

33M SERIES

Styropek Expandable

POLYSTYRENE RESINS

PRODUCT DATA SHEET

June 2023



Insulation, SIP's, ICF's, Fabricated Packaging

Features/Attributes:

- Low Density Potential
- Controlled/Uniform Expansion

Applications:

- Insulation
- SIP's
- ICF's
- Fabricated Packaging

Properties	Typical Values (English Units)	Typical Values (S.I. Units)
Product Properties:		
Pentane Content		
"A" Bead Pentane	6.4% by weight	6.4% by weight
"B" Bead Pentane	6.1% by weight	6.1% by weight
"C" Bead Pentane	5.9% by weight	5.9% by weight
Bulk Density	38 – 40 pounds per cubic foot	608 – 640 grams per liter
Thermal Properties:		
Thermal Resistance (R-Value)	3.9- 4.2 per inch	
Thermal Conductivity ¹ (K-factor, Lambda) Foot (ft) British Thermal Unit (Btu) Degree Fahrenheit (°F) Degree Centigrade (°C)	0.240-0.210 Btu-in/(hr-ft ² -°F)	34.5-30.2 milli-Watts/ (meters-°Kelvin)
Coefficient of Linear Expansion Inch (in) Centimeter (cm)	3.5 x 10 ⁻⁵ in/in/°F	6.3 cm/cm/°C
Maximum Continuous Service Temperature	175° F	80° C

¹ The thermal conductivity of expanded polystyrene at an average temperature of 75°F (24°C) is lowest at 3.5 pounds per cubic foot (pcf). It rises slightly at lower density until about 1.5 pcf where it increases rapidly. The rate of increase is much less at higher densities:

8,0 pcf (128 g/l) → 0,269 Btu in/(hr ft² °F) or 38,7 mW/(m K)
12,0 pcf (192 g/l) → 0,276 Btu in/(hr ft² °F) or 39,8 mW/(m K)

Bead Size Description:

	Cumulative US Standard Sieve
"A" Large	96% thru 10 on 20
"B" Intermediate	96% thru 16 on 30
"C" Small	98% thru 25 on 45

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www.styropek.com

AVAILABILITY

STYROPEK® expandable polystyrene (EPS resins) are produced at the Beaver Valley plant site (Monaca, PA) and are available in 2205 pound (1 metric tonne) bulk bags. The product type and batch number are clearly marked on each bag. Contact the STYROPEK sales office in your region..

QUALITY AND ENVIRONMENTAL MANAGEMENT SYSTEMS

33M resins are manufactured at an ISO 9001 and ISO 14001 registered facility.

STORAGE AND HANDLING

33M should be stored in a cool, dry place away from direct sunlight. This product can release pentane during expansion and molding. Pentane is a highly flammable gas in the presence of open flames, lit cigarettes, sparks, static electricity discharges, or heat. Prolonged or improper storage can result in deterioration of product properties. Care should be taken when handling and transferring product to prevent foreign matter contamination. The STYROPEK' **Safety Data Sheet (SDS)** and **EPS Storage and Handling Safety Guide** contain important safety information and should be reviewed before using the product.

PROCESSING CONDITIONS

Recommended Conditions:

Pre-puff age time:

12-48 hours – depending on pre-expanded density and method of bead pre-expansion. Comprehensive assistance with processing conditions and Technical Services are available from STYROPEK Styrenics Technology Center.

ENVIRONMENTAL INFORMATION

STYROPEK® EPS resins are biologically and chemically inert. STYROPEK® EPS resins does not contain CFC's (Chlorofluorocarbons). STYROPEK® EPS resins are recyclable.



is the SPI resin code for polystyrene to identify material type for sorting and recycling.



Where recycling of EPS resins is not possible, disposal to landfill or incineration in accordance with applicable laws and regulations is recommended. Contact STYROPEK Styrenics Technology Center for further information on recycling and disposal.

STYROPEK® is a proud member of EPS Industry Alliance. For additional EPS information please visit: <http://epsindustry.org/>

ICC-ES EVALUATION REPORT – ESR 1798

http://www.icc-es.org/reports/pdf_files/ICC-ES/ESR-1798.pdf

UL LISTINGS

<http://database.ul.com/cgi-bin/XYV/template/LISEXT/1FRAME/index.html>

Construction File number R4775

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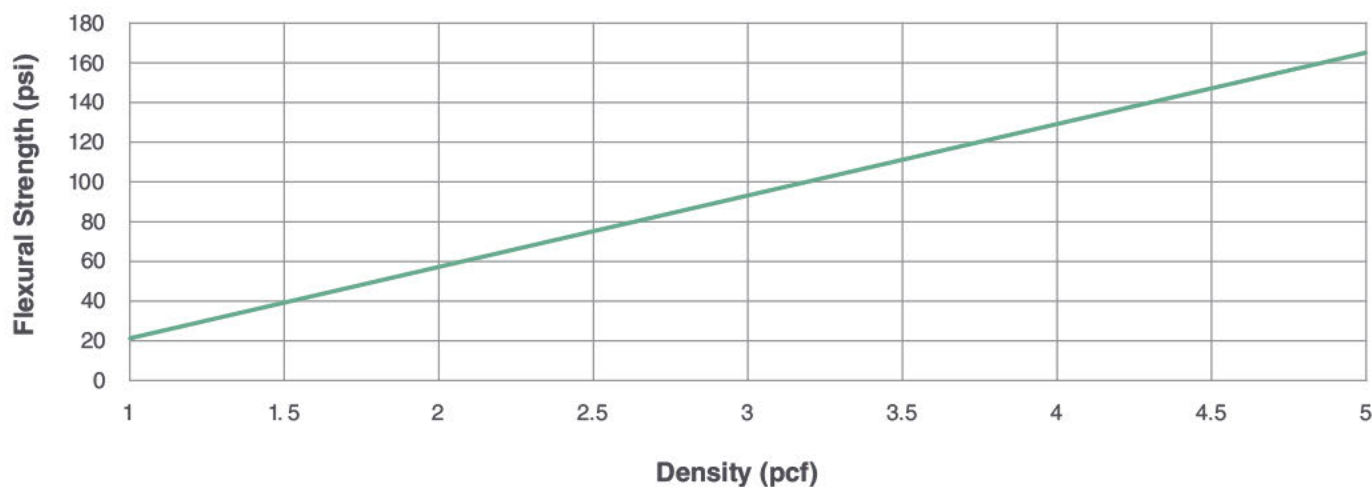
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TYPICAL MECHANICAL PROPERTIES:

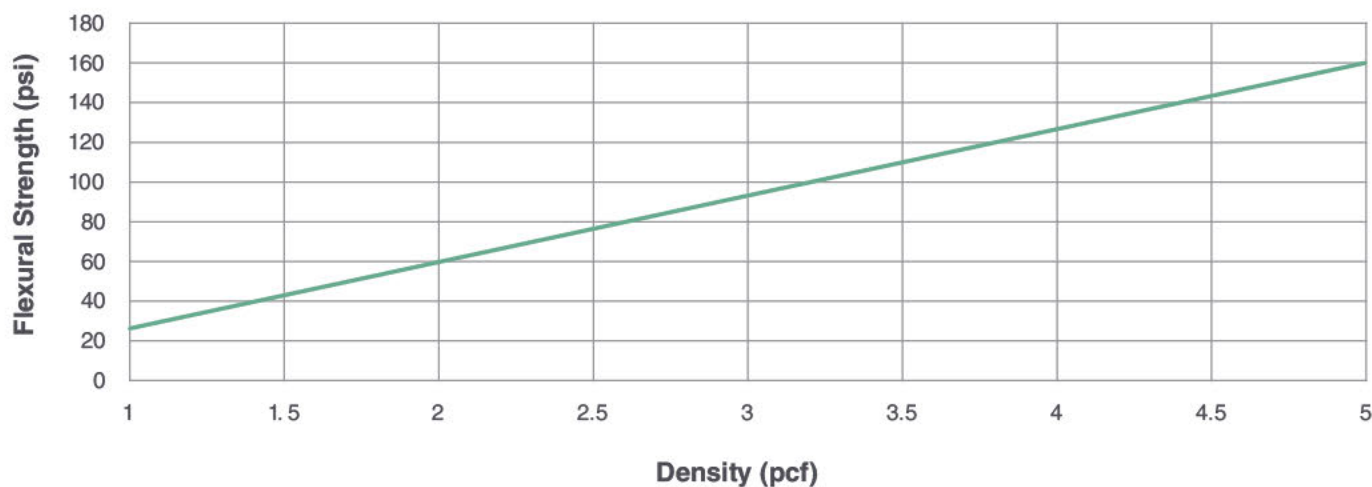


Flexural Strength
ASTM C-203



Flexural Strength - Pounds per square inch (psi) and Density – Pounds per Cubic Foot (pcf).)

Tensile Strength
MIL-P-19644

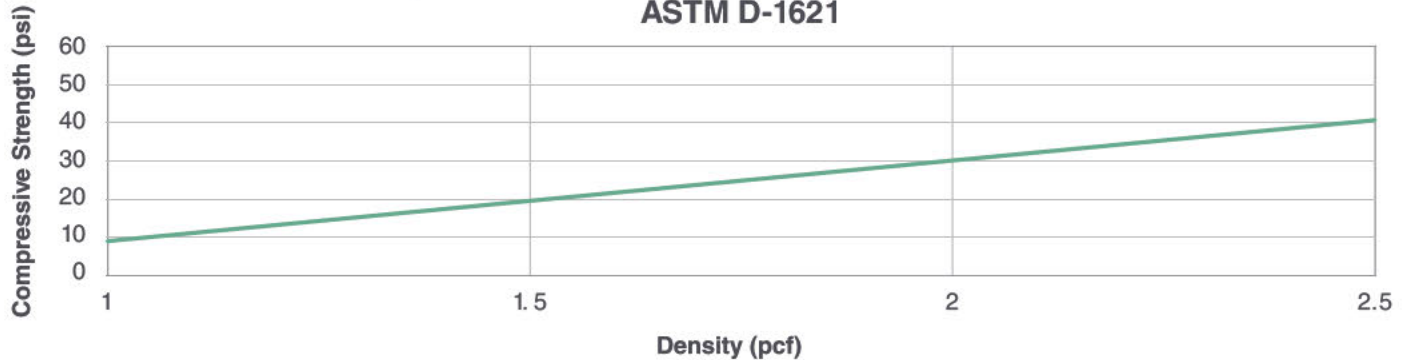


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TYPICAL MECHANICAL PROPERTIES:



Compressive Strength at 10% Deformation ASTM D-1621



Water Absorption MIL-P-19644

Nominal Density		Lbs of Water Absorbed per sq. ft. of Specimen Surface.		Kg of Water Absorbed per sq. meter of Specimen Surface		% By Volume
pcf	kg/m ³	Actual	Specification Max	Actual	Specification Max	
1.0	16	0.05	0.12	0.24	-	2.8
1.5	24	0.04	-	0.20	-	2.3
2.0	32	0.04	0.12	0.20	0.59	2.3
2.5	40	0.04	-	0.20	-	2.3
3.0	48	0.04	0.12	0.20	0.59	2.3
5.0	80	0.03	0.10	0.15	0.49	1.7

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TYPICAL MECHANICAL PROPERTIES:



Water Vapor Permeability ASTM C-355

Nominal Density		Perm - In.		Perm - Cm.	
		Plaques	Blocks	Plaques	Blocks
pcf	Fusion				
1.0	Optimum	1.0 - 2.0	1.5 - 3.0	1.5 - 3.5	2.0 - 5.0
1.4	Optimum	0.5 - 2.0	1.5 - 3.0	1.5 - 3.0	2.0 - 5.0
2.2	Optimum	0.5 - 1.5	1.0 - 2.5	1.0 - 2.5	2.0 - 4.0
2.5	Optimum	0.5 - 1.5	1.0 - 2.5	1.0 - 2.5	1.5 - 4.0
1.0	Minimum	1.5 - 3.0	2.0 - 3.5	2.5 - 5.0	2.5 - 6.0
2.3	Minimum	1.0 - 2.0	1.5 - 3.0	1.5 - 3.5	2.5 - 5.0

Thermal Conductivity, k, vs Density Mean Temperature 75°F (24°C) ASTM C-518

	Density (pcf)				
Units	1.0	1.25	1.5	2.0	2.5
Btu in./hr-ft-°F	.255	.244	.242	.239	.235

The product properties in the data sheet have been determined in accordance with the current testing methods of the American Society for Testing and Materials (ASTM), wherever possible.

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