:

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

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:

- Glass mat faced gypsum listed in a current evaluation report as complying with ASTM C1177.

- Gypsum sheathing complying with ASTM C1396.
- Plywood, Exposure 1 exterior grade complying with PS-1.
- Oriented Strand Board (OSB), Exposure 1, complying with PS-2.
- Concrete and masonry complying with the applicable code. **Note:** A tension load test program in accordance with Section 4.3.5 of AC235 must be implemented at the project specific locations and the results submitted to code official for approval.

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

3.5 Water-resistive Barrier:

The barrier must be one of the following:

- No. 15 asphalt felt, complying with ASTM D226, Type I.
- Over wood-based sheathing, two layers of Grade D building paper or Type I building paper complying with ASTM E2556, or one layer of Grade D Building paper with 60 minute water-resistance or Type II building paper complying with ASTM E2556, as required by IBC Section 2510.6 or 2021 and 2018 IRC Section R703.7.3 (2015 IRC Section R703.6.3).
- Over wood-based and gypsum sheathing, StoGuard with Sto Gold Coat water-resistive coating, as described in ICC-ES evaluation report ESR-1233.
- Other water-resistive barriers are permitted, provided they have a current evaluation report.

3.6 Drainage:

Drainage must be provided between the insulation board and the water-resistive barrier by using one of the following:

- Drainage Insulation Boards are 1¹/₂ to 4 inches (38 to 102 mm) with grooves on the back side for drainage. The grooves must run the full width of the board and be 1 inch (25.4 mm) wide by 1/4 inch (6.4 mm) deep, spaced 1³/₄ inches (44 mm) on center.
- Drainage mat used with flat insulation boards must be either Ultra-Lath or galvanized expanded metal lath. Ultra-Lath, manufactured by Plastic Components, Inc., is a UV-stabilized, heavy-duty extended polyolefin (polyethylene or polypropylene), self-furred lath. Ultra-Lath has 1/4-inch-by-1/4-inch (6.4 mm by 6.4mm) square holes oriented 45 degrees to the length of the lath, and is available either as a mat measuring 27 inches wide by 96 inches long (686 mm by 2438 mm) or as a roll measuring 27 inches wide by 100 feet long (686 mm by 30 480 mm). The galvanized, expanded metal lath is a self-furred diamond mesh, weighing a minimum of 2.5 pounds per square yard (0.95 kg/m²), and must comply with the applicable code.

4.0 DESIGN AND INSTALLATION

4.1 General:

Sto RainScreen and RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage 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/wp-content/uploads/2017/07/StoTherm-RainScreen-A900-Specification.pdf>
- <http://www.stocorp.com/wp-content/uploads/2017/07/Sto-9-00-Rainscreen-Details-PDF.zip>

- <http://www.stocorp.com/wp-content/uploads/2017/07/Rainscreen-II-A800-Specification.pdf>
- <http://www.stocorp.com/wp-content/uploads/2017/07/Sto-8-00-Rainscreen-II-Details-PDF.zip>

4.2 Drainage:

Sto Rainscreen and Sto Rainscreen II provide drainage as noted 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 Sto RainScreen and RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage based on tested assemblies.

4.4 Weather Protection:

Sto RainScreen and RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage systems comply with 2021 and 2018 IBC Section 1403.2 (2015 IBC Section 1404.2) 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 Special Inspection:

For recognition under the IBC, special Inspections of the water-resistive barrier coating must be conducted in accordance with 2021 IBC Section 1705.17 (2018 and 2015 IBC Section 1705.16). Refer to STO Corp. third-party inspection guidelines for verifying field preparation of materials.

5.0 CONDITIONS OF USE

The Sto RainScreen and Sto RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage 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 published 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 IBC Section 2603.8 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 (Editorially revised July 2020).
- 6.3 Data in accordance with NFPA 285 and NFPA 268 for the systems presented in Table 4 of this report.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-1030) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, containers of base coat, reinforcing mesh, and finish coat of the Sto RainScreen and Sto RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage described in this report must bear a label noting the manufacturer’s name (Sto Corp.) and address; product name; evaluation report number (ESR-1030); production date; batch number; quantity of material; storage, mixing and curing instructions; and expiration date.

The Windlock fasteners are packaged in cartons bearing the Windlock name; the designation Wind-Devil™, Wind-Devil 2™, ULP-3W2 or ULP-3S2; the quantity; and the installation instructions.

The weep screeds are packaged in cartons bearing the Plastic Components name and the part number (STDE).

Foam plastic insulation boards must be identified in accordance with their respective evaluation reports. When used on walls required to be of noncombustible construction, the EPS foam plastic boards must be identified along the edge of each board, and on both board faces of at least one board from each packaged bundle, with the following information:

- The Sto Corp. name and the evaluation report number (ESR-1030).
- The name and evaluation report number of the insulation board molder.
- The name of the inspection agency, as indicated in the evaluation report for the foam plastic.

7.3 The report holder’s contact information is the following:

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ATLANTA, GEORGIA 30331
(404) 346-3666
www.stocorp.com
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TABLE 1—STO RAINSCREEN AND STO RAINSCREEN II WITH DRAINAGE SYSTEM COMPONENTS¹

SYSTEM	WATER-RESISTIVE BARRIER	DRAINAGE MEDIUM ²	ASTM C578 INSULATION BOARD TYPE	INSULATION ATTACHMENT METHOD		BASE COAT	FINISHES
				Mechanical	Adhered		
Sto Rainscreen	See Section 3.5	Grooved EPS insulation board	See Section 3.2 Grooved EPS insulation board	Wind Devil and Wind Devil 2	N/A	Sto BTS Plus	StoLit StoSilco Lit
Sto Rainscreen II		Ultra-Lath or expanded metal lath	See Section 3.2 flat EPS insulation board	N/A	Sto BTS Plus	Sto BTS Plus	StoLit StoSilco Lit

¹All base coats are reinforced with the appropriate Sto Mesh product listed in Table 2.

² See Table 3 for drainage medium attachment details.

TABLE 2—REINFORCING MESH PRODUCTS

PRODUCT NO.	PRODUCT NAME ¹	NOMINAL WEIGHT, oz/yd ² (g/m ²)
80920E	Sto Mesh	4.5 (153)

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

TABLE 3—STO RAINSCREEN AND STO RAINSCREEN II ASSEMBLIES AND DESIGN WIND PRESSURES^{1,2}

ASSEMBLY/ DESIGN WIND PRESSURE	FRAMING	SHEATHING	SHEATHING ATTACHMENT	DRAINAGE MAT	DRAINAGE MAT ATTACHMENT	DRAINAGE INSULATION BOARD ATTACHMENT
1 (RainScreen II)/ Positive: 35 psf Negative: 30 psf	Min. 2-by-4 wood studs at max. 16 inches o.c.	Min. 7/16-inch-thick OSB or plywood	Min. 6d common nails at 6 inches o.c. along perimeter and 12 inches o.c. within the field	Ultra Lath or min. 2.5-pound-per- square-yard self- furred diamond mesh metal lath	No. 7 by 2-inch-long Type S-12, buglehead screws spaced a max. of 8 inches o.c. in both directions into sheathing	—
2 (RainScreen II)/ Positive: 35 psf Negative: 30 psf	Min. 18 gage steel studs at max. 16 inches o.c.	Min. 7/16-inch-thick OSB or plywood	No. 6 by 2-inch-long Type S-12, buglehead screws at 6 inches o.c. along perimeter, 12 inches o.c. within the field	Ultra Lath or min. 2.5-pound-per- square-yard self- furred diamond mesh metal lath	No. 7 by 2-inch-long Type S-12, buglehead screws spaced a max. of 8 inches o.c. in both directions into sheathing	—
3 (RainScreen II)/ Positive: 65 psf Negative: 55 psf	Min. 18 gage steel studs at max. 16 inches o.c.	Min. 5/8-inch-thick gypsum sheathing	Min. No. 6 by 1 1/4- inch-long Type S-12 buglehead screws spaced 8 inches o.c. along studs	Min. 2.5-pound-per- square-yard self furred diamond mesh metal lath	No. 6 by 2-inch-long Type S-12, buglehead screws spaced a max. of 8 inches o.c. along studs	—
4 (RainScreen II)/ Positive: 35 psf Negative: 30 psf	Min. 2-by-4 wood studs at max. 16 inches o.c.	Min. 5/8-inch-thick gypsum sheathing	No. 6 by 1 5/8-inch- long Type S-12, buglehead screws spaced 8 inches o.c. along studs	Min. 2.5-pound-per- square-yard self- furred diamond mesh metal lath	No. 7 by 2-inch-long Type S-12, buglehead screws spaced a max. of 8 inches o.c. along studs	—
5 (RainScreen)/ Positive: 35 psf Negative: 30 psf	Min. 2-by-4 wood studs at max. 16 inches o.c.	Min. 7/16-inch-thick OSB or plywood	Min. 6d common nails at 6 inches o.c. along perimeter and 12 inches o.c. within the field	—	—	Wind-Devil™ UWLM-2 screws spaced per Figure 1
6 (RainScreen)/ Positive: 65 psf Negative: 55 psf	Min. 18 gage steel studs at max. 16 inches o.c.	Min. 5/8-inch-thick gypsum sheathing or 1/2- or 5/8-inch- thick Dens-Glass Gold gypsum sheathing	Min. No. 6 by 1 1/4- inch-long Type S-12 buglehead screws spaced 8 inches o.c. along studs	—	—	Wind-Devil-2™ UST-3 screws spaced a max. of 8 inches o. c. along studs

For SI: 1 inch = 25 mm, 1 psf = 47.88 Pa, 1 pound = 0.454 kg.

¹Applicable to all Sto Rainscreen materials listed in Tables 1.

²Framing members must be designed to resist all positive and negative transverse design loads with a maximum allowable deflection of 1/240, of the span.

TABLE 4—ASSEMBLIES FOR USE IN TYPES I THROUGH IV CONSTRUCTION^{3,5}

FRAMING MEMBER		INTERIOR SHEATHING ^{1,4} (TYPE X GYPSUM)		EXTERIOR SHEATHING (TYPE X GYPSUM) ¹		Water-resistive Barrier	MAX. INSULATION BOARD THICKNESS, (inches)	SYSTEM
Metal	Max. Spacing (inches)	Min. Thickness (inch)	Max. Fastener Spacing ² (inches)	Min. Thickness (inch)	Max. Fastener Spacing ² (inches)			
3 5/8-inch-by No. 18 gage steel (0.0478- inch thick steel)	16	5/8	8 at perimeter 12 in field ²	5/8	8 at perimeter 12 in field ³	No. 15 asphalt felt complying with ASTM D226 Type 1 or Sto Gold Coat water-resistive coating listed in ESR-1233	4	Sto Rainscreen and Sto Rainscreen II

For SI: 1 inch = 25.4 mm.

¹All board joints backed by framing.

²Fasteners are No. 6 by 1 1/4-inch-long (31.7 mm), buglehead drywall screws.

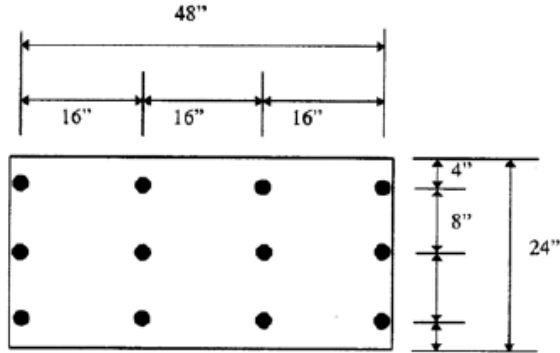
³Stud cavities at floor levels are blocked with mineral wool insulation, 4 lb/ft³ (64 kg/m³) density, 4 inches (102 mm) thick and 2 feet (610 mm) wide.

⁴All joints must be taped and treated with joint compound. Intermediate fastener heads are treated with joint compound in accordance with ASTM C840 or GA216.

⁵Openings must be framed with minimum 0.0478-inch-thick steel framing.

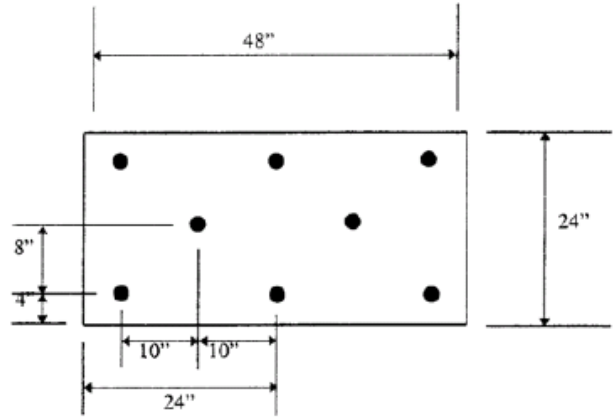
**GYPSUM SHEATHING
OVER STEEL FRAMING**

FASTENING PATTERN



**WOOD-BASED SHEATHING
OVER WOOD FRAMING**

FASTENING PATTERN



FASTENER SELECTION		
EPS BOARD THICKNESS (inches)	WIND DEVIL 2	FASTENER LENGTH (inches)
1½	UST-3	2 ⁵ / ₈
2	UST-4	3
2½	UST-5	4
3	UST-6	4 ³ / ₈
3½	UST-7	5
4	UST-8	6

FASTENER SELECTION		
EPS BOARD THICKNESS (inches)	WIND DEVIL	FASTENER LENGTH (inches)
1½	UWLM-2	2
2	UWLM-3	2½
2½	UWLM-4	3
3	UWLM-5	3¾
3½	UWLM-7	5
4	UWLM-7	5

For SI: 1 inch = 25.4 mm.

FIGURE 1—STO DRAINAGE INSULATION BOARD FASTENING DETAILS (RAINSCREEN)

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 System

REPORT HOLDER:

STO CORPORATION

EVALUATION SUBJECT:

STO RAINSCREEN AND STO RAINSCREEN II CLASS PB EXTERIOR INSULATION AND FINISH SYSTEMS WITH DRAINAGE

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Sto RainScreen and Sto RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage, described in ICC-ES evaluation report [ESR-1030](#), have also been evaluated for compliance with the codes noted below as adopted by 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 Sto RainScreen and Sto RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage, described in Sections 2.0 through 7.0 of the evaluation report [ESR-1030](#), comply with the LABC Chapters 7, 14 and 26, and the LARC Sections R316 and R703, and are subject to the conditions of use described in this report.

3.0 CONDITIONS OF USE

The Sto RainScreen and Sto RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage described in this evaluation report must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-1030](#).
- The design, installation, conditions of use and identification of the Sto RainScreen and Sto RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-1030](#).
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.

This supplement expires concurrently with the evaluation report, reissued December 2022 and revised December 20, 2022.

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 CORPORATION

EVALUATION SUBJECT:**STO RAINSCREEN AND STO RAINSCREEN II CLASS PB EXTERIOR INSULATION AND FINISH SYSTEMS WITH DRAINAGE****1.0 REPORT PURPOSE AND SCOPE****Purpose:**

The purpose of this evaluation report supplement is to indicate that Sto RainScreen and RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage, described in ICC-ES evaluation report ESR-1030, have also been evaluated for compliance with the code(s) noted below.

Applicable code edition(s):

- 2022 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 and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 California Residential Code (CRC)

2.0 CONCLUSIONS**2.1 CBC:**

The Sto RainScreen and RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage, described in Sections 2.0 through 7.0 of the evaluation report ESR-1030, comply with CBC Chapters 14 and 26, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 14, 16, 17 and 26, as applicable.

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 Sto RainScreen and RainScreen II Class PB Exterior Insulation and Finish Systems with Drainage, described in Sections 2.0 through 7.0 of the evaluation report ESR-1030, comply with CRC Chapters 3 and 7, provided the design and installation are in accordance with the 2021 *International Residential Code*® (IRC) provisions noted in the evaluation report.

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DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 24 00—Exterior Insulation and Finish Systems

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1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Sto Rainscreen systems, described in ICC-ES evaluation report ESR-1030, have 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 Sto Rainscreen systems, described in Sections 2.0 through 7.0 of the ICC-ES evaluation report ESR-1030, comply with the *Florida Building Code—Building* and the *Florida Building Code—Residential*. The design requirements must be determined in accordance with the *Florida Building Code—Building* and the *Florida Building Code—Residential* as applicable. The installation requirements noted in the ICC-ES evaluation report ESR-1030 for the 2018 *International Building Code*® meet the requirements of the *Florida Building Code—Building* and the *Florida Building Code—Residential*, as applicable, with the following condition:

Installation must meet the requirements of Section 1403.8 of the *Florida Building Code—Building* or Section R318.7 of the *Florida Building Code—Residential*, as applicable.

Use of the Sto Rainscreen systems for compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and the *Florida Building Code—Residential* has not been evaluated and is outside the scope of this evaluation 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).

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