

INSULATION UPDATE

PHYSICAL PROPERTIES OF THERMAX® SHEATHING (TF-610)

Description

Thermax Sheathing (TF-610) is a composite of a glass fiber reinforced polyisocyanurate foam core between smooth aluminum foil facers and is available in thicknesses of 1/2" through 4-1/4", lengths through 40 ft. and standard 4 ft. width.

WARNING: Celotex® Thermax® products should be used only in strict accordance with Celotex Application Instructions. When Thermax products are used alone or used with non-combustible building components, they will burn if subjected to a fire of sufficient intensity, but will not contribute to the rapid spread of fire. Thermax products and other insulations, when used with exposed combustible materials may contribute to the rapid spread of fire.

All common building materials like wood and Thermax Insulation products release toxic smoke if ignited.

COMPLIANCES: Thermax Sheathing

CABO: One- and Two-Family Dwelling Code, Sect. 317.

BOCA: Building Officials and Code Administrators International, Inc. Research Report No. 89-45 and National Building Code, Sect. 2603.0

ICBO: International Conference of Building Officials, Evaluation Report No. 3223 and Uniform Building Code, Sect. 2602.

SBCCI: Southern Building Code Congress International, Evaluation Report No. 9574 and Standard Building Code, Sect. 2603.

In Canada, the following apply to Thermax Sheathing:

CMHC: Canada Mortgage & Housing Corp. Evaluation Report No. 08433.

CGSB: Canadian General Standards Board, Specification CAN/CGSB 51.26 M86 Type 1.

FHA Federal Housing Administration Minimum Property Standards.

Thermax Sheathing complies with ASTM C1289, Type I, Class 2 and Federal Specification HH-1-1972/1, Class 2.

Third party Inspections

A reliable indication of an insulating material's quality and dependability is the third party inspection labels it carries.



Thermax Sheathing

Subject to the conditions of Approval as a Class 1 insulated wall and ceiling panel when installed as described in the current edition of the FMRC Approval Guide.

Thermax 600 Series Products

UNDERWRITERS LABORATORIES INC.®

CLASSIFIED 26P9 FOAMED PLASTIC

SURFACE BURNING CHARACTERISTICS

	Core Materials				
	1/2" Thick Max.	2" Thick Max.	4-1/4" Thick Max.		
Flame Spread	20	20	25		
Smoke Developed	35	85	130-185		
	Core Materials				
	1/2" Thick Max.	1" Thick Max.	2" Thick Max.	3" Thick Max.	4-1/4" Thick Max.
Flame Spread	20	20	20	20	20
Smoke Developed	60	80	120	140	125-190

† Installed in a thickness, or stored in effective thickness as indicated; for a density of 1.6 to 2.0 lb/ft.³

ALSO CLASSIFIED FOR INSULATED WALL-CEILING CONSTRUCTION CLASSIFIED AS TO FIRE DAMAGEABILITY ONLY (FOR ALUMINUM FOIL-FACED BOARDS ONLY)

ALSO CLASSIFIED FOR WALL-CEILING CONSTRUCTION CLASSIFIED WITH REGARD TO FLAME PROPAGATION AND DAMAGEABILITY UNDER SPECIFIED ROOM FIRE CONDITIONS ONLY

The manufacturer makes the following statement: These numerical ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.



Typical Physical Properties: Thermax Sheathing

Density ASTM D1622	2 (32) PCF Nominal	
Closed Cell Content ASTM D1940	≥ 90%	
K-Factor (Stabilized) ASTM C518 @ 75°F Mean Temp.	0.14 Btu-in/ft ² F hr	
Water Vapor Permeance ASTM E96	< 0.03 perm	
Water Absorption ASTM C209 (24 hr)	< 1% by volume	
Compressive Strength ASTM D1621 Thickness Direction	25 psi (172 kPa) minimum	
Tensile Strength ASTM D1623	25 psi (172 kPa)	
Shear Strength ASTM C273 @ 74°F Parallel & Perpendicular	24 psi (165 kPa)	
Shear Modulus ASTM C273 Parallel & Perpendicular	250 psi (1724 kPa)	
Flexural Strength, ASTM C203 Modulus of rupture, psi (kPa)	1" 88/59 (607/407)	
	2" 63/54 (434/372)	
	4-1/4" 29/26 (200/179)	
Dimensional Stability, % Change ASTM D2126 Length or Width	+200°F <±1.0 -40°F <±1.0 +158°F/97%RH <±1.0	
Tensile Strength, psi (kPa), ASTM D1623	25 (172)	—
Ignition Properties Flash Ignition Temperature ASTM D1929	900°F (482°C)	
Self-Ignition Temperature ASTM D1929	1025°F (552°C)	

Stabilized R-Values:^{*}

Nominal Board Thickness (mm)	1/2" (12.7)	5/8" (15.9)	3/4" (19.1)	7/8" (22.2)	1" (25.4)	1-1/4" (31.8)	1-1/2" (38.1)	2" (50.8)	2-1/4" (57.2)	2-1/2" (63.5)	2-3/4" (69.8)	3" (76.2)	3-1/4" (82.6)	3-1/2" (88.9)	3-3/4" (95.2)	4" (101.6)	4-1/4" (108)
R-Value at 75° Mean Temp.	3.6	4.5	5.4	6.3	7.2	9.0	10.8	14.4	16.2	18.0	19.8	21.6	23.4	25.2	27.0	28.8	30.0
System R-Value with 3/4" (19.1mm) Air Space [†]	6.4	7.3	8.2	9.1	10.0	11.8	13.6	17.2	19.0	20.8	22.6	24.4	26.2	28.0	29.8	31.6	32.8

^{*}R means the resistance to heat flow. The higher the R-Value, the greater the insulating power. See Celotex literature for product details, recommended uses, application instructions and warnings.

Product thicknesses are nominal and are provided for design information. For R-Values at other mean temperatures, consult Celotex.

[†]This system R-Value is the added R-Value calculated when the aluminum foil surface is installed next to 3/4" (19.1mm) air space in a wall. The product R-Value at 75°F mean temperature is then added to the air space R-Value of 2.77 (rounded to 2.8) to yield this system R-Value. This information from the ASHRAE Handbook Fundamentals is provided to assist designers of residential construction to comply with Federal Trade Commission requirements.

NOTICE: The information in this document is subject to change without notice. Celotex assumes no responsibility for any errors that may inadvertently appear in this document.



Consult Celotex literature for product details, recommended uses, application instructions and warnings. For immediate fax response dial 1-800-CELOFAX (235-6329).

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Core Properties:

Glass Fiber Reinforced Polyisocyanurate Foam Core
Density, pcf (kg/m³) (ASTM D1622) Nominal 2 (32)

Compressive Strength, Thickness Direction,
psi (kPa) (ASTM D1621) 25 minimum (172)

General Information: Temperature Resistance

Thermax Sheathing (TF-610) is resistant to thermal decomposition within a temperature range of -100°F to +250°F (-73 to +121°C). And, since most thermal insulation applications involve a thermal gradient (hot one side, cold one side) across the insulation material, brief exposure to slightly higher "hot side" temperatures, followed by continued satisfactory thermal insulation performance, could be experienced in thicker applications of Thermax Sheathing (TF-610). Thermax core material is made with a "Thermoset" polymer and retains its rigid board configuration at these high temperatures, as contrasted with polystyrene foam which is a "Thermoplastic" polymer and softens/melts around 175°F. Each insulation application should be carefully designed, giving consideration to thermal performance requirements for the insulation board under actual service conditions.

Moisture Resistance

Facers of aluminum foil are excellent barriers to both liquid water and water vapor. Thermax Sheathing (TF-610) core has a closed-cell structure and is resistant to the passage of liquid water as might be encountered in normal building and construction applications.