

ICC-ES Evaluation Report


ESR-1798

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DIVISION: 07 00 00— THERMAL AND MOISTURE PROTECTION Section: 07 21 00— Thermal Insulation	REPORT HOLDER: BVPV STYRENICS LLC	EVALUATION SUBJECT: EXPANDABLE POLYSTYRENE (EPS) BEADS	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012 and 2009 [International Building Code® \(IBC\)](#)
- 2021, 2018, 2015, 2012 and 2009 [International Residential Code® \(IRC\)](#)
- Other Codes (see Section 8.0)

Properties evaluated:

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

2.0 USES

The BVPV Styrenics LLC expandable polystyrene beads are used by independent manufacturers to produce expanded polystyrene (EPS) insulation products.

3.0 DESCRIPTION

The expandable polystyrene beads are designated as resin Types 33M, 35M and M77. The EPS insulation products manufactured from the beads are produced through the introduction of steam, without additives. This process expands the beads, which are then molded into insulation products, with maximum thicknesses and nominal densities as noted in [Table 1](#). At densities and thicknesses no greater than those specified in [Table 1](#), EPS insulation products produced from the beads 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 / UL 723. The end use of the EPS beads, including the manufacture of the EPS products, is outside the scope of this report and must be addressed in a separate evaluation report.

Type 33M, 35M, and M77 EPS beads can be used to produce EPS products that comply with Types I, II, VIII, IX, XIV and XV [0.9, 1.35, 1.15, 1.80, 2.4 and 3.0 pcf (15, 22, 18, 29, 38 and 48 kg/m³) minimum densities, respectively] of ASTM C578.

Type M77 beads can be used to produce EPS products that comply with Type XI [0.7 pcf (12 kg/m³) minimum densities, respectively] of ASTM C578.

The products have been qualified in accordance with Section 4.5.15.1.1 of the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12). The beads can be used to produce EPS products that comply with ASTM C578, for the types specified in [Table 1](#), 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 AC12.

4.0 INSTALLATION

4.1 General:

Installation must be as noted in the corresponding current ICC-ES evaluation report on the EPS insulation product, or as otherwise permitted by the code official under IBC Section 2603; or IRC Section R316, as applicable.

4.2 Attics and Crawl Spaces:

EPS insulation products produced from the EPS beads of the resin type, density, and thickness shown in [Table 2](#) of this report can be used on walls in 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:

- a. Entry to the attic or crawl space is only to service utilities, and no storage is permitted.
- b. There are no interconnected attic or crawl space areas.
- c. Air in the attic or crawl space is not circulated to other parts of the building.
- d. Attic ventilation is provided when required by 2021 and 2018 IBC Section 1202.2 (2015, 2012 and 2009 IBC Section 1203.2), or IRC Section R806, as applicable.
- e. Under-floor (crawl space) ventilation is provided when required by 2021 and 2018 IBC Section 1202.4 [2015 IBC Section 1203.4 (2012 and 2009 IBC Section 1203.3)], or IRC Section R408.1, as applicable.
- f. Combustion air is provided in accordance with IMC Section 701.
- g. Maximum thickness and density are limited to values stated in [Table 2](#).

5.0 CONDITIONS OF USE:

The 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 EPS insulation boards produced from the expanded beads must be as noted in [Tables 1](#) and [2](#) of this report.
- 5.2 Products manufactured from the EPS beads must be recognized in a current ICC-ES evaluation report.
- 5.3 Except as noted in Section 4.2 of this report, the EPS insulation products produced from the EPS beads must be separated from the building interior by a thermal barrier complying with IBC Section 2603.4, IRC Section R316.4, as applicable.
- 5.4 The beads are manufactured in Monaca, Pennsylvania, and Painesville, Ohio, 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 December 2020), including data in accordance with Appendix B.

7.0 IDENTIFICATION

- 7.1 Each container of beads must bear a label with the BVPV Styrenics LLC name and address, the bead type, the lot number and the evaluation report number (ESR-1798).
- 7.2 The report holder's contact information is the following:

BVPV STYRENICS LLC
400 FRANKFORT ROAD
MONACA, PENNSYLVANIA 15061
(724) 770-1000
www.styropek.com

8.0 OTHER CODES

In addition to the codes referenced in Section 1.0, the products described in this report were found to comply, just as described in Sections 2.0 through 7.0, with the requirements of the following codes:

- 2006 *International Building Code*[®]
- 2006 *International Residential Code*[®]
- 2003 *International Building Code*[®]
- 2003 *International Residential Code*[®]
- 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.

TABLE 1—EPS PRODUCT NOMINAL DENSITY AND MAXIMUM THICKNESS WHEN MADE WITH BVPV STYRENICS BEADS

EPS TYPE	NOMINAL DENSITY (pcf)	MAXIMUM THICKNESS (inches)		
		33M	35M	M77
XI	0.75	—	—	6
I	1.0	5	5	6
VIII	1.25	5	5	6
II	1.5	6	6	6
IX	2.0	5	5	6
XIV	2.5	6	6	6
XV	3.0	6	6	6

For **SI**: 1 inch = 25.4 mm, 1 pcf = 16.02 kg/m³.

TABLE 2—MAXIMUM DENSITY AND THICKNESS FOR EPS PRODUCTS USED IN ATTICS OR CRAWL SPACES

MAXIMUM DENSITY (pcf)	MAXIMUM THICKNESS (inches)		
	33M	35M	M77
1.0	4	4	4
2.0	2	2	2

For **SI**: 1 inch = 25.4 mm, 1 pcf = 16.02 kg/m³.