



ICC-ES Evaluation Report

Reissued May 2022

ESR-1634

This report is subject to renewal May 2024.

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION

Section: 07 21 00—Thermal Insulation

REPORT HOLDER:

EPSILYTE, LLC

EVALUATION SUBJECT:

EPSILYTE, LLC GRADES 54 AND 40 EXPANDABLE POLYSTYRENE BEADS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2018, 2015, 2012, 2009 and 2006 *International Building Code*® (IBC)
- 2018, 2015, 2012, 2009 and 2006 *International Residential Code*® (IRC)
- 2013 *Abu Dhabi International Building Code* (ADIBC)[†]

[†]The ADIBC is based on the 2009 IBC. 2009 IBC code sections referenced in this report are the same sections in the ADIBC.

Properties evaluated:

- Physical properties
- Surface-burning characteristics
- Attic and crawl space evaluation

2.0 USES

The expandable polystyrene beads designated as Epsilyte, LLC Grades 54 and 40 are used by independent manufacturers to produce expanded polystyrene (EPS) insulation products.

3.0 DESCRIPTION

The EPS insulation products manufactured with the expandable polystyrene beads are produced solely through the introduction of heat, without other additives. This process expands the beads, which are then molded into insulation products with densities and thicknesses no greater than those specified in this report. The end use of the polystyrene beads, including the manufacture of products, is outside the scope of this report and must be

addressed in a separate evaluation report. Boards manufactured from Grade 54 and Grade 40 beads at a maximum density of 2.0 pcf (32 kg/m³) and a maximum thickness of 5 inches (127 mm) 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.

Epsilyte, LLC Grade 54 and Grade 40 expandable polystyrene beads have been qualified in accordance with Section 4.5.15.1.1 of the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12). The expandable beads can be used to produce expanded polystyrene products that comply with Types I, II, VIII and IX [1.0, 1.5, 1.25 and 2.0 pcf (16, 24, 20 and 32 kg/m³) nominal densities, respectively] of ASTM C578, provided the final product is recognized in a current ICC-ES evaluation report and has been qualified in accordance with Section 4.5.15.1.2 of the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12).

4.0 INSTALLATION

4.1 General:

Installation is as noted in the corresponding current ICC-ES evaluation report on the foam plastic assemblies.

4.2 Special Use:

Foam plastic boards produced from the Epsilyte, LLC Grade 54 and Grade 40 beads may be used on walls of attics and crawl spaces without covering applied to the attic or crawl space side of the foam plastic, 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 attic or crawl space areas.
3. Air in the attic or crawl space must not be circulated to other parts of the building.
4. Attic ventilation is provided when required by Section 1202.2 of the 2018 IBC (Section 1203.2 of the 2015, 2012, 2009 and 2006 IBC) or Section R806 of the IRC, as applicable. Under-floor (crawl space) ventilation is provided when required by Section 1202.4 of the 2018 IBC (Section 1203.4 of the 2015 IBC and Section 1203.3 of the 2012, 2009 and 2006) IBC, or Section R408.1 of the IRC, as applicable.

5. Combustion air is provided in accordance with Section 701 of the 2018, 2015, 2012 and 2009 *International Mechanical Code*® (Sections 701 and 703 of the 2006 *International Mechanical Code*®).
6. The boards have a maximum density of 1 pcf (16 kg/m³) at a maximum thickness of 4 inches (102 mm), or a maximum density of 2 pcf (32 kg/m³) at a maximum thickness of 2 inches (51 mm).

5.0 CONDITIONS OF USE

The Epsilyte, LLC Grades 54 and 40 expandable polystyrene beads 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 maximum density and thickness of the insulation boards must be as noted in Sections 3.0 and 4.2 of this report.
- 5.2 Products manufactured from the beads must be recognized in a current ICC-ES evaluation report.
- 5.3 Except as noted in Section 4.2 of this report, the insulation boards produced from the Epsilyte, LLC beads must be separated from the building interior by a thermal barrier complying with Section 2603.4 of the IBC or Section R316.4 of the 2018, 2015, 2012 and 2009 IRC (Section R314.1.2 of the 2006 IRC).
- 5.4 The beads are produced by Epsilyte, LLC, in Peru, Illinois, under a quality control program with inspections 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 October 2017), including data in accordance with Appendix B.

7.0 IDENTIFICATION

- 7.1 Each container of beads shall bear a label with the Epsilyte, LLC, name and address; the bead identification (grade and a lot number); the evaluation report number (ESR-1634).
- 7.2 The report holder's contact information is the following:

EPSILYTE, LLC
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THE WOODLANDS, TEXAS 77380
(815) 224-1525
www.EPSilyte.com

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Section: 07 21 00—Thermal Insulation

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EPSILYTE, LLC

EVALUATION SUBJECT:

EPSILYTE, LLC GRADES 54 AND 40 EXPANDABLE POLYSTYRENE BEADS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Epsilyte, LLC Grades 54 And 40 Expandable Polystyrene Beads, described in ICC-ES evaluation report ESR-1634, for use by independent manufacturers to produce expanded polystyrene (EPS) rigid foam insulation products, have also been evaluated for compliance with the codes noted below, provided the insulation products are described in an ICC-ES evaluation report with a CBC and CRC Supplement.

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) and Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2019 *California Residential Code* (CRC)

2.0 CONCLUSIONS

2.1 CBC:

The Epsilyte, LLC Grades 54 And 40 Expandable Polystyrene Beads, described in Sections 2.0 through 7.0 of the evaluation report ESR-1634, comply with the 2019 *California Building Code* (CBC), and the insulation boards produced from these beads also comply with the 2019 CBC, provided the insulation boards are described in an ICC-ES evaluation report with a CBC Supplement and are installed in accordance with the 2018 *International Building Code*® (IBC) provisions, as applicable, of the evaluation report and the additional requirements of the 2019 CBC.

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 Epsilyte, LLC Grades 54 And 40 Expandable Polystyrene Beads, described in Sections 2.0 through 7.0 of the evaluation report ESR-1634, comply with 2019 *California Residential Code* (CRC), and the insulation boards produced from these beads also comply with the 2019 CRC, provided the insulation boards are described in an ICC-ES evaluation report with a CRC Supplement and are installed in accordance with the 2018 *International Residential Code*® (IRC) provisions, as applicable, of the evaluation report and the additional requirements of the 2019 CRC.

This supplement expires concurrently with the evaluation report, reissued May 2022.