



# 1 PRODUCT NAME TUFF-R™ Commercial and Super TUFF-R™ Commercial Insulation

## 2 Manufacturer

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## 3 Product Description

TUFF-R™ Commercial and Super TUFF-R™ Commercial polyisocyanurate insulation products consist of a patented, high-insulating-value, closed-cell polyisocyanurate foam core sandwiched between a choice of durable, exterior facers.

TUFF-R Commercial insulation has reflective/radiant barrier-quality facers on both sides of the board. When additional durability is required, Super TUFF-R Commercial insulation is the product of choice. The Super TUFF-R facers are composed of a reinforced, coated three-ply polymer/foil facer on one side. The other side is an equally reinforced polymer/foil super Tri-Plex non-reflective facer. Super TUFF-R's three-ply facers improve shipping, storage and job site durability.

TUFF-R Commercial and Super TUFF-R Commercial insulation products offer high, long-term R-value\*. The facers reduce intrusion by water and water vapor into the foam insulation core, and allow the foam R-value to stabilize at a higher value. TUFF-R Commercial and Super TUFF-R Commercial insulation can be detailed as an air barrier.

### BASIC USE

TUFF-R™ Commercial and Super TUFF-R™ Commercial insulation products can be used in commercial interior wall construction behind a minimum 1/2" gypsum board or equivalent thermal barrier interior finish.

### SIZES

Product thicknesses and R-values are shown in Table 1. Not all products are available in all parts of the country. Other product sizes are available by custom order. Consult a Dow representative for board sizes and additional thickness information.

## 4 Technical Data

### APPLICABLE STANDARDS

TUFF-R™ Commercial and Super TUFF-R™ Commercial insulation meet ASTM C1289 – Standard Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board, Type I, Class 2. Applicable standards include:

- D1621 – Standard Test Method for Compressive Properties of Rigid Cellular Plastics
- C209 – Standard Test Methods for Cellulosic Fiber Insulating Board
- E96 – Standard Test Methods for Water Vapor Transmission of Materials
- D1622 – Standard Test Method for Apparent Density of Rigid Cellular Plastics

- C203 – Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
- C236 – Standard Test Method for Steady-State Thermal Performance of Building Assemblies by Means of a Guarded Hot Box
- C518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

### CODE COMPLIANCE

TUFF-R™ Commercial and Super TUFF-R™ Commercial insulation products comply with the following standards and codes:

- IBC – International One- and Two-Family Dwelling Code, Section 317; International Building Code, Section 2603
- NES – National Evaluation Services (NER-616) which replaces:
  - BOCA – Section 2603
  - ICBO – Section 2602
  - SBCCI – Section 2603
- FHA – Federal Housing Administration Minimum Property Standards
- Federal Specification HH-I-1972/1, Class 2

TABLE 1

TUFF-R™ Commercial and Super TUFF-R™ Commercial Insulation R-Values				
Nominal Foam Thickness, in.	Stabilized R-Value <sup>(1)</sup>		System R-Value <sup>(2)</sup>	
	TUFF-R	Super TUFF-R	TUFF-R	Super TUFF-R
1	6.5	6.5	9.3	9.3
1.5	9.8	9.0	12.6	11.8
1.75	N/A	11.4	N/A	14.2
2.0	13.0	12.0	15.8	14.8

(1) Stabilized R-values @ 75°F mean temperature determined in accordance with ASTM C236/C518 on full-sized products.

(2) System R-value is the sum of the stabilized R-value plus additional R-value calculated when the aluminum foil surface is installed next to a non-ventilated 3/4" air space (R-value = 2.8). All values from the ASHRAE Fundamentals Handbook.

## PHYSICAL/CHEMICAL PROPERTIES

TUFF-R™ Commercial and Super TUFF-R™ Commercial insulation products exhibit physical properties as indicated in Table 2 when tested as represented.

For chemical resistance properties of TUFF-R Commercial and Super TUFF-R Commercial insulation products, see Table 3.

## ENVIRONMENTAL DATA

TUFF-R™ Commercial and Super TUFF-R™ Commercial insulation products are manufactured with hydrocarbon blowing agents, which have no ozone depletion potential.

## FIRE PROTECTION

TUFF-R™ Commercial and Super TUFF-R™ Commercial insulation products are combustible; protect from high heat sources. Local building codes may require a protective or thermal barrier. For more information, consult MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector.

## 5 Installation

TUFF-R™ Commercial and Super TUFF-R™ Commercial insulation boards are easy to handle, cut and install. They can be cut with a utility knife or any sharp blade. Contact a local Dow representative or access the literature library at [www.dowstyrofoam.com/architect](http://www.dowstyrofoam.com/architect) for more specific instructions.

**TABLE 2**

Physical Properties of TUFF-R™ Commercial and Super TUFF-R™ Commercial Insulation	
Property and Test Method	Value
Compressive Strength, ASTM D1621, psi, min.	25
Water Absorption, ASTM C272, % by volume, core foam, max.	0.05
Water Vapor Permeance, ASTM E96, perm	<0.03
Maximum Use Temperature, °F	190
Flexural Strength for 1" core foam, ASTM C203, psi, min.	55

**TABLE 3**

Chemical Resistance of TUFF-R™ Commercial and Super TUFF-R™ Commercial Insulation			
Acid, inorganic	Not recommended	Hydrocarbons	Excellent
Acid, organic	Excellent	Insecticides	Excellent
Alcohol	Excellent	Kerosene	Excellent
Asphalt, water-based	Good	Mineral oil USP	Excellent
Bases (caustics)	Poor	Naphtha	Excellent
Brines and other salts	Excellent	Paints, alcohol-based	Excellent
Cements and mortar	Poor (aluminum foil facers)/ Excellent (other facers)	Paints, water-based	Excellent
Gases, carbon dioxide (CO <sub>2</sub> )	Excellent	Polyglycols, including propylene glycol	Excellent
Gasoline	Excellent	Water <sup>(1)</sup>	Excellent

NOTE: This table should be used as a guide only. For design purposes, specific test data on the intended application may be needed.  
(1) Water may cause discoloration of aluminum facers. This does not impact the R-value of dry core insulation.

## 6 Availability

TUFF-R™ Commercial and Super TUFF-R™ Commercial insulation products are distributed through an extensive network. For more information, contact your local Dow representative or call 1-800-232-2436.

## 7 Warranty

A 15-year limited thermal warranty is available. Ask your Dow representative for details.

## 8 Maintenance

Not applicable.

## 9 Technical Services

Dow can provide technical information to help address questions when using TUFF-R™ Commercial and Super TUFF-R™ Commercial insulation products. Technical personnel are available to assist with any insulation project. For technical assistance, call 1-866-583-BLUE (2583).

## 10 Filing Systems

- [www.dowstyrofoam.com/architect](http://www.dowstyrofoam.com/architect)
- [www.sweets.com](http://www.sweets.com)

### IN THE U.S.:

- For Technical Information: **1-866-583-BLUE (2583)**
- For Sales Information: **1-800-232-2436**

### THE DOW CHEMICAL COMPANY

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COMBUSTIBLE: Protect from high heat sources. Local building codes may require a protective or thermal barrier. For more information, consult MSDS, call Dow at 1-866-583-BLUE (2583) or contact your local building inspector. In an emergency, call 1-989-636-4400.

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

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