

ICC-ES Evaluation Report

ESR-2949

Reissued June 2024


This report also contains:

- CBC Supplement

Subject to renewal June 2025

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<p>DIVISION: 07 00 00— THERMAL AND MOISTURE PROTECTION</p> <p>Section: 07 21 00— Thermal Insulation</p>	<p>REPORT HOLDER:</p> <p>NEXKEMIA PETROCHEMICALS INCORPORATED</p>	<p>EVALUATION SUBJECT:</p> <p>NEXKEMIA M SERIES AND MT SERIES EXPANDABLE POLYSTYRENE BEADS</p>	
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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® \(IRC\)](#)
- 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 installation

2.0 USES

Nexkemia M Series and MT Series expandable polystyrene beads 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 [Table 1](#) or [Table 2](#) of 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 Nexkemia M Series expandable polystyrene beads in the minimum densities and maximum thicknesses noted in [Table 1](#) 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. Boards manufactured from Nexkemia MT Series expandable polystyrene beads in the minimum densities and maximum thicknesses noted in [Table 2](#) 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.

Nexkemia M Series 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 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, provided the final product is evaluated 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).

Nexkemia MT Series expandable polystyrene beads with graphite 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 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, provided the final product is evaluated 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 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 Section 2603 of the IBC or Section R316 of the 2021, 2018, 2015, 2012 and 2009 IRC or Section R314 of the 2006 IRC, as applicable.

4.2 Attics and Crawl Spaces:

EPS insulation products produced from the M Series EPS beads at a maximum thickness of 3 inches (76 mm) and a maximum density of 2 lb/ft³ (32 kg/m³) may 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, 2009 or 2006 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, 2009 and 2006 IBC Section 1203.3) or IRC Section R408.1, as applicable.
- f. Combustion air is provided in accordance with Section 701 of the 2021, 2018, 2015, 2012 and 2009 *International Mechanical Code*[®] (Sections 701 and 703 of the 2006 *International Mechanical Code*[®]).

5.0 CONDITIONS OF USE:

The Nexkemia M Series and MT Series 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 density and thickness of the insulation boards produced from the expandable polystyrene beads must be as noted in [Table 1](#) or [Table 2](#) of this report.
- 5.2 Products manufactured from the beads must be evaluated in a current ICC-ES evaluation report.
- 5.3 Except as noted in Section 4.2 of this report, the EPS insulation products manufactured from the expandable polystyrene beads must be separated from the building interior by an approved thermal barrier complying with IBC Section 2603.4, Section R316.4 of the 2021, 2018, 2015, 2012 and 2009 IRC or Section R314.4 of the 2006 IRC, as applicable.
- 5.4 The beads are produced by Nexkemia Petrochemicals Incorporated in Mansonville, Quebec, 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 for the M Series expandable polystyrene beads.

7.0 IDENTIFICATION

- 7.1 Each container of beads must bear a label with the Nexkemia Petrochemicals Incorporated name and address; the bead identification; the evaluation report number (ESR-2949).
- 7.2 The report holder’s contact information is the following:

NEXKEMIA PETROCHEMICALS INCORPORATED
24 BELLEVUE STREET CP 240
MANSONVILLE, QUEBEC J0E 1X0
CANADA
(450) 292-3333
www.nexkemia.com

TABLE 1—INSULATION BOARD DENSITY AND THICKNESS WHEN MOLDED FROM M SERIES EPS BEADS

ASTM C578 TYPES	MIN. DENSITY (pcf)	MAX. THICKNESS (inches)
I	0.90	6
VIII	1.15	6
II	1.35	6
IX	1.80	6
XIV	2.40	6
XV	3.00	6

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

TABLE 2—INSULATION BOARD DENSITY AND THICKNESS WHEN MOLDED FROM MT SERIES EPS BEADS

ASTM C578 TYPES	MIN. DENSITY (pcf)	MAX. THICKNESS (inches)
I	0.90	6
VIII	1.15	6
II	1.35	6
IX	1.80	6
XIV	2.40	6
XV	3.00	6

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

DIVISION: 07 00 00—THERMAL AND MOISTURE PROTECTION
Section: 07 21 00—Thermal Insulation

REPORT HOLDER:

NEXKEMIA PETROCHEMICALS INCORPORATED

EVALUATION SUBJECT:

NEXKEMIA M SERIES AND MT SERIES EXPANDABLE POLYSTYRENE BEADS

1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that Nexkemia M Series and MT Series expandable polystyrene beads, described in ICC-ES evaluation report ESR-2949, for use by independent manufacturers to produce expanded polystyrene (EPS) rigid foam insulation boards, 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, CRC and CEC Supplement.

Applicable code editions:

- 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)
- 2022 *California Energy Code* (CEC)

2.0 CONCLUSIONS**2.1 CBC:**

The Nexkemia M Series and MT Series expandable polystyrene beads, described in Sections 2.0 through 7.0 of the evaluation report ESR-2949, comply with the 2022 *California Building Code* (CBC), and the insulation boards produced from these beads also comply with the 2022 CBC, provided the insulation boards are described in an ICC-ES evaluation report with a CBC Supplement and are installed in accordance with the 2021 *International Building Code*® (IBC) provisions, as applicable, of the evaluation report and the additional requirements of the 2022 CBC.

2.1.1 OSHPD: The Nexkemia M Series and MT Series expandable polystyrene beads, described in Sections 2.0 through 7.0 of the evaluation report ESR-2949, and the ICC-ES certified expanded polystyrene (EPS) rigid foam insulation boards produced from these beads recognized in an ICC-ES evaluation report with a CBC Supplement, comply with CBC Section 803.4 [OSHPD 1, 2 and 4] and CBC Chapter 26 [OSHPD 1, 2, 3 and 4], and the insulation boards produced from these beads also comply with these 2022 CBC OSHPD requirements, provided the insulation boards are recognized in an ICC-ES evaluation report with a CBC Supplement.

2.1.2 DSA: The Nexkemia M Series and MT Series expandable polystyrene beads, described in Sections 2.0 through 7.0 of the evaluation report ESR-2949, comply with CBC Section 803.4 [DSA-SS and DSA-SS/CC] and amended CBC Chapter 26 [DSA-SS and DSA-SS/CC], and the insulation boards produced from these beads also comply with these 2022 CBC DSA requirements, provided the insulation boards are recognized in an ICC-ES evaluation report with a CBC Supplement.

2.2 CRC:

The Nexkemia M Series and MT Series expandable polystyrene beads, described in Sections 2.0 through 7.0 of the evaluation report ESR-2949, comply with 2022 *California Residential Code* (CRC), and the insulation boards produced from these beads

also comply with the 2022 CRC, provided the insulation boards are described in an ICC-ES evaluation report with a CRC Supplement and are installed in accordance with the 2021 *International Residential Code*[®] (IRC) provisions, as applicable, of the evaluation report and the additional requirements of the 2022 CRC.

2.3 CEC:

The Nexkemia M Series and MT Series expandable polystyrene beads, described in Sections 2.0 through 7.0 of the evaluation report ESR-2949, comply with 2022 *California Energy Code* (CEC), and the insulation boards produced from these beads also comply with the 2022 CEC, provided the insulation boards are recognized in an ICC-ES evaluation report with a CEC Supplement and are installed in accordance with the 2021 *International Building Code*[®] (IBC) or 2021 *International Residential Code* (IRC) provisions, as applicable, of the evaluation report and the additional requirements of the 2022 CEC, under the following condition:

- In accordance with Section 110.8 of the 2022 *California Energy Code* (CEC), 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 expanded polystyrene (EPS) rigid foam insulation boards 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."

This supplement expires concurrently with the evaluation report, reissued June 2024.