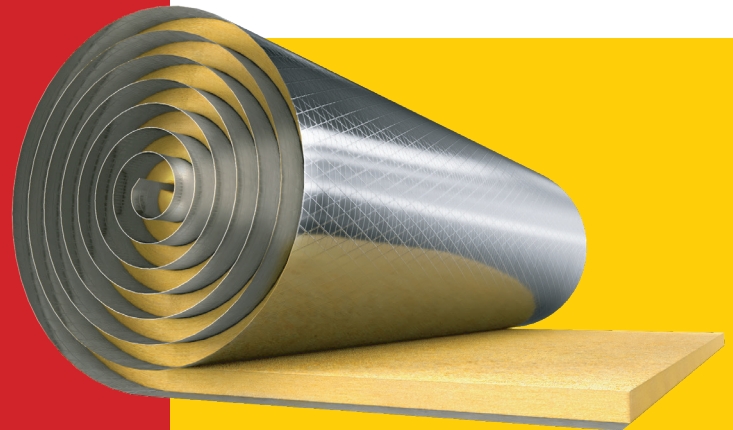




# Pre-Engineered Metal Building Insulation (PEBI)



## Product Description

AFICO Pre-Engineered Metal Building Insulation is a highly efficient, lightweight, strong, resilient, and easy to handle flexible blanket insulation composed of line, stable and uniformly textured inorganic glass fibers bonded together by a non-water soluble and fire-retardant thermosetting and heat resistant resin. It is free from coarse fibers and shot due to its mineral composition.

## Facing

AFICO Pre-Engineered Metal Building Insulation is designed and factory-laminated to a choice of functional finishes to provide attractive interiors, abuse resistance, and assistance in the control of moisture or vapor condensation. Pre-Engineered Metal Building Insulation is available with one side factory-applied Aluminum Foil Reinforced Kraft Paper Laminate (FRK), White Metalized Scrim Kraft (WMSK) and White Vinyl or other specific vapor barrier facings.

The use of the proper facing helps to preserve the inherent fire safety of metal buildings. These facings

brighten the building interiors due to their high light reflectance, reduce the cost of interior lighting, and contribute to an effective vapor barrier and to the control of condensation and dripping moisture.

A 50 mm (2 inch) stapling and taping overlap flange on one side or both sides of these facings is available. The facings are also available with UL fire resistant rating.

## Application

AFICO Pre-Engineered Metal Building Insulation is manufactured specifically for use in the roof and side walls of commercial, industrial, residential, agricultural and poultry farms metal building construction. This insulation greatly reduces heat gain or loss through the building envelope. It will not rot, disintegrate or slump.

## Standard Nominal Density

10 - 24 kg/m<sup>3</sup> (0.625 - 1.5 lb/ft<sup>3</sup>) Nominal Manufacturing Specifications. Check for availability of other dimensions and densities.

## Standard Products Available

Nominal Manufacturing Specifications. With K and R values at 24°C mean temperature. Check for availability of other densities and dimensions.

Product Type	Density		K Value		R Value / Thickness											
	Kg/m <sup>3</sup>	Lb/ft <sup>3</sup>	W/m <sup>2</sup> ·K	BTU·in/hr·ft <sup>2</sup> ·°F	25 mm	1 in.	50 mm	2 in.	75 mm	3 in.	100 mm	4 in.	150 mm	6 in.	200 mm	8 in.
100	10	0.625	0.041	0.28	0.60	3.40	1.22	6.80	1.83	10.20	2.44	13.60	3.66	20.40	4.88	27.1
120	12	0.75	0.040	0.28	0.63	3.51	1.25	7.03	1.88	10.50	2.50	14.10	3.75	21.10	5.00	28.1
140	14	0.875	0.038	0.26	0.66	3.64	1.32	7.29	1.97	10.90	2.63	14.60	3.95	21.90	5.26	29.2
160	16	1	0.037	0.26	0.68	3.78	1.35	7.57	2.03	11.40	2.70	15.10	4.05	22.70	5.41	30.3
180	18	1.125	0.036	0.25	0.69	3.94	1.37	7.87	2.05	11.70	2.75	15.50	4.15	23.40		
200	20	1.25	0.036	0.25	0.69	3.94	1.39	7.87	2.08	11.80	2.78	15.70				
240	24	1.5	0.034	0.24	0.71	4.10	1.47	8.20	2.21	12.30	2.94	16.40	-	-	-	-

Densities over 20kg with thickness higher than 150mm available only with facing



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## Performance & Physical Characteristics

**Apparent Thermal Conductivity**  
**ASTM C518, EN12667**  
 W/m<sup>2</sup>·K or Btu-in/hr-ft<sup>2</sup>·°F for all product range "K" or "λ" value at mean temperatures  
 Data for 10, 24 and 35°C mean temperature  
 Nominal K-Value

Product Type	Density		Mean Temperature					
	Kg/m <sup>3</sup>	Lb/ft <sup>3</sup>	10°C	50°F	24°C	75°F	35°C	95°F
PEBI 100	10	0.625	0.038	0.26	0.042	0.29	0.044	0.31
PEBI 120	12	0.75	0.036	0.25	0.040	0.28	0.041	0.29
PEBI 140	14	0.875	0.034	0.24	0.038	0.27	0.040	0.27
PEBI 160	16	1	0.034	0.24	0.037	0.26	0.039	0.27
PEBI 180	18	1.125	0.033	0.23	0.036	0.25	0.037	0.26
PEBI 200	20	1.25	0.033	0.23	0.036	0.25	0.037	0.26
PEBI 240	24	1.5	0.032	0.22	0.034	0.24	0.036	0.25

**Thermal Resistance «R» Value (ASTM C167)**  
 "R" is a measure of the resistance to heat flow of a material of any given thickness.  
 ("R" = m<sup>2</sup>·°K/W or hr-ft<sup>2</sup>·°F/Btu)

$$R = \frac{T}{K} \quad \text{Where "T" = Thickness}$$

$$R = \frac{1}{\lambda} \quad \text{Where "λ" or "K" = Thermal Conductivity}$$

**Thermal Resistance «U» Value (ASTM C168)**  
 "U" is a measure of how much heat is lost through a given thickness of a particular material.  
 ("U" = W/m<sup>2</sup>·°C or Btu/hr-ft<sup>2</sup>·°F)

$$U = \frac{1}{Rt} \quad \text{Where "1" = Total Thermal Resistance}$$

Composed of all elements/layers

U-Values are calculated from the thermal resistances of the parts making up a particular part of the structure. Transmission of heat is opposed in varying amounts dependent on material and surface.

$$U\text{-Value (of building element)} = 1 / (R_{so} + R_{si} + R_1 + R_2 + \dots)$$

Where R<sub>so</sub> is the fixed external resistance  
 R<sub>si</sub> is the fixed internal resistance  
 R<sub>1</sub>, R<sub>2</sub> etc are resistivity of all elements within the application including that of cavities within the construction.

Example calculation:

Layer & Material	Thickness & Conductivity	R Value
R <sub>so</sub> - Fixed external resistance	-	0.40m <sup>2</sup> ·°K/W
R <sub>si</sub> - Fixed internal resistance	-	0.13m <sup>2</sup> ·°K/W
R1 - Fiberglass insulation	0.100m; 0.035 W/mK	2.85m <sup>2</sup> ·°K/W
R2 - Clay bricks	0.105m; 0.710 W/mK	0.15m <sup>2</sup> ·°K/W
R3 - Concrete blocks	0.100m; 0.018 W/mK	0.55m <sup>2</sup> ·°K/W
R4 - Plaster	0.013m; 0.016 W/mK	0.08m <sup>2</sup> ·°K/W
Total		4.16m <sup>2</sup> ·°K/W

Therefore the overall wall element U-value = 1/R = 1/4.16 = 0.24W/m<sup>2</sup>·K

### Surface Burning Characteristics (ASTM E 84, UL723)

Base glass fiber is non-combustible

Facing	Flame Spread Index	Smoke Developed Index
FRK	≤ 25	≤ 50
WMSK	≤ 25	≤ 50
Vinyl	≤ 25	≤ 50

### Working Temperature Limitations (ASTM C411)

Operating temperature up to 232°C At excessive temperatures, limited migration of binder may occur in the insulation in contact with the surface. This in no way impairs the performance of the insulation.

### Mold Growth (ASTM C1338)

Does not breed or sustain mold, fungus, bacteria or rodents.

### Corrosiveness (ASTM C665)

Chemically inert. Will not cause or accelerate corrosion of steel, stainless steel, copper or aluminum, due to its particular inorganic and mineral composition.

### Water Vapor Sorption (ASTM C 1104)

Less than 1% by weight.

### Odor Emission (ASTM C1304)

Passed, no detectable odor that is objectionable or strong.

### Alkaninity (ASTM C871)

pH 9

### Specification Compliance

AFICO Pre-Engineered Metal Building Insulation complies with the standard specification requirements of the following specifications:

DCL: ASTM C665 Type I, Type II and Type III with different Classes and Categories

: ASTM C553 Type I, Type II and Type III  
 CE-EN: EN 13162-T1-1121-CPD-BA0137

UL 723 : Classified as FHC 25/50 File no R27731

ASTM C795 : Thermal Insulation for Use in Contact with Austenitic Stainless Steel tested  
 SASO: SASO EN 13162

License # 20240660861

SCS Global : SCS-HPD-09461

Global Green Tag : ARA:DS01:2025:GR

Global Green Tag : ARA:DS01:2024:PH

Emirates GBC : EmiratesGBC

SCS Global : SCS-RC-02810

SCS-IAQ-07373

SCS-EPD-08452

### Fire Properties

B.S. 476 PART 4: Non Combustible

B.S. 476 PART 5: Ignitability

B.S. 476 PART 6: Fire Propagation

B.S. 476 PART 7: Surface Spread of Flame Class '0' fire rating to the building regulations sections E15

### Facing Information (Flexible Vapor Barrier)

ASTM C1136 Standard specification for Flexible, Low Permeance Vapor Retarders for Thermal Insulation

### Vapor Permeability (ASTM E96A)

FRK: 0.02 perms

WMSK: 0.02 perms

Vinyl: 0.00 perms

### Puncture Resistance

FRK: 25 beach units

WMSK: 110 beach units

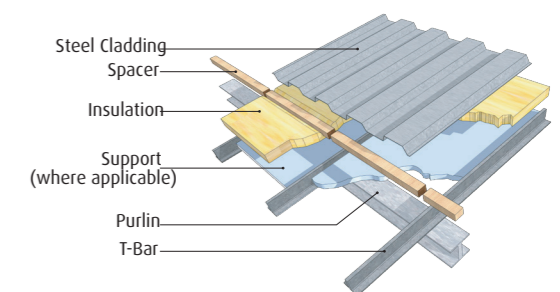
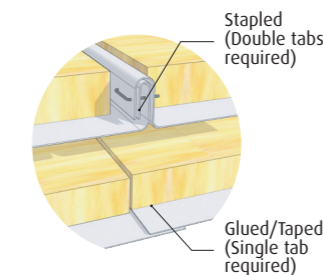
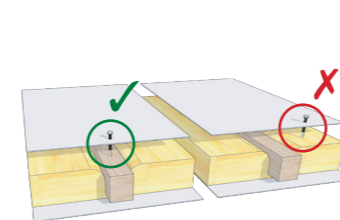
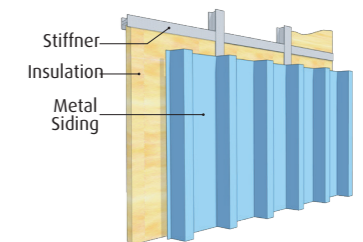
Vinyl: 1170 beach units

### Application Guidelines

Several methods are used to insulate metal buildings. The usual method is to apply the insulation over the structural members (purlins and girts) and inside the exterior panels. This method generally accommodates single layer insulation to R-13. Methods are also used to apply insulation in metal building roofs between purlins so as to accommodate greater insulation thickness and better thermal performance. In some cases, two insulation layers are necessary or desirable.

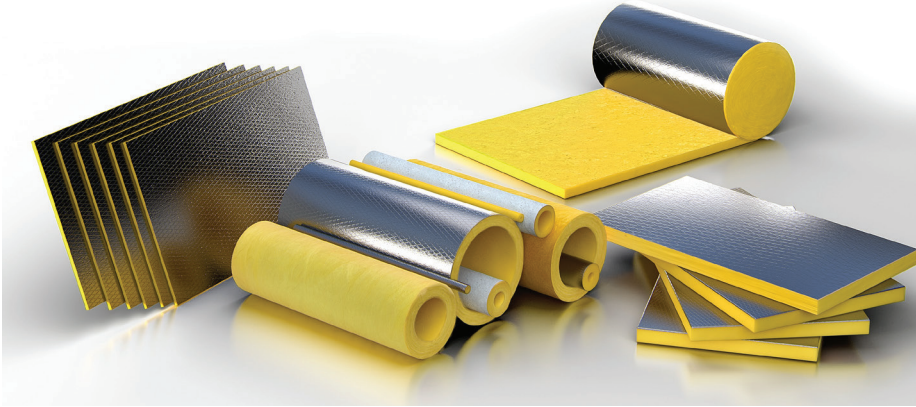
In such case, AFICO Pre-Engineered Metal Building Insulation provides an economical unfaced second layer. The table below shows how double layer application may be used to achieve desired R-values.

Desired R-Value	First Layer (Faced)	Second Layer (Unfaced)
16	R = 7	R = 9
19	R = 7	R = 12
25	R = 7	R = 18
31	R = 7	R = 24





# Pre-Engineered Metal Building Insulation (PEBI)



### The AFICO Product Range includes

- Cavity Wall Insulation • Blanket Insulation • Duct Liner Board • Duct Liner • Faced Duct Wrap • Quiet Liner
- Thermal Insulating Wool • Pipe Wrap Insulation • Quiet Liner Board • Acoustical Ceiling Panels • Board Insulation
- Roof Deck Board Insulation • Heavy Density Pipe Insulation • HD Series Blanket Insulation
- Pre-engineered Metal Building Insulation • Mechanical Board Insulation

### Call us today for more information & professional guidance:

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Jeddah: +966 12 670 0020

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Egypt (Cairo): +20 100 009 9209

North Africa (Tunis): +216 2 053 1000

Please send all email inquiries to [info@afico.com.sa](mailto:info@afico.com.sa)



## People & Planet Always First

AFICO's products are all energy saving, environmentally friendly, use even more recycled materials and contribute to the fight against global warming.

A Subsidiary of



TECHNOLOGY PARTNER

AFICO operates as a subsidiary of Gulf Insulation Group, With Owens Corning serving as its technology partner

### Maintenance

No maintenance is required. AFICO Pre-Engineered Metal Building Insulation products have a high resistance to accidental damage from knocks and handling during installation and maintenance. Dimensionally stable under varying conditions of temperature and humidity, rot proof, odorless, non-hygroscopic and will not sustain vermin or fungus due to its inorganic and mineral.

The product will maintain its thermal properties throughout the lifetime of the construction and will not age. AFICO fiberglass is non-toxic and presents no hazard to health.

### Storage

To avoid moisture in the building construction, AFICO insulation products stored outside must be kept dry. We recommend AFICO products to be always stored in covered and dry areas. AFICO is not liable for the damage resulting from inadequate utilization, loading and off-loading and mishandling of its products.

### Warranty

See manufacturer's General Terms and Conditions of Sale. As AFICO and/or OCF has no control over installation design, installation workmanship, accessory materials, or conditions of application, AFICO and/or OCF does not warrant the performance or results of any installation containing their products. This warranty disclaimer includes all implied warranties, including the warranties or merchantability and fitness for a particular purpose.

Arabian Fiberglass Insulation Company AFICO reserves the right to alter product specifications without prior notice, as part of its policy of continued development and improvement. The installation methods described in this leaflet are not compulsory. The choice of materials and methods of fixing are the decision of the specifier, consultant or contractor. For further information or advice on specification of products, contact your local, sales office.

### Availability

Manufactured by Arabian Fiberglass Insulation Company, Ltd. (AFICO), a subsidiary wholly owned by Gulf Insulation Group. AFICO has headquarters and production facilities located in Dammam, Saudi Arabia, operating under license from and utilizing the manufacturing specifications and technology of Owens-Corning Corporation (OCF), Toledo, Ohio, U.S.A.



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Marketed throughout Saudi Arabia, the G.C.C. countries, the Middle East, and the Far East, AFICO products are available directly as well as through a vast and reliable network of local distributors.

Special products are manufactured on request.