



## Product Data Sheet

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

## 33M Series

### 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)
<b>Product Properties:</b>		
<b>Pentane Content</b>		
“A” Bead      Pentane	6.8% by weight	6.8% by weight
“B” Bead      Pentane	6.1% by weight	6.1% by weight
“C” Bead      Pentane	5.4% by weight	5.4% by weight
<b>Bulk Density</b>	38 – 40 pounds per cubic foot	608 – 640 grams per liter
<b>Thermal Properties:</b>		
<b>Thermal Resistance (R-Value)</b>	3.9- 4.2 per inch	-
<b>Thermal Conductivity<sup>1</sup> (K-factor, Lambda)</b> Foot (ft) British Thermal Unit (Btu) Degree Fahrenheit (°F) Degree Centigrade (°C)	0.240-0.210 Btu-in/(hr-ft <sup>2</sup> -°F)	34.5-30.2 milli-Watts/(meters-° Kelvin)
<b>Coefficient of Linear Expansion</b> Inch (in) Centimeter (cm)	3.5 x 10 <sup>-5</sup> in/in/° F	6.3 cm/cm/° C
<b>Maximum Continuous Service Temperature</b>	175° F	80° C

<sup>1</sup> 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-ft<sup>2</sup>-°F) or 38.7 mW/(m-K)

12.0 pcf (192 g/l) → 0.276 Btu-in/(hr-ft<sup>2</sup>-°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

## 33M Series

## NOVA Chemicals® EPS

**Availability**

**NOVA Chemicals® 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 NOVA Chemicals sales office in your region.

**Quality and Environmental Management Systems**

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

**Storage and Handling**

33MB 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 NOVA Chemicals' **Material Safety Data Sheet (MSDS)** and **EPS Storage and Handling Safety Guide** contain important safety information and should be reviewed before using the product. These and additional safety and health information are available on our [Product Care](#) webpage.

**Processing Conditions****Recommended Conditions:**

For recommended minimum densities of Nova EPS Resins, please visit:

[http://www.novachem.com/EPS/Documents/EP\\_S\\_Product\\_Chart\\_eng.pdf](http://www.novachem.com/EPS/Documents/EP_S_Product_Chart_eng.pdf)

**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 NOVA Chemicals Styrenics Technology Center.

**Environmental Information**

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



is the SPI resin code for polystyrene to identify material type for sorting and recycling. Significant information regarding EPS recycling is available from the [Alliance of Foam Packaging Recyclers](#). Where recycling of EPS resins is not possible, disposal to landfill or incineration in accordance with applicable laws and regulations is recommended. Contact NOVA Chemicals Styrenics Technology Center for further information on recycling and disposal.

NOVA Chemicals® 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](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

[www.novachemicals.com](http://www.novachemicals.com)

**EPS Sales and Manufacturing**

**NOVA Chemicals, Inc.**  
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Monaca, PA 15061  
Phone: 724.774.1000  
Fax: 724.770.6701

**Latin America Sales**

Telephone: 786.242.1375  
Fax: 519.862.7215

**Asia and Pacific Rim Sales Office**

**NOVA Chemicals (International) S.A.**  
Level 15 Prudential Tower  
30 Cecil Street  
Singapore 049712  
Phone: 65.6224.8807  
Fax: 65.6224.1877

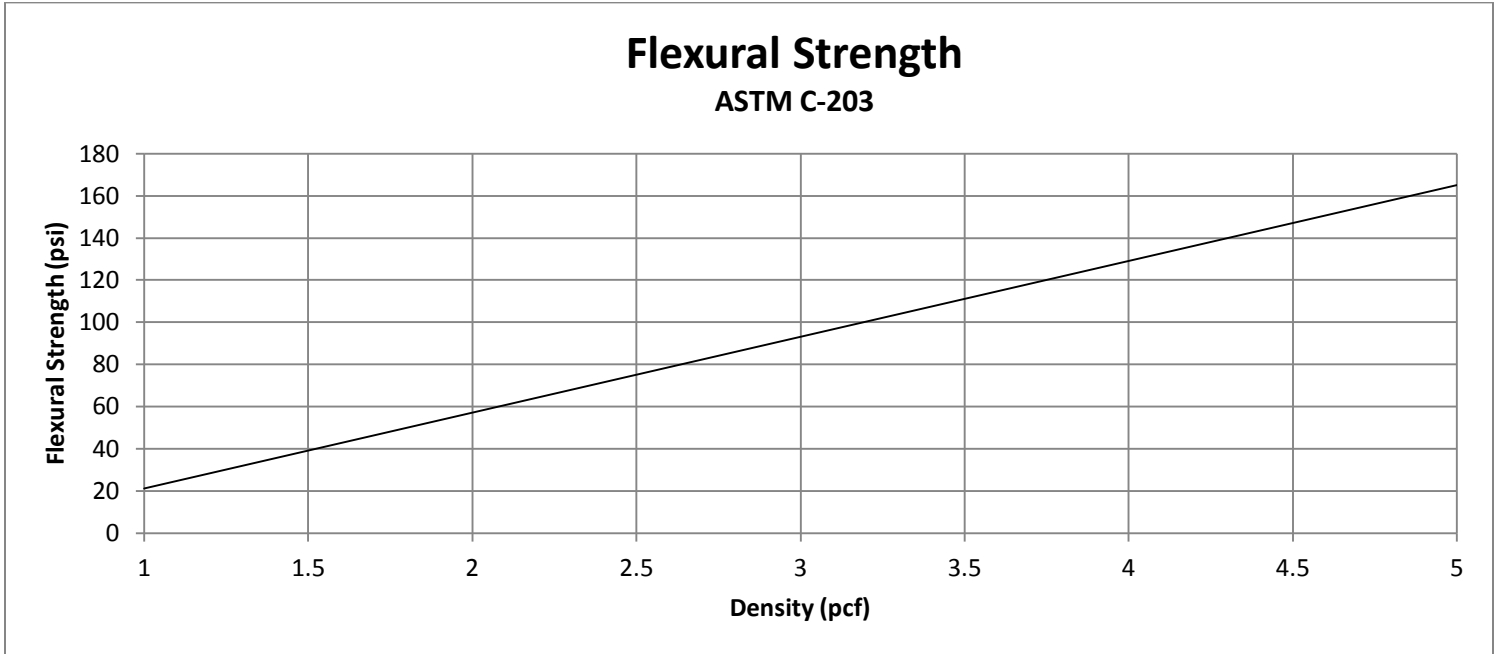
**Technical Center**

**NOVA Chemicals Performance Styrenics Technology Center**  
400 Frankfort Road  
Monaca, PA 15061  
Phone: 724.774.1000  
Fax: 724.770.5601

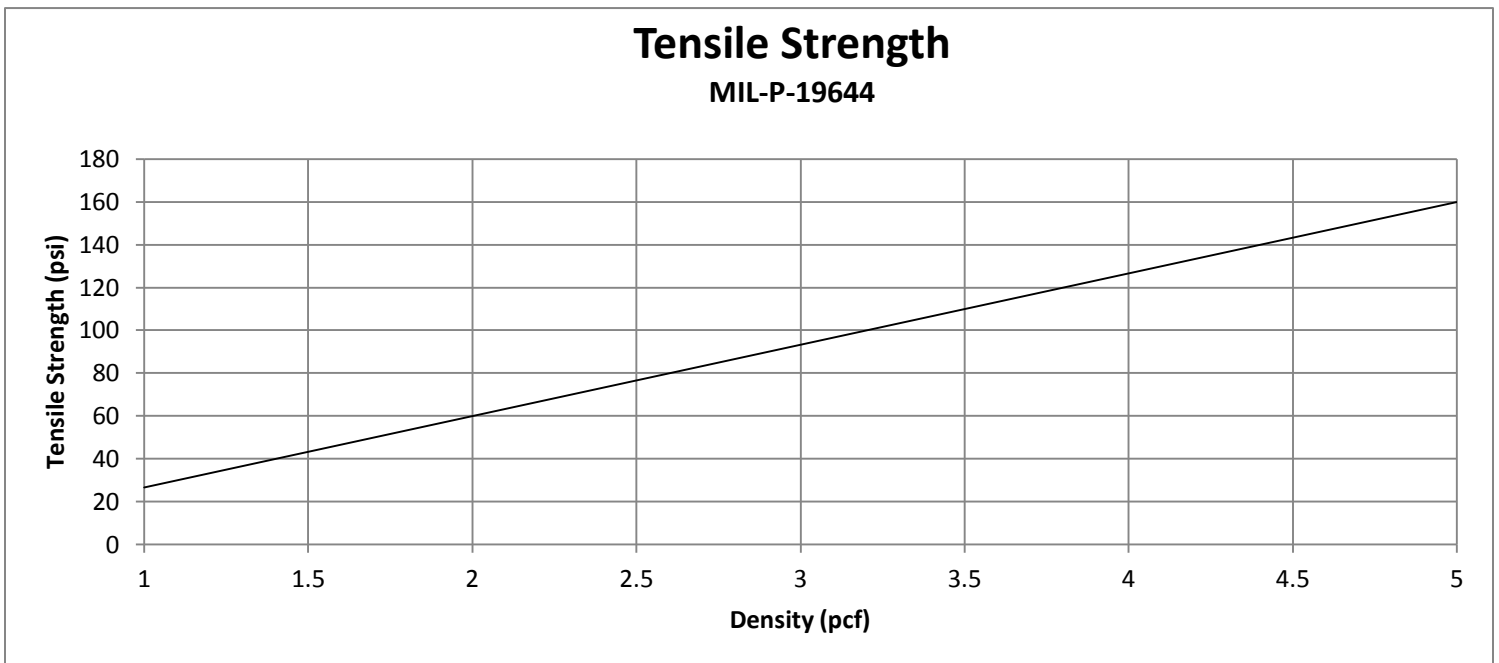
33M Series

# NOVA Chemicals® EPS

## TYPICAL MECHANICAL PROPERTIES:



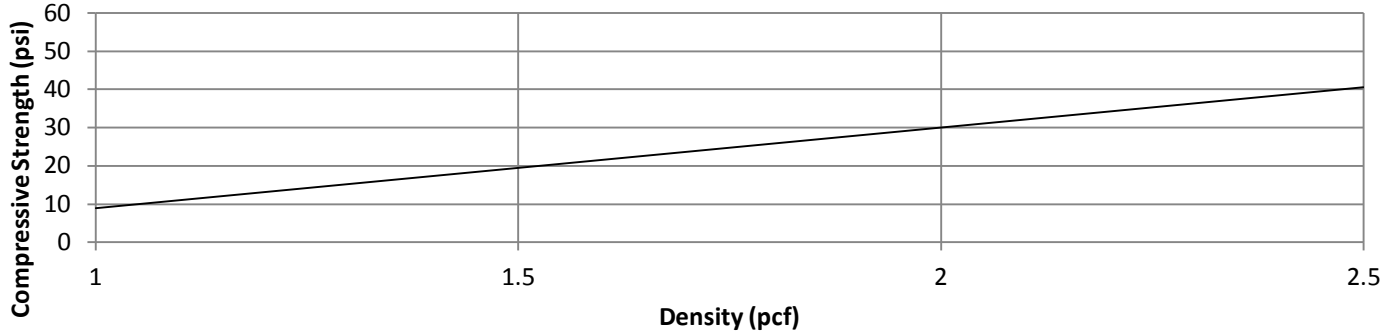
Flexural Strength - Pounds per square inch (psi) and Density – Pounds per Cubic Foot (pcf).



33M Series

# NOVA Chemicals® EPS

## 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 <sup>3</sup>	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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## NOVA Chemicals® EPS


**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**

Units	Density (pcf)				
	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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