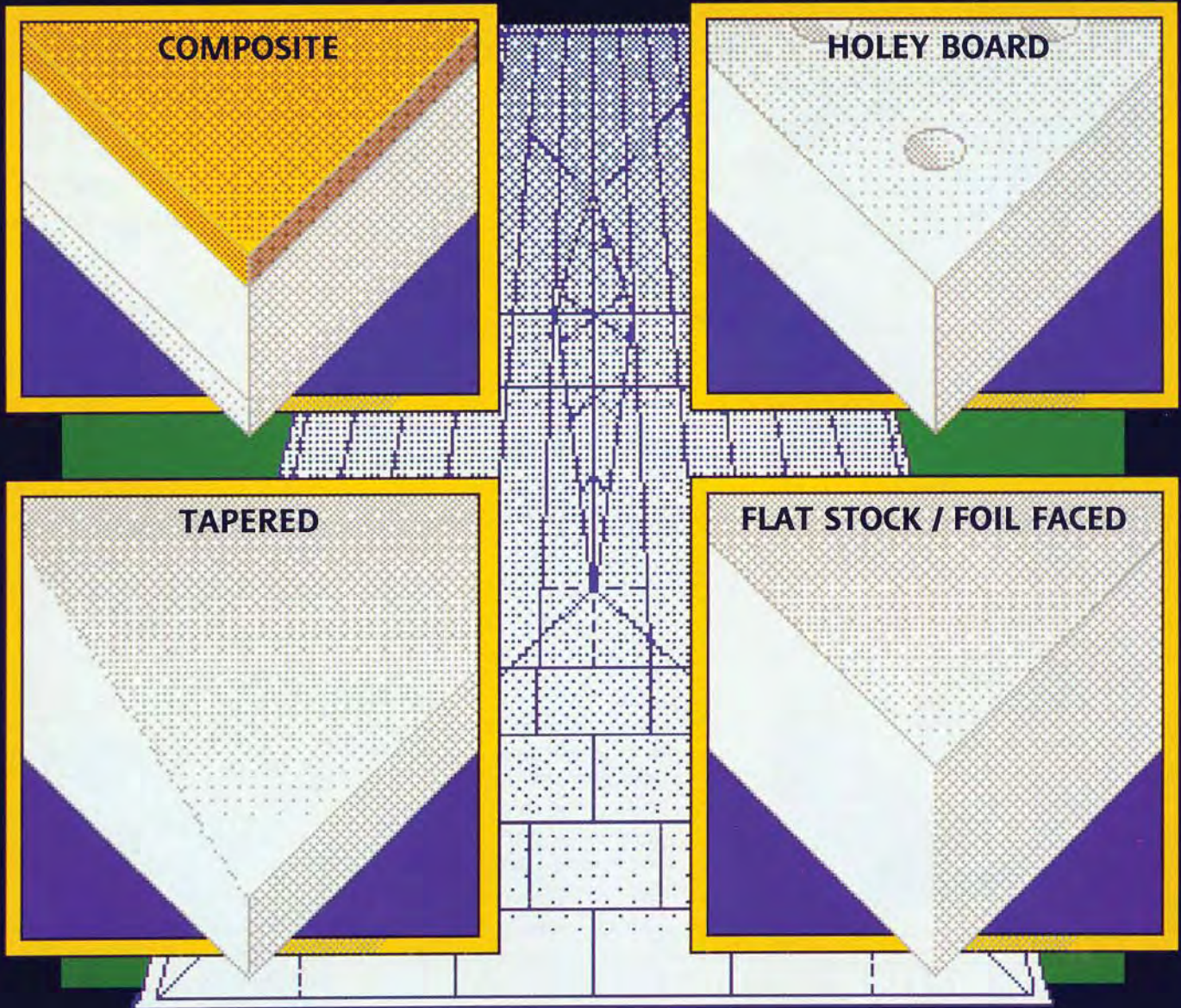




cellofoam®

EPS Roof Deck Insulation Products



• BOCA, ICBO, SBCCI Code Recognized

• No Formaldehyde

CELLOFOAM EPS insulation, as manufactured by Cellofoam North America Inc, is a modified expanded polystyrene. It is a rigid, foamed plastic with resilient closed cells molded in a range of densities and sizes to meet your application specifications/requirements.

CELLOFOAM EPS provides each of the characteristics required for long-term performance; permanent R-value, inherent water resistance, excellent physical strength, and dimensional stability. Recognizing this commitment to quality, major membrane manufacturers approve the roof insulations produced by Cellofoam North America Inc.

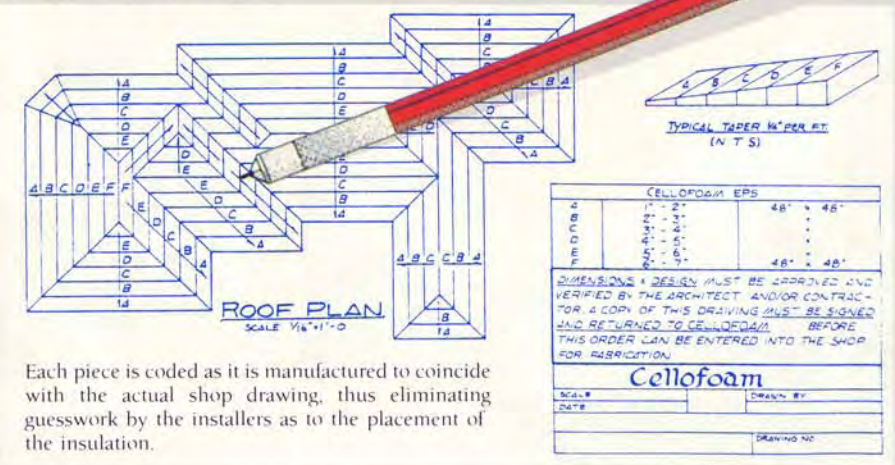
CELLOFOAM EPS economically adds R-value to single-ply membrane systems and built-up roof systems, providing maximum dimensional stability and high thermal efficiency at low cost.

Our Most Practical...

Tapered CELLOFOAM EPS Insulation saves on heating/cooling costs and provides positive drainage to eliminate ponding on new or retrofit roofs. CELLOFOAM Tapered Insulation is available precut with a minimum 1/16" slope per foot...EPS only, or laminated with your choice of materials.

Cellofoam's Estimating Department stands ready to assist you with your contract documents. Each custom tapered roof system is professionally laid out from the architectural drawings in a single layer or a multiple layer system to provide the specified R-value and slope consistent with project requirements.

Cellofoam's Tapered EPS insulation boards, manufactured at all plant locations, are cut, coded, and shipped to your jobsite to provide efficient installation. Every tapered system design is backed with professional sales support and service to make each project go smoothly from start to finish.



Each piece is coded as it is manufactured to coincide with the actual shop drawing, thus eliminating guesswork by the installers as to the placement of the insulation.



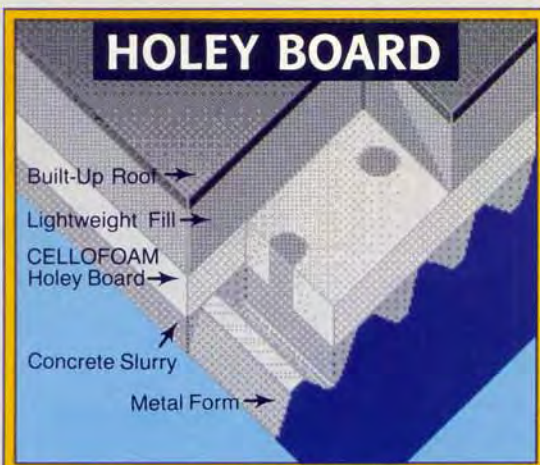
CELLOFOAM Factory Laminated Composite Panels are available in a variety of combinations:

- Wood Fiberboard
- Gypsum Board
- Perlite
- OSB
- Plywood

We also laminate a slip sheet using foil or paper. The lamination is performed under ideal factory conditions ensuring quality control procedures. Factory laminated product is superior to field laminated systems and saves time and cost of field labor.

Thermal Efficiency Composites

Laminate one side	Laminate other side	EPS Thickness	R Value	C Factor
1/2" wood fiber	none	2"	9.7	.10
		4"	18.0	.06
		6"	26.4	.04
		8"	34.7	.03
3/4" perlite	none	2"	10.4	.10
		4"	18.7	.05
		6"	27.1	.04
		8"	35.4	.03
3/4" perlite	1/2" wood fiber	2"	11.8	.08
		4"	20.1	.05
		6"	28.5	.04
		8"	36.8	.03



For Lightweight Concrete Roof Deck Assemblies

The High Performance Substrate for Insulating Lightweight Concrete Roof Deck Assemblies.

ADVANTAGES

- Easy to handle and apply
- Low thermal conductivity
- Readily available
- Adaptability on curved surfaces
- Inorganic
- Single layer application

Listed in the UL Fire Resistance Directory for the following Roof-Ceiling Designs:

P231	P411	P810	P911	P919
P246	P509	P901	P913	P920
P251	P511	P902	P914	P922
P255	P708	P905	P916	P924
P410	P719	P906	P917	P925
			P910	

Construction No. 110
Construction No. 155

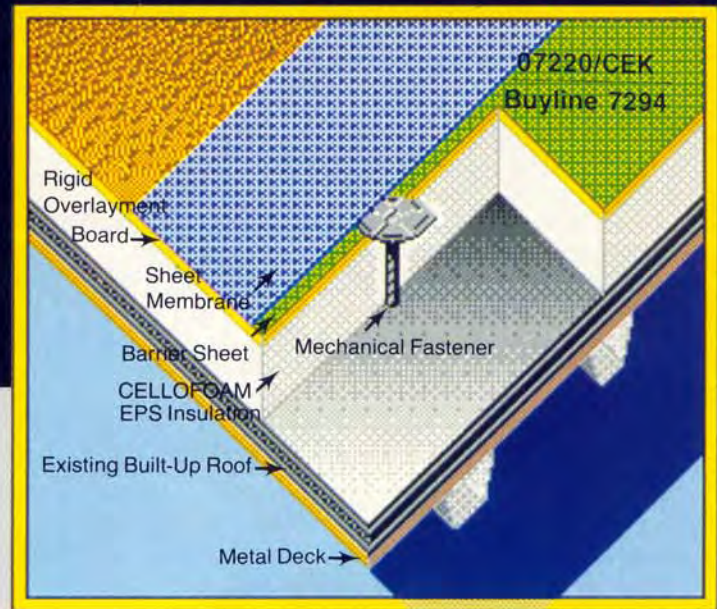
SYSTEMS



CELLOFOAM EPS roof insulation board is certified under the ACCU-R Program of **The Society of the Plastics Industry**, which assures quality and consistency of manufactured materials through third party certification.

Adhered Single-Ply Membrane Re-Roof

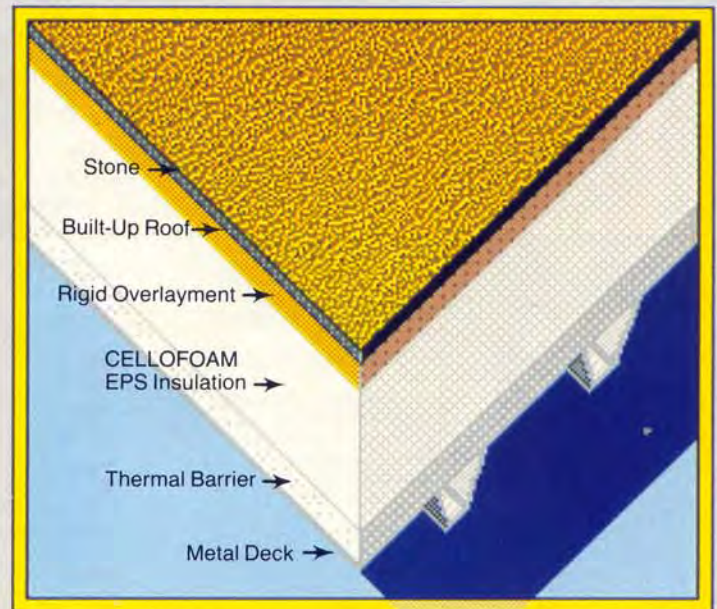
- Adds high insulation value but little weight to existing roof
- Mechanical fasteners penetrate EPS and attach to deck
- Stone ballast may be used if weight is not a limitation
- A vapor retarder may be required



Built-Up Roof Over Metal Deck

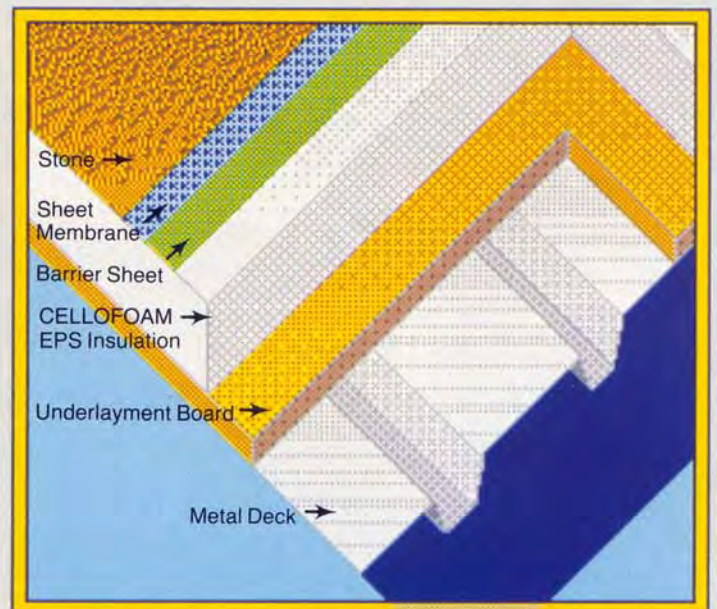
- Economically achieves good insulation value as well as meeting most fire codes and ratings
- May use EPS/fiberboard composite or mop and flop fiberboard or perlite to EPS with asphalt
- Thermal barrier such as perlite* or gypsum board* may be factory laminated or attached with mechanical fasteners, asphalt or adhesive
- Use flat or tapered

**Consult your local building code*



Ballasted Membrane Over Metal Deck

- A lightweight system which delivers long-term performance
- Flat or tapered CELLOFOAM EPS insulation panels can be loose-laid under membrane or fully adhered and mechanically secured to achieve a smooth, exposed surface
- Span deck flutes and meet code/insurance requirements with specified underlayment board
- The use of barrier sheet for EPS insulation may be required by some membranes



The examples given are not recommendations, but general guidelines for use of EPS insulation in roofing types.

Suggested (Condensed Language) Guide Specification

Expanded Language Guide Specification available upon request

SECTION 07225 EPS BOARD ROOF DECK INSULATION

PART I GENERAL

1.01 SUMMARY

- A. Section Includes: EPS board roof deck insulation for use as an acceptable and recommended substrate for project roofing system.
- B. Related Sections:
- Division 3 Concrete sections for cast-in-place concrete and lightweight concrete.
 - Division 5 Metals sections for metal decks.
 - Division 7 Thermal & Moisture Protection sections for roofing systems, including built-up roofing, modified bitumen roofing, single-ply roofing, and roof accessories.

1.02 REFERENCES

- A. American Society for Testing & Materials (ASTM):
- C578-92 Preformed, Cellular Polystyrene Thermal Insulation, Spec. for.
- B. The Society of the Plastics Industry, Inc. (SPI):
- ACCU-R EPS Program for product quality control and labeling program.
- C. Factory Mutual Research Corporation (FMRC)
- Loss Prevention Data Sheet I-28, current edition.

1.03 SYSTEM DESCRIPTION

- A. Description: EPS roof deck insulation product specifically manufactured and recommended by manufacturer for compatibility with project roofing system for R-value and other physical properties indicated herein when tested in accordance with ASTM C 578.

1.04 SUBMITTALS

- A. Product Date: Submit manufacturer's product data for specific EPS board roof deck insulation proprietary products affirming products do not contain chlorofluorocarbon (CFC) or hydrochlorofluorocarbon (HCFC).
- B. Samples: Submit three samples, 12"x12"x1" minimum, each specified EPS insulation product, identified with SPI ACCU-R quality assurance program label.
- C. Tapered Insulation Shop Drawings: Submit tapered EPS insulation shop drawings indicating layout, minimum and maximum thickness, slope direction, and placement sequence.

1.05 QUALITY ASSURANCE

- A. SPI ACCU-R Program: Comply with the quality assurance program of The Society of the Plastics Industry, Inc. (SPI) ACCU-R EPS program for appropriate testing, inspection, and review of product production practices for compliance with ASTM C 578 requirements.

ED NOTE: Coordinate below to paragraphs with Division 7 Section.

- B. Insurance Underwriter Requirements: Comply with owner's insurance underwriter's requirements for EPS roof deck insulation product for application with project roofing system.
- C. Factory Mutual Research Corporation (FMRC) Requirements: Comply with requirements for EPS roof deck insulation application with project roofing system.

1.06 DELIVERY, STORAGE AND HANDLING

- A. Storage: Store and protect EPS roof deck insulation prior to installation from direct sunlight exposure and from weather to ensure insulation is dry when installed.

ED NOTE: Coordinate below with applicable "Conditions of the Contract."

1.08 WARRANTY

- A. Manufacturer's Product Warranty: Submit manufacturer's standard warranty form for EPS board insulation R-value when tested for conformance with ASTM C 578. This warranty is in addition to, and not a limitation of other rights Owner may have under Contract Documents.

ED NOTE: Specify below warranty period. Consult with insulation manufacturer.

- Warranty Period: _____ years from Date of Substantial Completion.
- Beneficiary: Issue warranty in the legal name of project Owner.
- Warranty Acceptance: Owner is sole authority who will determine acceptance of warranty document.

PART 2 PRODUCTS

ED NOTE: Retain below article for proprietary specification.

2.01 MANUFACTURERS

- A. Manufacturer: Cellofoam North America Inc
- Address: P.O. Box 406, Conyers, GA 30207
 - Telephone: 404 483 4491

ED NOTE: Select thickness & density on each product required below. Refer to ASTM C 578 physical properties chart and manufacturer's literature for density and thickness.

3. Products:
- a. Flat Stock (Unfaced)/Foil Faced EPS Board:
- Thickness:
 - Density:

ED NOTE: Delete below if no foil face EPS Board

- 3) Foil: Aluminum

- b. Holey Board:

- Thickness:
- Density:

ED NOTE: Hole spacing determined by UL "P" design number. Refer to U.S. Fire Resistance Directory.

- 3) Hole Spacing:

ED NOTE: Below for use with metal deck and lightweight concrete fill. See UL Fire Resistance Directory for assembly design number.

- c. Composite EPS Board:

- Thickness:
- Density:

ED NOTE: Select below top & bottom laminates from manufacturer's standard laminate options.

- Top Laminate:
- Bottom Laminate (Optional):

- d. Tapered EPS Board:

- Thickness (Min/Max):
- Density:

ED NOTE: Select below laminate from manufacturer's standard laminate options.

- 3) Laminate Surface (Optional):

ED NOTE: Below available precut in slopes of 1/8", 1/4", and 1/2".

- 4) Slope:

2.02 INSULATION MATERIAL

- A. Material Standard: Comply with ASTM C 578 for EPS board roof insulation.

ED NOTE: Select below listed types: I, VIII, II, (Type IX not usually used for roofing.)

- Type I.
- Type VIII.
- Type II.

ED NOTE: Use below new article in Division 7 roofing section when this separate, stand alone roof insulation section is not desired.

2.03 ROOF INSULATION BOARD

- A. Molded EPS Board Insulation: Rigid, closed cell, lightweight, thermal insulation formed by the composition of hydrogen and carbon atoms in a closed mold to comply with ASTM C578-92 for type indicated as follows:

ED NOTE: Select below type(s) required. Delete others.

- Type II: 1.35 pcf minimum density, R-value of 4.55 and 4.17 at 40 degrees F and 75 degrees F (4.4 degrees C and 23.9 degrees C), respectively.
- Type VIII: 1.15 pcf minimum density, R-value of 4.25 and 3.92 at 40 degrees F and 75 degrees F (4.4 degrees C and 23.9 degrees C), respectively.
- Type I: .90 pcf minimum density, R-value of 4.17 and 3.85 at 40 degrees F and 75 degrees F (4.4 degrees C and 23.9 degrees C), respectively.

PART 3 EXECUTION

3.01 INSULATION INSTALLATION/APPLICATION

ED NOTE: Below text adopted with modification from AIA MASTERSPEC Program. MASTERSPEC is copyrighted by American Institute of Architects. MASTERSPEC neither endorses nor recommends manufacturers and products.

- A. General: Install EPS board insulation in single or multiple layers to achieve required R-value, extending EPS insulation over entire roof deck surface to be installed, cutting and fitting around projections and obstructions. Form cant strips, crickets, and tapered areas for positive drainage of roofing system.
- B. Insulation Board Joints: Stagger EPS board insulation joints in one direction for each course. For multiple layers, stagger joints in both directions between courses with no gaps to form a complete thermal envelope.
- C. Exposure: Do not install more EPS insulation in a day than can be covered with roofing membrane before end of work day or before start of weather conditions which can damage EPS insulation.
- ED NOTE:** Coordinate below three paragraphs Division 7 roofing section for use of vapor retarder.
- D. Ballasted Membrane Over Metal Deck: Install EPS board insulation over metal deck; either loose-laid or fully adhered and mechanically secured to deck substrate. Span deck flutes in accordance with roofing system assembly fire rating and insurance underwriter's requirements.
- E. Adhered Single-Ply Membrane Re-Roof: Install EPS board insulation over roof deck fully adhered and mechanically secured to deck substrate.
- F. Built-Up Roofing (BUR) Over Metal Deck: Install EPS board insulation over metal deck, either loose-laid or fully adhered and mechanically secured to deck substrate. Span deck flutes in accordance with roofing system assembly fire rating and insurance underwriter's requirements.

END OF SECTION

TYPICAL PHYSICAL PROPERTIES OF EPS INSULATION

Specification Reference: ASTM C578-92

Property	Units	ASTM Test	Type I	Type VIII	Type II	Type IX
Density (Maximum)	pcf		1.0	1.25	1.5	2.0
Density, (Minimum)	pcf	C303 or D1622	0.90	1.15	1.35	1.80
Thermal Conductivity	at 40F BTU/(hr.)	C177 or	0.24	0.235	0.22	0.21
K Factor	at 75F (sq. ft.)/(F/in.)	C518	0.26	0.255	0.24	0.23
Thermal Resistance	at 40F per inch	—	4.17	4.25	4.55	4.76
Values (R)*	at 75F thickness	—	3.85	3.92	4.17	4.35
Strength Properties						
Compressive 10% Deformation	psi	D1621	10-14	13-18	15-21	25-33
Flexural	psi	C203	25-30	30-38	40-50	55-75
Tensile	psi	D1623	16-20	17-21	18-22	23-27
Shear	psi	D732	18-22	23-25	26-32	33-37
Shear Modulus	psi	—	280-320	370-410	460-500	600-640
Modulus of Elasticity	psi	—	180-220	250-310	320-360	460-500
Moisture Resistance						
WVT	perm. in.	E96	2.0-5.0	1.5-3.5	1.0-3.5	0.6-2.0
Absorption (vol.)	%	C272	less than	less than	less than	less than
			4.0	3.0	3.0	2.0
Capillarity	—	—	none	none	none	none
Coefficient of Thermal Expansion						
Thermal Expansion	in./(in.)(F)	D696	0.000035	0.000035	0.000035	0.000035
Maximum Service Temperature						
Long-term	°F	—	167	167	167	167
Intermittent			180	180	180	180
Oxygen Index	Minimum %	D2863	24.0	24.0	24.0	24.0

*R' means resistance to heat flow. The higher the 'R' value, the greater the insulating power.



1-800-241-3634 U.S.
1-404-483-4491 GEORGIA
1-404-929-3608 FAX

P. O. Box

This information represents Cellofoam North America Inc's expectations based on tests conducted in accordance with recognized standard methods. The sale of these products shall be subject to the terms and conditions of the sale, INCLUDING those limited warranties set forth in Cellofoam North America Inc's invoices.

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