

# ThermaDrain® THERMADRAIN® WITH SUPER TUFF-R/THERMAX (POLYISOCYANURATE) INSULATED DRAINAGE SYSTEM

## 1. Product Name

ThermaDrain® with Super Tuff-R/Thermax (Polyisocyanurate) Insulated Drainage System

## 2. Manufacturer

ThermaDrain® Inc.  
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## 3. Product Description

ThermaDrain® with Super Tuff-R/Thermax insulated drainage board combines Super Tuff-R/Thermax brand high-quality closed cell polyisocyanurate rigid insulation with a high impact non-compressible styrene drainage panel adhered to its face. When installed within a masonry wall, ThermaDrain® with Super Tuff-R/Thermax increases the R-Value of the wall (over conventional cavity wall construction) and forms a continuous unobstructed drainage path within the masonry wall to the flashing and weepholes.

ThermaDrain® with Super Tuff-R/Thermax eliminates the need for excessive, open airspace in drainage walls and eliminates the concern of mortar droppings in the cavity. ThermaDrain® with Super Tuff-R/Thermax is ideal for use in cavity wall and masonry veneer wall construction.

ThermaDrain® with Super Tuff-R/Thermax increases the quality of masonry wall construction by:

- Eliminating water related problems in cavity walls caused by excessive mortar droppings which block weep systems and render flashing installations useless
- Allowing for more insulation in the cavity wall, giving structures increased R-Value and thermal efficiency
- Providing the mason with an easy and conventional one-step means of installation of the insulation and continuous drainage system

ThermaDrain® with Super Tuff-R/Thermax generates savings by:

- Increasing the masons productivity by eliminating the extra effort required to keep the airspace clean of mortar, as well as it's one-step installation process
- Reducing wall and foundation thickness up to 2" through the reduction of cavity size and elimination of oversized airspace
- Substantially reducing shelf angle size subsequently reducing the eccentricity and tension caused by loading
- Generating long-term savings for the building owner by increasing wall R-value, thereby lowering heating and cooling costs

## 4. Technical Data

### SPECIFICATION & DETAILING

In order to obtain the most effectiveness of the ThermaDrain® with Super Tuff-R/Thermax wall system, the design professional must use the following formula to properly size the product for the wall cavity:

**A + B = C**, where:

**A** = Overall thickness of ThermaDrain

**B** = Tolerance Space

**C** = Cavity Dimension

For example, if 2" ThermaDrain® with Super Tuff-R/Thermax is desired to get a 13.0 R-Value, and the available cavity dimension is 3", then the formula would be:

$$\begin{array}{rclclcl} \mathbf{A} & + & \mathbf{B} & = & \mathbf{C} \\ 2\frac{3}{8}" & + & & = & 3" \\ 2\frac{3}{8}" & + & \frac{5}{8}" & = & 3" \end{array}$$

The drawings would reflect a  $\frac{5}{8}"$  tolerance space, ThermaDrain® with Super Tuff-R/Thermax at 2" (overall thickness of  $2\frac{3}{8}"$ ) and a total cavity dimension of 3".

If only the cavity space is known, then utilize the formula backwards (**C-B=A**) starting with the total cavity dimension (**C**), less a typical tolerance space of  $\frac{5}{8}"$  (**B**), with the remaining dimension to accommodate as much ThermaDrain® with Super Tuff-R/Thermax as is allowed (**A**). Adjust the tolerance space as necessary to accommodate the insulation dimension. The face brick can also be projected off the ledge slightly to adjust for the size of insulation desired.

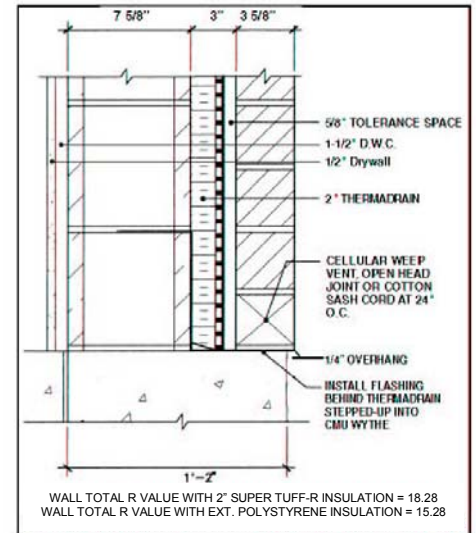
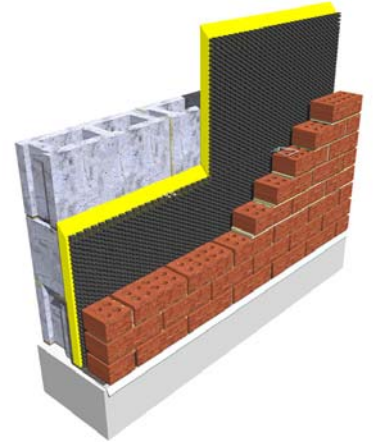
To achieve the best results, it is critical to combine the correct sizing and specifying of ThermaDrain® with Super Tuff-R/Thermax with an effective and properly detailed flashing system, including flashing material, preformed corners and end dams, stainless steel drip edge, termination bar and weepholes, all installed per the manufacturers recommendations and at the proper height and location.

### SIZES

ThermaDrain® with Super Tuff-R/Thermax is available in standard thicknesses ranging from  $\frac{1}{8}"$  to  $3\frac{7}{8}"$  and is provided in 16"x96" cavity cut pieces, or full 4'x8' pieces as required per the installation. Special insulation thicknesses or piece sizing is available upon request.

When provided in 16" x 96" pieces, ThermaDrain® with Super Tuff-R/Thermax includes our patented Cavity Cut, providing a downward sloping angle on the horizontal joint with square edges on the vertical joints. All 4'x8' boards are provided with square edges on all four sides.

For standard sizing of ThermaDrain® with Super Tuff-R/Thermax see chart at right.



## TECHNICAL DATA

### INSULATION PRODUCT:

Dow Super Tuff-R or Thermax Insulation (See Dow Building Materials Commercial Products Selector Guide for specific insulation technical data)

### DRAINAGE MAT:

$\frac{3}{8}"$  thick high-impact, non-compressible polystyrene drainage material, commercially laminated to insulation material

### ThermaDrain® with Super Tuff-R/Thermax standard sizing

INSULATION THICKNESS	OVERALL THICKNESS	R-VALUE	INSULATION PRODUCT
1/2"	7/8"	3.3	Super Tuff-R
1"	1 3/8"	6.5	Super Tuff-R
1 1/2"	1 7/8"	9.8	Super Tuff-R
2"	2 3/8"	13.0	Super Tuff-R
2"	2 3/8"	13.0	Thermax
2 1/2"	2 7/8"	15.8	Thermax
3"	3 3/8"	19.0	Thermax
3 1/2"	3 7/8"	22.1	Thermax

## TESTING

A testing program was developed to determine the effectiveness of a *ThermaDrain® with Super Tuff-R/Thermax* wall system in comparison to a standard cavity wall system. Walls for this study were tested in accordance to ASTM E514 "Test Method for Water Permeance of Masonry". Walls were constructed unsupervised to simulate field conditions and to allow normal amounts of mortar droppings and extrusions to accumulate in the wall. Flashings were properly installed at the base of each wall to facilitate the collection of water.

The results of the study indicate that the *ThermaDrain® with Super Tuff-R/Thermax* wall system substantially outperformed the standard cavity wall system and exhibited nearly 400% more drainage capability. See Table 1 below for a summary of the results of this study. For a complete copy of the test results please contact *ThermaDrain®*.

	TEST WALL WITH THERMADRAIN	TEST WALL WITH 3" CAVITY AND PEA GRAVEL
First visible water on cavity side of brick	6 minutes	7 minutes
Appearance of flowing water on cavity side of brick	14 minutes	16 minutes
Water passing through weephole at the brick wythe face:		
- At 3 hours	3.4 gal/hr	.52 gal/hr
- At 72 hours	4.1 gal/hr	1.06 gal/hr

**Table 1: Test Results**

## 5. Installation

The method of installation for *ThermaDrain® with Super Tuff-R/Thermax* is similar to the installation of standard rigid insulation board used in cavity wall construction. However, the following procedures and precautionary measures must be followed during installation to achieve the desired results and successful performance of the *ThermaDrain® with Super Tuff-R/Thermax* wall system:

1. For concrete masonry backup walls, remove all mortar droppings from the face of the concrete masonry backup to ensure direct and flush contact between the *ThermaDrain® with Super Tuff-R/Thermax* and the backup wythe.

2. For 16"x96" pieces: Install the *ThermaDrain® with Super Tuff-R/Thermax* between the wall ties, with the cavity cut sloping downward and the vertical joints butted tightly together. The black drainage mat must face the wall exterior. Any building wrap or other air or vapor barriers should be installed on the interior side of the *ThermaDrain® with Super Tuff-R/Thermax*. Flashing should be terminated behind the *ThermaDrain® with Super Tuff-R/Thermax*.

3. For 4'x8' sheets: Install the *ThermaDrain® with Super Tuff-R/Thermax* against the exterior sheathing with the black drainage mat facing the wall exterior. Any building wrap or

other air or vapor barriers should be installed on the interior side of the *ThermaDrain® with Super Tuff-R/Thermax*. All edges (horizontal and vertical) should be tightly butted together. Flashing should be terminated behind the *ThermaDrain® with Super Tuff-R/Thermax*.

4. If the interior wall structure is metal studs, all masonry anchors should be installed directly through the *ThermaDrain® with Super Tuff-R/Thermax* and as directed by the anchor manufacturer. 4'x 8' sheets should be used for easy installation.

5. If the bed joints and head joints of the insulation are set into a bead of NP-1 sealant, and the insulation is sealed to the window frames, an air permeance of .0062 of cfm/ft<sup>2</sup> of the assembly can be obtained. Contact *ThermaDrain* for a copy of this report.

6. No more than 1" and no less than 3/8", of space should be left between the face of the *ThermaDrain® with Super Tuff-R/Thermax* and the back of the outer wythe of masonry (tolerance space).

7. For exterior corner conditions, use tape or sealant on the end joint. Tape or sealant can be used between any vertical or horizontal joint if desired for maximum protection.

8. Use *ThermaDrain® with Super Tuff-R/Thermax* only in walls that contain properly installed flashing. The flashing is to be terminated behind the *ThermaDrain® with Super Tuff-R/Thermax* board.

9. All field adjustments required for the alteration of size or shape of *ThermaDrain® with Super Tuff-R/Thermax* must be performed with a power table saw. The top slope of the board (cavity cut) is not to be removed.

10. Do not allow the *ThermaDrain® with Super Tuff-R/Thermax* to be exposed to the elements for longer than sixty (60) days.

## 6. Availability and Cost

*ThermaDrain® with Super Tuff-R/Thermax* is available through a nationwide network of masonry and building supply distributors.

## 7. Warranty

The recommendations and properties attributed to the products are based upon what is believed to be reliable information. We warrant our materials to be of good quality and will replace unused material proven to be defective. No expressed or implied warranty of installed material is made because satisfactory results depend not only on product quality but also upon factors that are beyond our control.

## 8. Maintenance

No maintenance is required after proper installation.

## 9. Technical Services

Contact the manufacturer for any required technical services. Details and suggested application drawings are available on each individual product data sheet. *ThermaDrain* Material Safety Data Sheets should be read and understood by all personnel before using the products.

## 10. Filing Systems

Product information is available from the manufacturer in the following formats:

- Complete *ThermaDrain* Inc. product line catalog in printed and CD format
- Online access to all data sheets at: [www.thermadrain.com](http://www.thermadrain.com)

## WRITTEN SPECIFICATION

The written specification for *ThermaDrain® with Super Tuff-R/Thermax* is:

1. The masonry cavity wall insulated drainage board shall be *ThermaDrain® with Super Tuff-R/Thermax*, sized as indicated on the drawings. The product shall be a combination of polyisocyanurate insulation bonded with a 3/8" high impact styrene drainage panel integrated with a non-woven fabric, all products bonded by the manufacturer.

2. The *ThermaDrain® with Super Tuff-R/Thermax* shall be provided as shown on the drawings, or as required so that no more than a 1" tolerance space and no less than a 3/8" tolerance space is present. The tolerance space shall be equivalent to the total cavity dimension, less the overall thickness of the *ThermaDrain® with* being used.

3. Products that alter the original state of the insulation or do not provide a drainage panel bonded by the manufacturer and as stated above shall not be allowed.

4. The product shall be *ThermaDrain® with Super Tuff-R/Thermax* and available through local distributors. Contact *ThermaDrain, Inc.* at 800-837-4065 for a complete list of local distributors