ICC-ES Evaluation Report

ESR-2407

Reissued November 2023

This report also contains:

- CBC Supplement

Subject to renewal November 2024

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DIVISION: 07 00 00 THERMAL AND MOISTURE PROTECTION **Section: 07 21 00—Thermal Insulation** **Section: 07 22 00—Roof and Deck Insulation**	**REPORT HOLDER: PROWALL BUILDING PRODUCTS, INC.**	**EVALUATION SUBJECT: PROWALL FOAM PLASTIC INSULATION BOARDS**	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2021, 2018, 2015, 2012, 2009 and 2006 *International Residential Code®* (IRC)
- 2021, 2018, 2015, 2012, 2009 and 2006 *International Energy Conservation Code®* (IECC)

Property evaluated:

- Physical properties
- Surface burning characteristics
- Thermal performance (R-value)
- Attic and crawl space installation

2.0 USES

2.1 PROWALL EPS Insulation Boards:

The PROWALL expanded polystyrene (EPS) insulation boards described in this evaluation report are used as a general, nonstructural, thermal insulation material. Other uses include installation on the outside faces of exterior walls in buildings of Type V-B (IBC) construction or structures constructed in accordance with the IRC; in wall cavities; in door cavities; as a component of classified roof assemblies; at the exterior perimeter of foundations and basements; and as architectural shapes. When used as the core of sandwich panels, the insulation boards must be specifically recognized in a current evaluation report.

PROWALL EPS insulation boards may be used in roof covering assemblies when specifically recognized in a current ICC-ES report for the roof-covering system. The evaluation report for the roof covering material must recognize the EPS insulation as part of a Class A, B or C roof assembly tested in accordance with ASTM E108 or UL 790.

PROWALL EPS insulation boards may be used as a core material in doors that do not require a fire-resistance rating when installed in accordance with IBC Sections 2603.4.1.7 and 2603.4.1.8 or 2021, 2018, 2015, 2012 and 2009 IRC Sections R316.5.5 and R316.5.6 (2006 IRC Sections R314.5.5 and R314.5.6).

2.2 PROWALL EIFS Grade (PBP-EIFS) Insulation Boards:

PROWALL EIFS Grade (PBP-EIFS) insulation boards are used as nonstructural thermal insulation in exterior insulation and finish systems (EIFS). The insulation is used on the outside faces of exterior walls when an ASTM C578, Type I, EPS insulation board is specified in a current ICC-ES evaluation report for an EIFS.

2.3 PROWALL One-Coat Stucco (PBP-OCS) Insulation Boards:

PROWALL One-Coat Stucco (PBP-OCS) insulation boards are used in one-coat cementitious exterior wall coating systems recognized in an evaluation report in which a generic ASTM C578, Type I or Type II, EPS insulation board is specified.

2.4 PROWALL Attic and Crawl Space (PBP-ACS) Insulation Board:

PROWALL attic and crawl space (PBP-ACS) insulation boards installed on the interior side of walls in attics and crawl spaces may be left exposed as prescribed in Section 4.4 of this report.

2.5 PROWALL Drainboard:

PROWALL Drainboard insulation boards are used in one-coat cementitious exterior wall coating systems recognized in a current ICC-ES evaluation report in which a generic ASTM C578, Type II, EPS insulation board is specified.

3.0 DESCRIPTION

3.1 General:

PROWALL insulation boards having a maximum thickness of 6 inches (152 mm) and a maximum nominal density of 2 pcf (32.0 kg/m^3), 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.

3.2 PROWALL EPS Insulation Boards:

PROWALL EPS boards are molded closed-cell EPS insulation boards. The boards are available as Type I, II, or IX boards complying with ASTM C578, and have densities and thermal resistance values as shown in Table 1. The boards are available in various lengths and widths and in thicknesses up to 6 inches (152 mm) with square, shiplap, or tongue-and-groove edges.

3.3 PROWALL EIFS Grade (PBP-EIFS) Insulation Board:

PROWALL EIFS Grade (PBP-EIFS) insulation boards have a minimum density of 0.90 pcf (14.4 kg/m^3). The boards comply as Type I in accordance with ASTM C 578, and are available in various thicknesses up to 6 inches (152 mm) with square, shiplap, or tongue-and-groove edges. The boards have more restrictive requirements than the EPS board for conditioning, product dimensions, marking and packaging. For thermal resistance properties, see Table 1.

3.4 PROWALL One-Coat Stucco (PBP-OCS) Insulation Board:

PROWALL One-Coat Stucco boards are maximum 1$^1/_2$-inch-thick (38 mm), nominally 1.5 pcf density (24 kg/m^3), EPS insulation boards with tongue-and-groove edges. The boards are available in various lengths and widths. The boards comply as Type II in accordance with ASTM C 578. For thermal resistance properties, see Table 1.

3.5 PROWALL Attic and Crawl Space (PBP-ACS) Insulation Board:

PROWALL attic and crawl space (PBP-ACS) insulation boards have a maximum thickness of 1$^1/_2$ inches (38 mm) and a maximum density of 1.5 pcf (24 kg/m^3).

3.6 PROWALL Drainboard:

PROWALL Drainboard is ½-inch (12.7 mm) or 1-inch-thick (25.4 mm), nominally 1.5 pcf density (24 kg/m^3), complying with ASTM C578 as Type II EPS insulation board, having ¼-inch-wide-by-$^1/_8$-inch-deep (6.4 by 3.2 mm) vertical grooves spaced 12 inches (405 mm) on center on the back face of the insulation boards.

4.0 DESIGN AND INSTALLATION

4.1 General:

Installation 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.

Except as described in Section 4.4, the interior of the building must be separated from the insulation boards by an approved thermal barrier as required in IBC Section 2603.4, 2021, 2018, 2015, 2012 and 2009 IRC Sections R316.4 or R316.5 or 2006 IRC Section R314.4 or R314.5. The installation of the insulation boards in areas where the probability of termite infestation is "very heavy" must in accordance with 2021, 2018, 2015, 2009 and 2006 IBC Section 2603.8 (2012 IBC Section 2603.9) or 2021, 2018, 2015, 2012 and 2009 Section R318.4 (2006 IRC Section R320.5), as applicable.

A water-resistive barrier must be installed in accordance with 2021 and 2018 IBC Section 1402.2 (2015, 2012, 2009 and 2006 IBC Section 1403.2) or IRC Section R703, as applicable. If required, a vapor retarder must be installed in accordance with 2021 and 2018 IBC Section 1404.3 (2015, 2012, 2009 and 2006 IBC Section 1405.3 or 2021, 2018 and 2015 IRC Section R702.7 (2012 IRC Section R702.7 or 2009 IRC Section R601.3), as applicable. Protection against condensation in exterior wall assemblies must be provided in accordance with 2021 and 2018 IBC Section 1402.2 (2015, 2012, 2009 and 2006 IBC Section 1403.2) or 2021, 2018, 2015, 2012 and 2009 IRC Section R703; under the 2006 IRC, a vapor retarder must be provided in accordance with IRC Section R318.

The insulation board may be applied to exterior faces of walls to a maximum thickness of $1^1/_2$ inches (38 mm), except insulation board thicknesses greater than $1^1/_2$ inches (38 mm) may be permitted if such installation is recognized in a current ICC-ES evaluation report on a wall covering. The attachment of finish materials over the insulation board must allow for a minimum 1-inch (25.4 mm) penetration of the fasteners into wood framing, or the fasteners must protrude through structural sheathing or structural steel framing beneath. Sheathing or a wall covering over the insulation must be structurally adequate to resist horizontal forces perpendicular to the wall. All walls must be braced in accordance with 2021, 2018 and 2015 IBC Section 2308.6 (2012, 2009 and 2006 IBC Sections 2308.9.3 and 2308.12.4), or IRC Section R602.10, as applicable.

Insulation boards must not be used as a nailing base for exterior finish materials. Fasteners used to attach exterior finish material over insulation boards must comply with a current ICC-ES evaluation report for proprietary wall covering materials, 2021, 2018 IBC Sections 1403 or 1404, 2015, 2012, 2009 and 2006 IBC Sections 1404 or 1405, or 2021, 2018 and 2015 IRC Sections R703.15, R703.16 or R703.17 [2012, 2009 and 2006 IRC Table R703.4], and the installation instructions from the exterior finish manufacturer.

When the insulation boards are applied over open framing, vertical butt joints must be over framing members. For cementitious exterior wall coating systems, unbacked joints are permitted only when specified in the evaluation report on the cementitious exterior wall coating system.

Insulation boards for use as roof insulation must comply with, and be installed in accordance with, a current ICC-ES evaluation report on a roof covering system.

4.2 PROWALL EIFS Grade (PBP-EIFS) Insulation Board:

Type I PROWALL EIFS Grade (PBP-EIFS) insulation boards must be installed in accordance with an ICC-ES evaluation report on an EIFS wall system.

4.3 Cementitious Exterior Wall Coatings:

When used with ICC-ES–recognized cementitious exterior wall coatings, the PROWALL OCS boards are an alternative to 1-inch-thick (25.4 mm), 1.5 pcf density (24 kg/m^3), EPS insulation specified in an ICC-ES evaluation report on the coating. The PROWALL OCS boards must be installed over a water-resistive barrier with vertical insulation board joints directly over framing, or must be installed over solid sheathing. Conditions in the cementitious exterior wall coatings evaluation report for the EPS insulation, such as orientation, tongue-and-groove edges, square edges and taping, must be observed. Fasteners for insulation boards thicker than $1^1/_2$ inches (38 mm) must be considered for lateral resistance to ensure support for the exterior wall coatings. Finish materials over the insulation boards must be structurally adequate to resist the required horizontal forces perpendicular to the wall.

4.4 Ignition Barrier—Attics and Crawl Spaces:

4.4.1 Application with a Prescriptive Ignition Barrier:

When PROWALL EPS insulation boards are installed within attics and crawl spaces, where entry is made only for service of utilities, an ignition barrier must be installed in accordance with IBC Section 2603.4.1.6, 2021, 2018, 2015, 2012 and 2009 IRC Sections R316.5.3 and R316.5.4 or 2006 IRC Sections R314.5.3 and R314.5.4, as applicable. The ignition barrier must be consistent with the requirements for the type of construction required by the applicable code, and must be installed in such a manner that the insulation boards

are not exposed. The attic or crawl space area must be separated from the interior of the building by an approved thermal barrier, as described in Section 4.1.

4.4.2 Application without a Prescriptive Ignition Barrier:

PROWALL (PBP-ACS) insulation boards may be installed at a maximum thickness of 4 inches (102 mm) on the interior side of walls in attics and crawl spaces without an ignition barrier separating the attic or crawl space from the EPS insulation boards provided all of the following conditions are met:

1. Entry to the attic or crawl space is only to service utilities, and no storage is permitted.
2. There are no interconnected crawl space or attic areas.
3. Air in the attic or crawl space is not circulated to other parts of the building.
4. Attic ventilation is provided when required by 2021 and 2018 IBC Section 1202.2 (2015, 2012, 2009 and 2006 IBC Section 1203.2) or IRC Section R806, as applicable.
5. Under-floor (crawl space) ventilation is provided when required by 2021 and 2018 IBC Section 1202.4 [(2015 IBC Section 1203.4), (2012, 2009 and 2006 IBC Section 1203.3)] or IRC Section R408.1, as applicable.
6. Combustion air is provided in accordance with Section 701 of the 2021, 2018, 2015, 2012 and 2009 *International Mechanical Code*® (IMC) or Sections 701 and 703 of the 2006 *International Mechanical Code*® (IMC).
7. Insulation boards must not exceed 1.5 inches (38 mm) thick, and have a maximum density of 1.5 pcf (24 kg/m^3).

5.0 CONDITIONS OF USE:

The PROWALL EPS insulation boards 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 The boards must be manufactured, identified and installed in accordance with this report, the manufacturer's published installation instructions and the applicable code. If there is a conflict between the manufacturers' published installation instructions and this report, this report governs.

5.2 The insulation boards must be covered with an approved exterior wall covering. A water-resistive barrier complying with 2021 and 2018 IBC Section 1403.2 (2015, 2012, 2009 and 2006 IBC Section 1404.2) or IRC Section R703.2, as applicable, must be installed as specified for the approved assembly.

5.3 The exterior wall covering spanning between wall framing members must provide the necessary structural resistance to wind and seismic forces.

5.4 Insulation boards must not be used as a nailing base for exterior siding materials. All nailing must be made through the insulation into the wall framing or structural sheathing as required by the siding manufacturer's published installation instructions or the applicable code.

5.5 Except as noted in Section 4.4, the insulation boards must be separated from the interior of the building with an approved thermal barrier complying with IBC Section 2603.4, 2021, 2018, 2015, 2012 and 2009 IRC Sections R316.4 or R316.5 or 2006 IRC Section R314.4 or R314.5, as applicable.

5.6 Installation in unvented attics, when equipped with vapor diffusion ports, in accordance with Section 1202.3, Item 5.2 of the 2021 IBC and Section R806.5, Item 5.2 of the 2021 and 2018 IRC, is outside the scope of this report.

5.7 Use of the EPS insulation boards in areas where the probability of termite infestation is "very heavy" must be in accordance with 2021 2018, 2015, 2009 and 2006 IBC Section 2603.8 (2012 IBC 2603.9) or 2021 2018, 2015, 2012 and 2009 Section R318.4 (2006 IRC Section R320.5), as applicable.

5.8 The insulation boards are produced in Casa Grande, Arizona, under a quality control program with inspections provided by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated June 2015 (Editorially revised December 2020), including data in accordance with Appendix B.

7.0 IDENTIFICATION

7.1 General: Product labeling shall include, the name of the report holder or listee, and the ICC-ES mark of conformity. The listing or evaluation report number (ICC-ES ESR-2407) may be used in lieu of the mark of conformity. Packages of insulation boards are labeled with the name and the address of the manufacturer (PROWALL Building Products, Inc.); the product name; the date of manufacture; the nominal board density; the flame-spread index (25 or less); the smoke-developed index (450 or less); the thermal-resistance value (*R*-value); and the evaluation report number (ESR-2407).

7.2 PROWALL EIFS Grade (PBP-EIFS) Insulation Boards: In addition to the identification provisions noted in Section 7.1, PROWALL EIFS Grade (PBP-EIFS) insulation boards are identified along one edge, and on both faces of one board from each package, with the name of the exterior coating (EIFS) company and the EIFS company's evaluation report number.

7.3 PROWALL One-Coat Stucco (PBP-OCS) Insulation Boards: In addition to the identification provisions noted in Section 7.1, PROWALL One-Coat Stucco boards are identified along the short, square edge, with the board type (Type II); the nominal density (1.5 pcf); the PROWALL name; and the evaluation report number (ESR-2407).

7.4 PROWALL Attic and Crawl Space (PBP-ACS) Insulation Boards: In addition to the identification provisions noted in Section 7.1, PROWALL PBP-ACS insulation boards used for installations in attics and crawl spaces as described in Section 4.4 must be identified as being produced from Styropek USA, BVPV Styrenics, StyroChem Canada, Ltd., or Epsilyte LLC beads.

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

PROWALL BUILDING PRODUCTS, INC.
1092 NORTH JEFFERSON AVENUE
CASA GRANDE, ARIZONA 85122
(520) 568-9300
www.prowall.com

TABLE 1—DENSITIES AND *R*-VALUES FOR INSULATION BOARDS

EPS CLASSIFICATION	NOMINAL DENSITY (pcf)	MINIMUM DENSITY (pcf)	*R*-VALUE FOR 1-INCH THICKNESS AT 75°F [(hr-ft^2-°F)/Btu]
Type I	1.00	0.90	3.6
Type II	1.50	1.35	4.0
Type IX	2.00	1.80	4.2

For **SI:** 1 inch = 25.4 mm, 1 pcf = 16.02 kg/m^3, 1°F·ft^2·hr/Btu = 0.176 m^2·K/W, 1°F = 1.8°C+32.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 21 00—Thermal Insulation
Section: 07 22 00—Roof and Deck Insulation

REPORT HOLDER:

PROWALL BUILDING PRODUCTS, INC.

EVALUATION SUBJECT:

PROWALL FOAM PLASTIC INSULATION BOARDS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the PROWALL EPS Foam Plastic Insulation Boards, described in ICC-ES evaluation report ESR-2407, have also been evaluated for the codes noted below.

Applicable code editions:

- 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 the State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

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

2.0 CONCLUSIONS

2.1 CBC and CRC:

The PROWALL EPS Foam Plastic Insulation Boards, described in Sections 2.0 through 7.0 of the evaluation report ESR-2407, comply with the 2019 CBC and CRC, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report.

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 CEC:

The PROWALL EPS Foam Plastic Insulation Boards, described in Sections 2.0 through 7.0 of the evaluation report ESR-2407, comply with the 2019 CEC, provided the design and installation are in accordance with the 2018 *International Building Code*® (IBC) provisions noted in the evaluation report.

2.2.1 Conditions of Use:

In accordance with Section 110.8 of the 2019 California Energy Code, verification of certification by the Department of Consumer Affairs, Bureau of Household Goods and Services, must be provided to the code official, demonstrating that the insulation conductive thermal performance is approved pursuant to the California Code of Regulations, Title 24, Part 12, Chapters 12-13, Article 3, “Standards for Insulating Material.” The certification must be verified with the DCA Bureau of Household Goods and Services. The following directory link may be used for verification:

https://bhgs.dca.ca.gov/consumers/ti_directory.pdf

This supplement expires concurrently with the evaluation report, reissued November 2023.