

Expanded Polystyrene (EPS) Insulation Board

CSI SECTION 07 24 00

EXPANDED POLYSTYRENE (EPS) INSULATION BOARD SPECIFICATIONS

1. SCOPE

- 1.1 This specification covers the type, physical properties and dimensions of Expanded Polystyrene Insulation Board intended for use in Parex USA, Inc. Exterior Insulation and Finish Systems (EIFS).
- 1.2 This specification covers Type I Expanded Polystyrene Insulation Board (as defined by ASTM C578) intended for use in Parex USA Exterior Insulation and Finish Systems (EIFS).

2. APPLICABLE DOCUMENTS

- 2.1 ASTM Standards:
 - 2.1.1 E2430 – Expanded Polystyrene (EPS) Thermal Insulation Boards for Use in Exterior Insulation and Finish Systems (EIFS)
 - 2.1.2 C578 – Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
- 2.2 Quality Control Manual for Molders Supplying Parex USA
- 2.3 Hold Harmless and Indemnification Agreement for Insulation Board Suppliers.

3. MATERIALS AND MANUFACTURE

- 3.1 Insulation board shall be formed by steam expansion of polystyrene resin beads in a closed mold. The insulation board shall be of uniform density and have essentially closed cells. All insulation board shall contain sufficient flame retardants to meet the oxygen index, flammability and smoke development requirements of this specification.
- 3.2 All insulation boards shall be molded from modified grade, expandable polystyrene beads listed in accordance with the requirements of the building code having jurisdiction.

4. INSPECTION

- 4.1 In accordance with the Third Party Certification and Quality Assurance Program.
- 4.2 Shear Modules and Tensile strength properties are required to be evaluated at the beginning of the program.

5. PHYSICAL REQUIREMENTS

- 5.1 All dimensional requirements are described in Section 6.
- 5.2 All workmanship, finish and appearance requirements are described in Section 7.
- 5.3 Combustibility Characteristics - Insulation board is an organic material and is, therefore, combustible. It should not be exposed to flames or other ignition sources. The values obtained by ASTM D 2863 and ASTM E 84/UL523 do not necessarily indicate or describe the fire risk of the materials in end use configuration and are used in this specification primarily to distinguish between insulation formulated with flame retardants and those not so formulated.
- 5.4 Molded billets shall be dimensionally stable prior to being cut into boards or special shapes.
- 5.5 Molded billets shall be conditioned in accordance with Section 5.5.1, 5.5.2, 5.5.3, or 5.5.4
 - 5.5.1 Molded billets shall be aged (air dried) in ambient conditions for a minimum of six (6) weeks.
 - 5.5.2 Molded billets shall be heat dried for a minimum of five (5) days at a constant temperature of 60 °C (140 °F).
 - 5.5.3 Molded billets shall be air dried at ambient conditions for a minimum of 12 days when the billets are manufactured using low pentane EPS resin (<4.5% pentane) and vacuum molding technology.
 - 5.5.4 Molded billets shall be air dried at ambient conditions for a minimum of 18 days when the billets are manufactured using full pentane resin (nominal 6% pentane) and using vacuum molding technology.

NOTE: Suppliers furnishing insulation board or shapes conditioned under Section 5.2 shall advise Parex USA. and the Third Party Certification and Quality Assurance Agency in writing. The Block Molders plant shall be inspected by the Third Party Certification and Quality Assurance Agency and approved by Parex USA. prior to the use of this conditioning method.

6. DIMENSIONS AND PERMISSIBLE VARIATIONS

- 6.1 Insulation board covered by this specification shall conform to the nominal dimensions in Section 6.
- 6.2 Dimensional Tolerances:
 - Length: +/- 1.6 mm (+/-1/16 in)
 - Width: +/- 1.6 mm (+/-1/16 in)
 - Thickness: 19 mm (3/4 in) to 25 mm (1 in) + 1.6 mm (+1/16 in); greater than 25 mm (1 in) +/- 1.6 mm (+/-1/16 in)
- 6.3 Edge Trueness - Unless otherwise specified and approved by Parex USA., insulation board shall be furnished with true edges. Edges shall not deviate more than 0.8 mm (1/32 in) in 305 mm (12 in).
- 6.4 Face Flatness - Insulation board shall be furnished flat and shall not exhibit any bowing of more than 0.8 mm (1/32 in) in the length.
- 6.5 Squareness - Insulation board shall not deviate from squareness by more than 0.8 mm (1/32 in) in 305 mm (12 in) of total length or width.

7. FINISH AND APPEARANCE AT TIME OF DELIVERY

- 7.1 Defects - Insulation board shall have no defects that will adversely affect its service qualities. It shall be of uniform texture and free from foreign inclusions, broken edges or corners, slits or objectionable odors.
- 7.2 Crushing and Depressions - Insulation board shall have no crushed or depressed areas on any surface exceeding 1.6 mm (1/16 in) in depth on more than 5% of the total surface area.
- 7.3 Voids - Insulation board shall have no more than 8 voids having dimensions larger than 3.2 mm (1/8 in) x 3.2 mm (1/8 in) x 3.2 mm (1/8 in) per 0.74 m² (8 ft²) of surface area.
- 7.4 Projections - Insulation board shall be free of surface projects or wire marks in excess of 1.6 mm (1/16 in).

8. CERTIFICATION

Upon request, certification of compliance with this specification shall promptly be forwarded to Parex USA or their designee.

9. PRODUCT MARKING

- 9.1 Insulation boards shall be marked (stamped) in accordance with the requirements or Parex USA.

NOTE: Suppliers may add their company name if they so desire.

10. PACKAGING

- 10.1 All insulation boards shall be packaged in polyethylene bags as required by Parex USA.
- 10.2 Alternate methods of packaging shall be submitted to Parex USA and approved in writing prior to use.
- 10.3 The supplier shall mark the lot number on each package as required.

11. INDEMNIFICATION

Insulation board supplier shall agree to indemnify and hold harmless Parex USA for any loss, cost or damage incurred by Parex USA. as a result of the Insulation Board Supplier's and/or the insulation board's failure to meet these specifications.

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Properties and Requirements of Type I EPS for Use in Parex USA EIFS

Classification (ASTM C 578)

Density	0.90 lb/ft ³ (14.4 kg/m ³) min. 1.25 lb/ft ³ (20.0 kg/m ³) max.			
Thermal Resistance	@ 1.0 in (25.4 mm)	@2.0 in (50.8 mm)	@3.0 in (76.2 mm)	@4.0 in (101.6 mm)
1.0 lb/ ft ³ Density Thickness				
40 °F(4.4 °C)	4.0 F·ft ² ·h/Btu (0.70 K·m ² /W)	8.0 F·ft ² ·h/Btu (1.40 K·m ² /W)	12.0 F·ft ² ·h/Btu (2.1 K·m ² /W)	16.0 F·ft ² ·h/Btu (2.8 K·m ² /W)
75 °F(23.9 °C)	3.60 F·ft ² ·h/Btu (0.63 K·m ² /W)	7.2 F·ft ² ·h/Btu (1.26 K·m ² /W)	10.8 F·ft ² ·h/Btu (1.89 K·m ² /W)	14.4 F·ft ² ·h/Btu (2.52K·m ² /W)
1.8 lb/ ft ³ Density Thickness				
40 °F(4.4 °C)	4.76 F·ft ² ·h/Btu (0.83 K·m ² /W)	9.52 F·ft ² ·h/Btu (1.66 K·m ² /W)	14.28 F·ft ² ·h/Btu (2.49 K·m ² /W)	19.0 F·ft ² ·h/Btu (3.32 K·m ² /W)
75 °F(23.9 °C)	4.35 F·ft ² ·h/Btu (0.76 K·m ² /W)	8.7 F·ft ² ·h/Btu (1.52 K·m ² /W)	13.0 F·ft ² ·h/Btu (2.28 K·m ² /W)	17.4 F·ft ² ·h/Btu (3.04 K·m ² /W)
Compressive strength , Minimum	10.0 psi (69 kPa)			
Tensile strength , Minimum	15.0 psi (103 kPa)			
Flexural strength , Minimum	25.0 psi (172 kPa)			
Shear modulus , Maximum	400 psi (2758 kPa)			
Water vapor permeance of 25.4 mm (1.00 in)thickness, Maximum	5.0 perm (287 ng/Pa·s·m ²)			
Water absorption by total immersion, Maximum	2.5%			
Dimensional stability , Maximum	2.0%			
Oxygen index , Minimum	24.0%			
Flame spread , Maximum	25.0			
Smoke development , Maximum	450			
Board thickness , Class PB and PM				
Maximum	See Note*			
Minimum	3/4 in (19 mm)			
Board width , Maximum	24 in (610 mm)			
Board length , Maximum	48 in (1219 mm)			

***NOTE: Contact Parex USA Technical Department for thicknesses exceeding 4 inches.**

PAREXUSA

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PAREXUSA
www.parexusa.com

Corporate Office

Parex USA, Inc.
4125 E. La Palma Ave., Suite 250
Anaheim, CA 92807
(866) 516-0061
Tech Support: (800) 226-2424

Facilities

Redan, GA
Riverside, CA
French Camp, CA
Colorado Springs, CO
Albuquerque, NM
San Antonio, TX
Wilkes Barre, PA
Ft. Pierce, FL

