

DuPont™ Thermax™ Insulation Exposed Interior Wall Applications

For Metal Buildings with Low Humidity

SYSTEM OVERVIEW

Description

DuPont™ Thermax™ polyisocyanurate insulation products used in exposed applications help safeguard metal building systems that have low humidity* against thermal loss, moisture buildup and even fire damage.

Use Thermax™ products as a continuous insulation solution for exposed interior wall insulation applications in agricultural, commercial and industrial buildings such as factories, warehouses, agricultural structures, cold storage structures and similar facilities. Installed perpendicular to framing, Thermax™ products should span no fewer than three framing members with insulation board joints breaking over framing or meeting the roof edge (Figure 1).

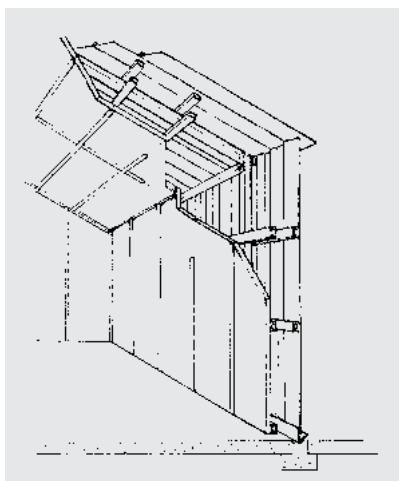


Figure 1

Products

Thermax™ products are designed as an insulation and interior finish. The boards are closed-cell products that are highly resistant to heat flow. All Thermax™ products feature a polyisocyanurate foam core with glass fiber reinforcement, and are surfaced with different solid aluminum foil facers. The reinforced core, plus chemical modifications, improves fire performance compared with other rigid insulation products and enhances dimensional stability.

The bonded aluminum foil facers serve as effective moisture vapor retarders. **Thermax™ Sheathing** has pinhole-free aluminum foil facers on both sides, while **Thermax™ Metal Building Boards** have embossed aluminum facers on both sides.

Thermax™ Light Duty, **Thermax™ Heavy Duty** and **Thermax™ White Finish** insulation products have an embossed aluminum facer on one side with a white acrylic-coated aluminum facer on the other. This design creates an aesthetically appealing decorative effect.

The products listed here have varying thicknesses and facers, ideally suiting Thermax™ products for meeting specific designs and requirements in the interior walls of metal buildings with low humidity.

TABLE 1: Thermax™ Product Recommendations⁽¹⁾

Boards	Surface Facers
Thermax™ Sheathing	1.0 mil smooth aluminum foil on both sides
Thermax™ Metal Building Board	1.25 mil embossed aluminum foil on both sides
Thermax™ Light Duty	1.25 mil white acrylic-coated aluminum/ 1.25 mil embossed aluminum
Thermax™ Heavy Duty	4 mil white acrylic-coated aluminum/ 1.25 mil embossed aluminum
Thermax™ White Finish	1.25 mil white acrylic-coated aluminum/ 1 mil embossed aluminum

Advantages

Thermax™ products offer several advantages:

- Excellent insulation – high R-value (6.5 at 1")
- Improved fire performance – Thermax™ insulation can be left expose without the need for thermal barriers according to building codes. Additionally Thermax™ insulation (FS/SD of 25/300) contributes minimally to the spread of flame and smoke
- Air Barrier Performance – Thermax™ meets air barrier requirements when properly installed and sealed
- Continuous insulation solution
- Easy and fast installation

* Buildings in which humidity is less than 50 percent

INSTALLATION

Securement

Install a minimum 1" thick board of DuPont™ Thermax™ insulation perpendicular to framing, spanning at least three framing members. The maximum span is 5'.

Penetrate separate wood and metal framing 1" with a corrosion-resistant fastener and poly washer, such as Quik-Cap. When fastening to metal, Buildex Multi-Diameter Insulation Tekes or equivalent (with minimum 1-1/4" poly washers) is advised (Figure 2).

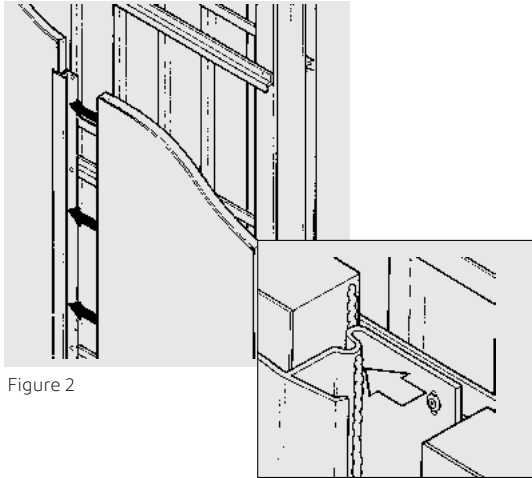


Figure 2

Fasteners should be spaced 12" o.c. in three rows (of five fasteners) per 48" board width. See fastening pattern (Figure 3).



Figure 3

TABLE 2: Recommended Fastener Lengths

Board Thickness (in.)	Fastener Length (in.)
1/2 to 5/8	1-7/16
3/4 to 1	1-7/8
1-1/8 to 1-1/2	2-3/8
1-5/8 to 2	3
2-1/4	3-1/4
2-1/2	3-1/2
3	4

Joint Treatment for Moisture Control

Even in low-humidity buildings, condensation can build up when insulation joints are left exposed. The joint treatments described here can help control moisture buildup, airflow and heat flow for optimum building performance.

Good System

Requires square edge boards. Leave square edge joints untreated.

Tape the joint on the board's front side with 3" Thermax™ white foil or aluminum foil tape (Figure 4). Taping serves as protection against moisture penetration and gives the interior of the boards a continuous surface. **Note:** When temperature difference between the inside and the outside of the building is greater than 30°F, condensation may occur.

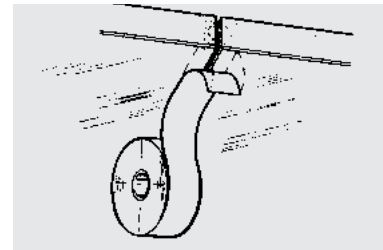


Figure 4

Best System

Requires square edge boards. Install Clip Strip with sealant on exposed joints for 1", 1-1/2", 2" and 2-1/2" thicknesses (Figure 5). The Clip Strip must be caulked with a recommended sealant.

Apply continuous coverage of selected sealant to the single long flange of the Clip Strip; slide Thermax™ insulation into place, ensuring good contact with sealant.

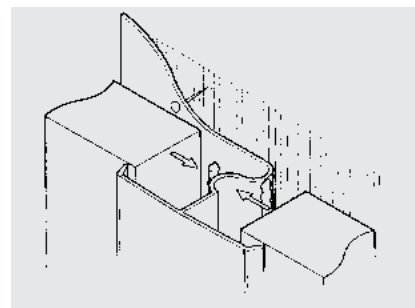


Figure 5

Performance Tests

Factory Mutual (FMRC Standard 4880) – Subject to the conditions of approval as Class 1 wall and ceiling panels when installed as described in the current edition of the FMRC Approval Guide.
FACTORY MUTUAL SYSTEM APPROVED.

Compliances

- ASTM E2178 Standard Test Method for Air Permeance of Building Materials – leakage rates less than 0.001 L/s/m² at a test pressure of 75 Pa
- ASTM E283 Standard Test Method for Determining Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors under specified Pressure differences across the specimen. Results were <0.02 L/s/m².
- ASTM E2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies - no leakage
- ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference - no leakage
- International Residential Code 2006 (IRC) Section R314
- International Building Code 2006 (IBC) Section 2603
- ICC-ES NER-681
- DuPont™ Thermax™ products are covered under Underwriters Laboratories Inc. (UL) files R5622, R8181 and R2637
- UL 1256 – Fire Test of Roof Deck Constructions, Roof Deck Construction No. 120 and No. 123
- Class A UL 723 (ASTM E84) Surface Burning Characteristics of Building Materials
- The following designs are 1, 2, 3 or 4 hour wall rated assemblies as listed in the UL Fire Resistance Directory: U026, U326, U330, U354, U355, U424, U460, U902, U904, U905, U906, U907, V454, V482
- Fire Performance Evaluation of an Exterior Masonry Wall System Incorporating Thermax™ Insulation Tested in Accordance With NFPA 285, 2006 Edition (UBC 26.9, intermediate scale – multistory testing)
- FMVSS No. 302 - Flammability of Interior Materials – Passenger Cars, Multipurpose Passenger Vehicles, Trucks and Buses (Docket No. 3-3; Notice 4)
- Miami-Dade NOA 08-0320.01 Interior Insulation on CMU Block



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CAUTION: When cured, these products are combustible and will burn if exposed to open flame or sparks from high-energy sources. Do not expose to temperatures above 240°F (116°C). For more information, consult (Material) Safety Data Sheet ((M)SDS), call DuPont at 1-866-583-BLUE (2583) or contact your local building inspector. In an emergency, call 1-989-636-4400 in the U.S. or 1-519-339-3711 in Canada. The blowing agent contained within this product can exhibit vapor flame limits under the right conditions. If specific operating conditions are such that concentrations of the blowing agent above the lower flammable limit can accumulate in areas with high relative humidity and in the presence of high-energy electrical discharges or other ignition sources, additional measures such as increased ventilation or coded electrical equipment (class one, division two) may be warranted. **DO NOT SMOKE DURING USE. DO NOT USE NEAR ANY OPEN FLAME OR ELECTRICAL SOURCE. OUTDOOR USE ONLY. INDOOR USE INCREASES LIKELIHOOD OF IGNITABLE CONDITIONS.** INSTASTIK™ Quik Set Commercial Roofing Adhesive contains isocyanate and a blowing agent. Read the label and (Material) Safety Data Sheet ((M)SDS) carefully before use. Wear gloves, and goggles or safety glasses. Provide adequate ventilation or wear proper respiratory protection. Contents under pressure. For outside use only.

Building and/or construction practices unrelated to insulation could greatly affect moisture and the potential for mold formation. No material supplier including DuPont can give assurance that mold will not develop in any specific system.

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