



**TUFF-R™ AND SUPER TUFF-R™
POLYISOCYANURATE INSULATION**

**TO BE USED AS AN EXAMPLE ONLY.
THIS IS NOT AN ADVERTISING FOR THE BRAND**

PRODUCT NAME

TUFF-R™ and Super TUFF-R™
Polyisocyanurate Insulation

MANUFACTURER

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PRODUCT DESCRIPTION

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

On TUFF-R™ insulation, one facer is a continuous sheet of aluminum foil; the other is a Tri-Plex facer consisting of a three-ply laminate of durable kraft with aluminum foil on both sides. Where additional durability is required, Super TUFF-R™ insulation is a product of choice. The Super Tri-Plex facers are three-ply laminates of durable polyester, kraft and reinforced aluminum foil. One side is blue; the other side is radiant barrier-quality reflective foil. TUFF-R™ and Super TUFF-R™ insulation help reduce air infiltration through the wall by covering cracks between the framing members and sealing tightly against the studs.

APPLICATIONS

Install TUFF-R™ and Super TUFF-R™ insulation products in residential construction where they will be covered with a minimum of 1/2" gypsum board, or equivalent, thermal barrier.

Applications include:

- New frame wall construction behind masonry, siding, exterior stucco or other compatible finishes

TABLE 1: FEATURES AND BENEFITS OF TUFF-R™ AND SUPER TUFF-R™ POLYISOCYANURATE INSULATION

Feature	Benefit
High R-value ⁽¹⁾	<ul style="list-style-type: none"> • Enhances thermal efficiency, helping reduce energy cost
Choice of durable facers depending on design requirements	<ul style="list-style-type: none"> • Contribute to durable surface that can be nailed, stapled or glued
Facers help reduce air penetration and water vapor intrusion	<ul style="list-style-type: none"> • Allow products to be detailed as a weather-resistant barrier • Allow foam R-value to stabilize at higher value
Products can be cut with utility knife or any sharp blade; Tri-Plex facers on Super TUFF-R™ improve shipping, storage and job-site durability	<ul style="list-style-type: none"> • Easy to handle and install • Less damage and job-site waste
Compatible with most exterior siding treatments	<ul style="list-style-type: none"> • Versatile • Ideal for brick, stone, aluminum, vinyl, wood, composite, fiber cement and stucco⁽²⁾
Hydrocarbon blowing agent	<ul style="list-style-type: none"> • No ozone depletion potential

(1) R means resistance to heat flow. The higher the R-value, the greater the insulating power.

(2) Siding manufacturers may restrict warranties as applied to sheathing underlayment.

TABLE 2: PHYSICAL PROPERTIES OF TUFF-R™ AND SUPER TUFF-R™ POLYISOCYANURATE INSULATION

Property and Test Method	Value
Compressive Strength ⁽¹⁾ , ASTM D1621, psi, min.	20
Flexural Strength, ASTM C203, psi, min. for 1" core foam	40
Water Absorption, ASTM C209, % by volume, max.	<1
Water Vapor Permeance ⁽²⁾ , ASTM E96 (dessicant method), perms	<0.03
Nominal Density, ASTM D1622, pcf	2
Operation Temperature Range, °F	-50 to +190

(1) Vertical compressive strength is measured at 10 percent deformation or at yield, whichever occurs first.

(2) Based on 1" thickness.

- Interior retrofit of existing walls under a new interior finish of 1/2" (minimum) gypsum board
- Exterior retrofit of existing walls under new exterior sidings
- Over roof decks and in cathedral ceilings

PHYSICAL PROPERTIES

TUFF-R™ and Super TUFF-R™ insulation products offer high R-value. The polyisocyanurate insulation is created by an exclusive free-rise manufacturing process, which produces a uniform, closed-cell foam for better insulation performance. As with all Dow polyisocyanurate insulations, TUFF-R™ and Super

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

For features and benefits of TUFF-R™ and Super TUFF-R™ insulation products, refer to Table 1.

TUFF-R™ and Super TUFF-R™ insulation products exhibit the properties indicated in Tables 2 and 3 when tested as represented.

SIZES

Width and length:
4' x 8', 4' x 9', 4' x 10'
Edge treatment: Square edge

CODE COMPLIANCES

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

- International Residential Code (IRC) and International Building Code (IBC); see ICC-ES Evaluation Report NER-616
- ASTM C1289 Type I, Class 1
- Calif. Std. Reg. # CA-T383

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

INSTALLATION

Boards of TUFF-R™ and Super TUFF-R™ insulation are easy to handle, cut and install. The lightweight boards can be cut with a knife or any sharp blade.

Contact a local Dow representative or visit the literature library at www.insulateyourhome.com for more specific instructions.

AVAILABILITY

TUFF-R™ and Super TUFF-R™ Polyisocyanurate Insulations are available through an extensive network of distributors and dealers. For more information, call 1-800-232-2436.

TECHNICAL SERVICES

Dow can provide technical information to help address questions when using TUFF-R™ and Super TUFF-R™ insulations. Technical personnel are available at 1-866-583-BLUE (2583).

TABLE 3: R-VALUES FOR TUFF-R™ AND SUPER TUFF-R™ POLYISOCYANURATE INSULATION

Nominal Foam Thickness, in.	Product R-Value ⁽¹⁾	Product R-Value plus 3/4" air space ⁽²⁾
3/8	2.0	4.8 ⁽³⁾
1/2	3.3	6.1
5/8	4.1	6.9
3/4	5.0	7.8
1	6.5	9.3

- (1) Product R-values @ 75°F mean temperature determined in accordance with ASTM C1289 and ASTM C236/C518 on full-sized product.
(2) System R-value is the sum of the product 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.
(3) Super TUFF-R™ only

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NOTICE: Changes to the International Residential Code require the installation of a water-resistive barrier (WRB) within most exterior wall assemblies in residential construction. The following Dow insulated sheathing products qualify as a WRB when installed according to the installation instructions developed for "installation of foam sheathing as a weather-resistive barrier": STYROFOAM™ DURAMATE™ Plus, STYROFOAM™ Residential Sheathing, STYROFOAM™ Tongue and Groove, STYROFOAM SIS™, STYROFOAM™ Square Edge, STYROFOAM™ Residing Board, DOW™ High Performance Underlayment, THERMAX™ Sheathing, TUFF-R™ and Super TUFF-R™ and therefore do not require the use of a building paper or a housewrap as a WRB. When a WRB is not needed, these Dow foam sheathings may be installed according to standard installation instructions for foam sheathing from Dow. Be sure products and installation instructions meet code requirements for your particular location. Note: WEATHERMATE™ and WEATHERMATE™ Plus Housewraps have already qualified as water-resistive alternatives to the prescribed felt (see Evaluation Reports NER-533 and NER-640 for approved alternative).

CAUTION: This product is combustible and 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. 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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FOR TECHNICAL INFORMATION: 1-866-583-BLUE (2583)

FOR SALES INFORMATION: 1-800-232-2436

THE DOW CHEMICAL COMPANY

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THIS IS NOT ADVERTISING.
THERMAX IS ONLY AN EXAMPLE OF THE
TYPE OF BOARD THAT CAN BE USED

Typical Physical Properties

These properties are typical but do not constitute specifications.

THERMAX™ Sheathing - U.S. Residential

Nominal Board Thickness ⁽¹⁾ , in	R-Value ⁽²⁾⁽³⁾	Board Size, ft	Edge Treatment
.50	3.3	4 x 8, 4 x 9, 4 x 10	Square Edge
.75	5.0	4 x 8, 4 x 9, 4 x 10	Square Edge
1.0	6.5	4 x 8, 4 x 9, 4 x 10	Square Edge
1.5	9.8	4 x 8, 4 x 9, 4 x 10	Square Edge, Shiplap
2.0	13.0	4 x 8, 4 x 9, 4 x 10	Square Edge, Shiplap

⁽¹⁾ Not all product sizes are available in all regions.

⁽²⁾ R means resistance to heat flow. The higher the R-value, the greater the insulating power. R-values are expressed in ft²•h•°F/Btu. R-value determined by ASTM C518.

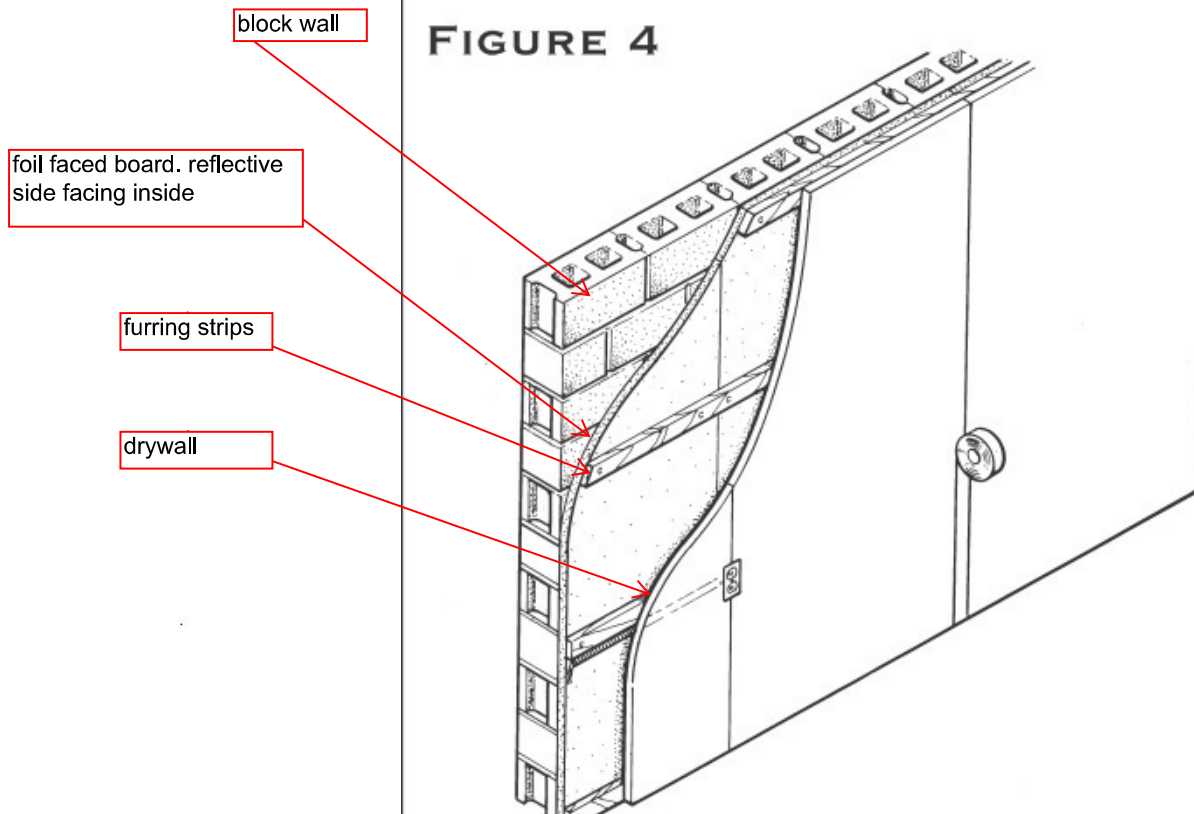
⁽³⁾ Consult your Dow Seller or Technical Service Group for information on different R-values.

⁽⁴⁾ Vertical compressive strength is measured at 10% deformation or at yield, whichever occurs first.

BETTER METHOD

Figure 4 shows a better method to install THERMAX™ Sheathing.

FIGURE 4



Final assembly outside to inside: concrete block + board + furring strips + drywall