

# DuPont™ Tuff-R™ (ci) Insulation Board

## High-Performance Polyiso Foam with Dual Reflective Foil Facers

### FEATURES/BENEFITS

#### Description

DuPont™ Tuff-R™ (ci) Insulation Board is a non-structural, rigid board insulation consisting of a glass-fiber-infused, closed-cell polyisocyanurate foam core laminated between 1.0 mil smooth reflective aluminum facers on both sides. As a result, Tuff-R™ (ci) offers high, long term R-value providing continuous, durable insulation within the building envelope.

Tuff-R™ (ci) is specially designed to have a Class A fire rating and can be used in a range of concealed and exposed applications including use in exterior walls. It has the required flame-spread index of 25 or less and a smoke-developed index of 450 or less and has NFPA 285 tested assemblies that are approved for use per Section 2603.5 of the International Building Code in Exterior Walls of Types I, II, III, IV construction.

#### Ease of Installation

Tuff-R™ (ci) Insulation Boards are:

- Lightweight – easy to handle and install with a utility knife or any sharp blade
- Quick to install – installs quickly to walls including girts, steel stud, tilt-up, block and wood

- Effective – high R-value<sup>(1)</sup> provides enhanced thermal efficiency; facers help reduce air penetration and water vapor intrusion allowing products to be detailed as a weather-resistive barrier
- Durable – Class A fire rating allows them to be used in a range of concealed and exposed applications with enhanced job-site durability; less damage and job-site waste

#### Available Sizes

Tuff-R™ (ci) is available in 4' x 8' dimensions up to a maximum thickness of 3.2". Full sizing information can be found in Table 1.

#### Sustainable Solutions

- Tuff-R™ (ci) can be used for continuous insulation to assist in meeting and exceeding both the most current IECC and ASHRAE 90.1 energy standards.
- Tuff-R™ (ci) is manufactured with a zero ozone depleting potential.
- The use of Tuff-R™ (ci) helps reduce the carbon footprint of commercial buildings by reducing the energy consumed to maintain comfort.

**TABLE 1: Sizes, R-values and Edge Treatments for Tuff-R™ (ci) Insulation Board**

Nominal Board Thickness <sup>(1)</sup> , in.	R-value <sup>(2)(3)</sup>	Board Size, FT	Edge Treatment
1.0	6.3	4 x 8	Square Edge
1.55	10.0	4 x 8	Square Edge
2.0	13.0	4 x 8	Square Edge
3.2	19.2	4 x 8	Square Edge

<sup>1</sup>Contact your DuPont seller for information at different R-values and other sizes and lead time requirements. Not all product sizes are available in all regions.

<sup>2</sup>R means resistance to heat flow. The higher the R-value, the greater the insulating power. Stabilized R-values @ 75°F mean temperature determined in accordance with ASTM C518. R-values expressed in ft<sup>2</sup>·h·°F/Btu.

<sup>3</sup>An additional 2.77 R-value may be added to the system R-value, when a minimum 3/4" ideal air space and horizontal heat flow are present in accordance with the ASHRAE Fundamentals Handbook on FTC, 16 CFR Part 460.

## PROPERTIES

DuPont™ Tuff-R™ (ci) Insulation Board exhibits physical properties as indicated in Table 2 when tested as represented. Review all instructions and (Material) Safety Data Sheet ((M)SDS) before use. Please contact DuPont at 1-866-583-2583 when additional guidance is required for writing specifications that include this product.

**TABLE 2: Typical Physical Properties of Tuff-R™ (ci) Insulation Board**

Property and Test Method	Value
Compressive Strength <sup>(1)</sup> , ASTM D1621, psi, min.	20
Flexural Strength, ASTM C203, psi, min.	40
Water Absorption, ASTM C209, % by volume, max.	0.1
Water Vapor Permeance, ASTM E96, perm, max.	≤0.04
Maximum Use Temperature, °F	250
Surface Burning Characteristics <sup>(3)</sup> , ASTM E84 for both Foam Core and Finished Product	
Flame Spread	≤25
Smoke Developed	<450

<sup>1</sup> Vertical compressive strength is measured at 10 percent deformation or at yield, whichever occurs first.

<sup>2</sup> Calculated flammability values for this or any other material are not intended to represent hazards that may be present under actual fire conditions.

## TESTING

### Applicable Standards

Tuff-R™ (ci) meets ASTM C1289 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board, Type I, Class 2. Applicable standards include:

- **C203** – Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
- **C209** – Standard Test Methods for Cellulosic Fiber Insulating Board
- **C518** – Standard Test Method for Steady- State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- **D1621** – Standard Test Method for Compressive Properties of Rigid Cellular Plastics
- **D2126** – Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging
- **E96** – Standard Test Method for Water Vapor Transmission of Materials
- **D1623** – Standard Test Method for Tensile and Tensile Adhesion Properties of Rigid Cellular Plastics

### Notice

Tuff-R™ (ci) complies with the following code and tests verified by third party entities:

- ASTM E2178 Standard Test Method for Air Permeance of Building Materials – leakage rates less than 0.001 L/s/m<sup>2</sup> at a test pressure of 75 Pa.

- ASTM E283 (Modified Based on AC12 Section 4.5.11.6) 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/m<sup>2</sup>
- ASTM E2357 Standard Test Method for Determining Air Leakage of Air Barrier Assemblies – no leakage when used with Liquidarmor™ - CM Flashing and Sealant or Weathermate™ Straight Flashing
- ASTM E331 Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference – no leakage when used with Liquidarmor™ - CM Flashing and Sealant or Weathermate™ Straight Flashing
- 2009 International Building Code (IBC) Section 2603
- ICC-ESR – 3766
- UL 1256 – Fire Test of Roof Deck Constructions, Roof Deck Construction No. 120 and No.123
- The following designs are 1, 2, 3 or 4 hour wall rated assemblies as listed in the UL Fire Resistance Directory: U424, U425, U460, U902, U904, U905, U906, U907, V482, V499
- Fire Performance Evaluation of an Exterior Masonry Wall System Incorporating Tuff-R™ (ci) Insulation Board Tested in Accordance With NFPA 285, 2006 Edition

Contact your DuPont sales representative or local authorities for state and local building code requirements and related acceptances.

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## HANDLING

**WARNING: For Professional Use Only** – Read and follow the entire Handling section and the Safety Data Sheets (SDSs, formerly MSDSs or Material Safety Data Sheets) carefully before use. The information below is designed to protect the user and allow for safe use and handling of DuPont™ products. Follow all applicable federal, state, local and employer regulations.

### Precautionary Statements

- Butt joints must be installed over structural members. “Best practices” recommends continuously sealing the board joints with a DuPont joint closure system.
- Building and/or construction practices unrelated to building materials 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.
- **CAUTION: DuPont™ Tuff-R™ (ci) Insulation Boards** are combustible and when used in a building containing combustible materials, may contribute to the spread of fire. This product shall only be used as specified by the local building code with respect to flame spread classification and to the use of a suitable thermal barrier.

**Tuff-R™ (ci)** should be used only in strict accordance with product application instructions. For more information, consult (M)SDS and/or call DuPont at 1-866-583-2583.

### Disposal

Dispose of any residual product, coated debris, or solvent in accordance with applicable federal, state, and local government regulations.



**For more information visit  
[building.dupont.com/tuffr](http://building.dupont.com/tuffr)  
or call 1-866-583-2583**

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**CAUTION:** This product is combustible. Protect from high heat sources. A protective barrier or thermal barrier may be required as specified in the appropriate building code. For more information, consult (Material) Safety Data Sheet ((M)SDS), call DuPont at 1-866-583-2583 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.

**WARNING:** Rigid foam insulation does not constitute a working walkable surface or qualify as a fall protection product.

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