



# SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project: \_\_\_\_\_ Substitution Request Number: \_\_\_\_\_

From: \_\_\_\_\_

To: \_\_\_\_\_ Date: \_\_\_\_\_

A/E Project Number: \_\_\_\_\_

Re: \_\_\_\_\_ Contract For: \_\_\_\_\_

Specification Title: \_\_\_\_\_ Description: \_\_\_\_\_

Section: \_\_\_\_\_ Page: \_\_\_\_\_ Article/Paragraph: \_\_\_\_\_

Proposed Substitution: \_\_\_\_\_

Manufacturer: Insulfoam Address: \_\_\_\_\_ Phone: \_\_\_\_\_

Trade Name: Insulfoam a Carlisle Company Model No.: \_\_\_\_\_

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: \_\_\_\_\_

Signed by: \_\_\_\_\_

Firm: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_\_

### A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: \_\_\_\_\_

Date: \_\_\_\_\_

Supporting Data Attached:  Drawings  Product Data  Samples  Tests  Reports  \_\_\_\_\_



## Description

R-Tech X is a high-performance rigid insulation developed to be an alternative equal in applications where Type X extruded polystyrene (XPS) is specified. R-Tech X consists of a superior closed-cell, lightweight and resilient expanded polystyrene (EPS) with advanced polymeric laminate facers. The core of R-Tech X is the same high-quality as our InsulFoam® brand insulations and meets or exceeds the compressive strength, flexural strength, dimensional stability and water absorption requirements of ASTM C578, *Type X, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation*. R-Tech X is available with factory laminated metallic-reflective facers, white facers or a combination of the two. In addition, R-Tech X offers a long-term stable R-Value, is an Energy Star® qualified insulation and qualifies for LEED points.

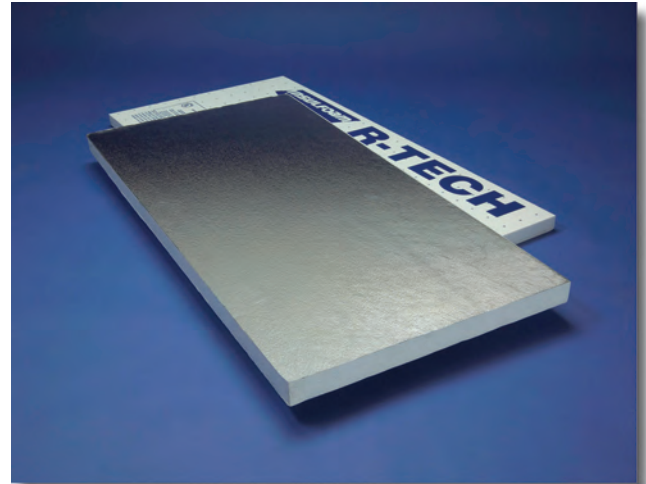
## Uses

R-Tech X has been used successfully for numerous commercial, industrial and residential applications. The following are examples of the many R-Tech X uses:

- Below Grade Insulation
- Radiant-Heated Floors
- Waterproofing Protection Board
- Precast Concrete Panel Insulation
- Cavity Walls
- Concrete Slabs
- Interior Walls
- Tilt-up Concrete Insulation
- Cold Storage & Freezers

## Advantages

- *Environmentally Friendly.* R-Tech X contains no dyes, formaldehyde or ozone-depleting HCFCs, may contain recycled material and the foam core is 100% recyclable.
- *Stable R-Value.* Unlike XPS, there is no thermal drift. Designers are well served knowing the R-Tech X thermal properties will remain stable over its entire service life. R-Tech is eligible for an Insulfoam 20-Year Thermal Performance Warranty – a warranty that's not prorated or limited to a percentage of the published R-Value.
- *User Friendly.* R-Tech X can be ordered with the InsulSnap™ feature which scores the product longitudinally at any pre-ordered interval (commonly 16" or 24" o.c.). The InsulSnap feature minimizes labor by enabling the installer to cleanly break the product at the desired width while also minimizing product breakage and waste.
- *Water-Resistant.* R-Tech facers provide a surface that is virtually impervious to moisture.
- *Insect and Mold Resistant.* R-Tech X can be manufactured with an inert additive that deters termites and carpenter ants. R-Tech X does not sustain mold and mildew growth.



- *Jobsite Durability.* With a polymeric facer on either side of the R-Tech, it is an extremely flexible and durable insulation.
- *Cost-Effective.* R-Tech is typically less expensive than comparable insulation products.
- *Proven Performance.* The same fundamental EPS chemistry has been in use since the mid-1950s so the actual performance of the product is well known.
- *Code Approvals.* InsulFoam is recognized by the International Code Council Evaluation Service (ICC-ES) for numerous applications. Please contact your local Insulfoam representative for details.
- *Enhanced R-Values.* In certain applications, increased R-Values can be obtained by placing the metallic reflective side of the R-Tech towards a dead air space. R-Value gain is dependent on the amount of dead air space between the R-Tech and outer surface. R-Value gains are based on the *ASHRAE Handbook of Fundamentals*. See the attached Effective R-Value chart.

## Sizes

R-Tech X is available in 4' x 8' sheets in thicknesses ranging from 3/8" to 5" in 1/8" increments. R-Tech X can also be ordered with the InsulSnap feature which allows the end user to cleanly break the 4' x 8' sheets into any desired width. In addition, custom sizes are available upon request with little or no impact on lead times.

## Installation Recommendations

Please refer to the appropriate R-Tech application sheets for recommended installation procedures.

## Key Product Comparisons

Property	R-Tech X	Type X XPS	Test Method
<b>Density</b> (min. pcf)	1.35	1.30	ASTM C303
<b>Compressive Strength</b> (psi, 10% deformation)	15	15	ASTM D1621
<b>Flexural Strength</b> (psi)	40	40	ASTM C203
<b>Water Absorption</b> (max. % vol.)	0.3	0.3	ASTM C272
<b>Water Vapor Permeance</b> (max. perm.)	< 1.5	1.5	ASTM E96
<b>Dimensional Stability</b> (maximum %)	2.0	2.0	ASTM D2126
<b>Flame Spread</b>	< 75	< 75	ASTM E84
<b>Smoke Developed</b>	< 450	< 450	ASTM E84

## Product Feature Summary

Product Features	R-Tech X	Type X XPS
<b>Stable R-Value</b>	Yes	No
<b>Free of HCFCs and Dyes</b>	Yes	No
<b>Available with Metallic Reflective Films</b>	Yes	No
<b>Available in a wide range of sizes and thicknesses</b>	Yes	No

## Effective R-Values\* (metallic-reflective facer & dead air space)

R-Tech X Thickness	Design Temp.	Effective R-Value <sup>†</sup> (R-Tech MR + Air Space)
<b>0.5"</b>	40 °F	5.30
	75 °F	5.10
<b>0.75"</b>	40 °F	6.45
	75 °F	6.15
<b>1.00"</b>	40 °F	7.60
	75 °F	7.20
<b>1.25"</b>	40 °F	8.75
	75 °F	8.25
<b>1.50"</b>	40 °F	9.90
	75 °F	9.30
<b>1.75"</b>	40 °F	11.05
	75 °F	10.35
<b>2.00"</b>	40 °F	12.20
	75 °F	11.40
<b>2.25"</b>	40 °F	13.35
	75 °F	12.45
<b>2.50"</b>	40 °F	14.50
	75 °F	13.50

\* Requires 0.75"- 3.50" dead air space and the R-Tech metallic-reflective facer towards the dead air space.

## R-Value Comparisons

R-Value	R-Tech X	Type X XPS	Test Method
<b>Warranted R-Values @ 20 years</b>	4.6/inch	Not Warranted Not Warranted	ASTM C518 @ 40 °F
	4.2/inch		@ 75 °F
<b>Warranted R-Values @ 15 years</b>	4.6/inch	4.9/inch 4.5/inch	ASTM C518 @ 40 °F
	4.2/inch		@ 75 °F
<b>Published R-Value (Thermal Resistance)</b>	4.6/inch	5.4/inch 5.0/inch	ASTM C518 @ 40 °F
	4.2/inch		@ 75 °F



## Jobs Specified for R-Tech Perimeter, Under Slab and Cavity wall Insulation

1. Aquatic Center Combat Facility/Geofoam, Cavity Wall, Roof
2. Central and Emerson Elementary Hoquiam Wa./R-tech , Rognlins Construction
3. Decatar High, Federal Way, Thomas Jefferson/R-tech Perimeter
4. Jefferson School Addition Port Angeles/ R-tech Perimeter, RAS Builders
5. Larchmont Elementary/ R-tech perimeter, Porter Brothers Const.
6. Blakely Village Student Housing Seattle/ R-tech Perimeter, Walsh Construction
7. Meeker Middle School/ R- tech perimeter, Bailey Berg General Contractors Olympia
8. Harbor Pointe Village Center, Mukilte/ R- tech Perimeter, SGA Corp,
9. Seattle City Hall bid 1/8/02/ R- tech & Rfg Insul/Carlisle
10. Mason Middle School, Tacoma bid 1/10/0/ R- tech Typ IX (25psi) perimeter
11. Arlington High School Phase 2, Arlington, WA, bid 1/23/02/ R-Tech Typ IX (25psi) R-10
12. Queen Anne Apt, Olson Sunberg, Seattle, WA bid 1/25/02/ R-Tech 10 25 psi, JP Stevens Typ I EPS rfg sys
13. Lynden Public Library, Lynden, WA bid 2/13/02/ R-10 R-Tech 25 psi
14. Thurston County Exhibit Hall, Olympia, WA bid 1/22/02/ R-10 R-Tech, 25psi
15. Renton Parking Garage, LMN Arch bid 2/5/02/ R-10 R-Tech perimeter & 'Z' furred wall sys (25 psi)
16. North Cascades Environ Learning Cntr, City of Seattle, bid 2/13/0 R-10
17. Community Tech Center, Wenatchee, WA PKJB Arch. bid 2/13/02/ R-10 R-Tech 25psi
18. Albertson's No.0473, Burien, WA Jeffrey A. Shneider Arch. bid 2/12/02/ 1 1/2" thk R-Tech 25psi foundation/perimeter
19. Poulso Junior High School Harthorne Hagen Arch bid 2/6/02/ R-10 R-Tech 15psi
20. Hockinson Middle School Del Sessions Arch bid 2-19 R-10 Perimeter
21. Pe Ell Wastewater Trtmnt, Pe Ell, WA, Gray & Osborne Eng. Bids 3/21/02/ R-10 EPS for perimeter
22. Hazardous Waste Fac, Prosser WA URS Arch. Bids 2/28/02/ R-10 25psi perimeter
23. Camp Brinkley/Omache Snohomish Cnty, Stickney&Murphy Bids 3-1-02/ R-10 25psi R-Tech, R-21 Insulvent
24. Grant Cnty Snow & Ice Storage Bldg, DOH Arch bids 3-11-02/ R-10 R-Tech 15psi perimeter insulation
25. Lopez Children's Center, Ross & McClure Arch bids 3-13-02/ R-15 R-Tech 15psi underslab insulation
26. Mukilteo Elementary Bassetti/ Liz Leroy Arch. Bid 4-9R-TECH typ IX 25psi
27. Lake Washington Tech Cummings Associates Arch. Bid 4-9 /R-8, R-11 15psi
28. Mariner High School D.R.L Group Arch. Bid 4-24 /R-10 25psi
29. Alderwood water & wastewater Merritt+Pardini Arch. Bid 4-24/ 10ps, 25psi
30. Wasterwater Mcneil Island Gray & Osborne Arch. Bid 5-22 / R-10 R-Tech 25psi
31. Zoo Maintenance Facility, Merritt & Pardini Arch. Bids 4-25 / R-10 R-Tech 25psi
32. Fischer Plaza, Seattle, Sellen Construction installed April 2002/ 60 psi HD EPS below concrete plaza deck

### Description

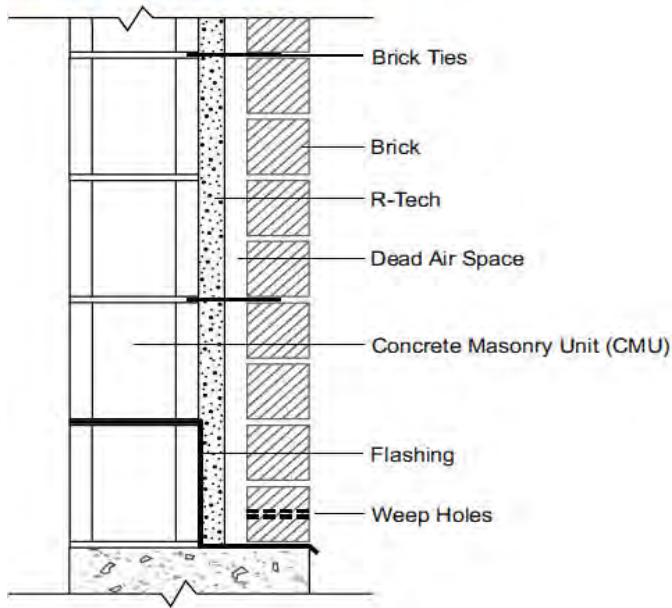
R-Tech is a high-performance rigid insulation consisting of a superior closed-cell, lightweight and resilient expanded polystyrene (EPS) with advanced polymeric laminate facers. R-Tech is available with factory adhered metallic-reflective facers, white facers or a combination of the two. The core of R-Tech is the same high-quality as our InsulFoam® brand insulations and meets or exceeds the requirements of ASTM C578, *Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation*. In addition, R-Tech has excellent dimensional stability, compressive strength and water-resistant properties. R-Tech is an Energy Star® qualified insulation and qualifies for LEED points.

### Uses

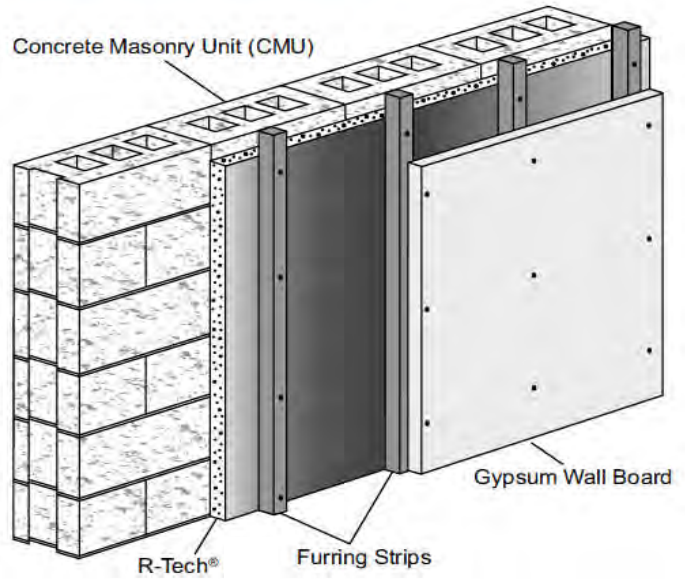
R-Tech has been used successfully for numerous commercial, industrial and residential applications. The following are examples of the many R-Tech uses:

- ▶ Basement Walls
- ▶ Cavity Walls
- ▶ Crawl Spaces
- ▶ Interior Walls
- ▶ Waterproofing Protection Board
- ▶ Radiant-Heated Floors
- ▶ Siding Underlayment
- ▶ Stucco Underlayment
- ▶ Concrete Slabs
- ▶ Wall Sheathing
- ▶ Below Grade Insulation

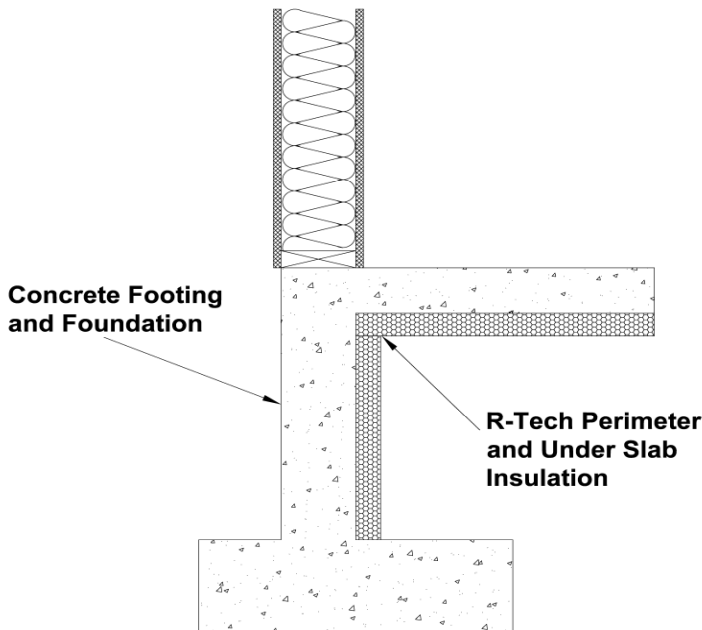
**Typical Cavity Wall Application**



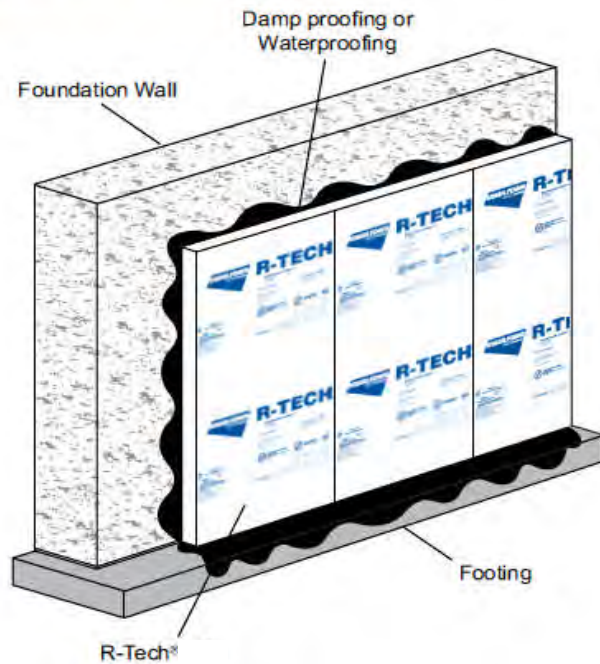
**Typical Interior Wall Application**



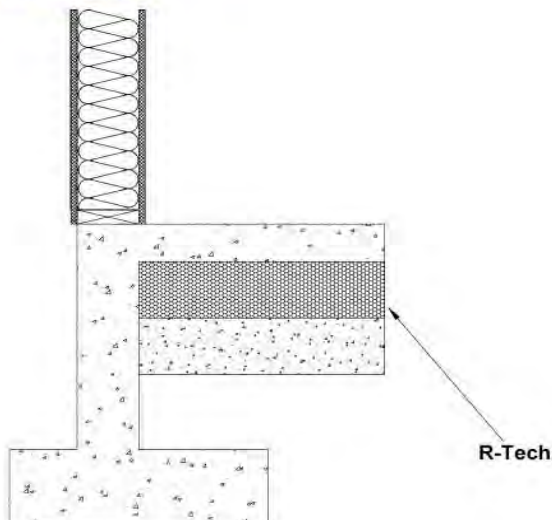
**Typical Perimeter Insulation**



**Typical Below Grade Application**



**Typical Cold Storage and Freezer Insulation**



All details may change per Architect drawings  
Drawings are not to scale

**David C. Haug**  
Territory Manager

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# R-TECH X, IV 20 Year Inservice R-Value Insulation Warranty

## SECTION I INSULFOAM

1015 Pacific Avenue  
Tacoma, WA 98402

(Owner), the Insulation System described in Application for Warranty Form, subject to the terms, conditions, and limitations stated in this Warranty. Insulfoam will repair or replace, at Insulfoam option, insulation manufactured at \_\_\_\_\_ Insulfoam manufacturing facility when the EPS Insulation, which is installed as described in this Warranty, is found to be below the Minimum R-Value as stated in Section II below. Liability under this warranty shall not exceed the original sales price of the insulation material. This Warranty shall commence upon the date as written and shall terminate after Twenty (20) years.

## SECTION II Minimum R-Value Standard

Insulfoam warrants that the R-TECH Insulation will maintain 100% of the minimum R-values identified below when tested in accordance to ASTM C518. R-values shall be tested according to ASTM C518 and shall meet the minimum stated value within reasonable limits of experimental error\*. Such tests will be conducted at three separate areas, yielding three 12" x 12" x 1" samples. Tests on these samples will be conducted at 75° F mean temperature with the results being averaged. The tests will be performed by an independent laboratory selected by Insulfoam. \* ± 3%

Minimum R-Value	@75°F	@40F	@25F
R-TECH X	4.2	4.6	4.8
R-TECH IV	4.5	4.8	5.0

## SECTION III Exceptions and Limitations

In addition to all other exceptions set forth herein, this Warranty Agreement shall not cover any failure of the Insulation to meet the minimum R-value Standard due to:

1. Excessive heat beyond design considerations or fire.
2. Moisture resulting from improper installation, application design. Moisture resulting from a malfunction or failure of other building components, or construction.
3. The effect of building movement on the EPS Insulation.
4. The effect of plasticizer migration on the EPS Insulation.
5. The effect of ultraviolet attack on the EPS Insulation.
6. The effect of foot or equipment traffic or other compressive loads that exceed the design limits of the EPS Insulation.
7. The effect of other external forces not under control of Insulfoam.

## SECTION IV Additional Terms, Conditions and Limitations

**A. Owner shall notify Insulfoam in writing at the address in Section I within sixty (60) days after Owner Warranted Insulation System becomes or should have become aware of any EPS Insulation, which does not meet the Minimum R-Value Standard.**

B. This Warranty shall not be enforceable, if in the judgment of Insulfoam any of the following shall occur:

1. The EPS Insulation is damaged by any natural cause, including but not limited to, lightning, strong wind, hurricane, hail, tornado, or earthquake.
2. The EPS Insulation is damaged by any act of negligence, any accident or any intentional or unintentional misuse.
3. Metal work or other material not approved by System Manufacturer and Insulfoam participation plant is used in the Insulation System and causes loss of physical properties in the EPS Insulation.
4. If, after installation of the Insulation, there are any alterations, or repairs made on or through the System or if anything is placed upon or attached to the System without first obtaining written authorization from Insulfoam participating plant.
5. Failure to use reasonable care in maintaining the Insulated System.
6. The Owner of the Insulation System fails to comply with any of the obligations stated in this Warranty Agreement.

During the term of this Warranty, Insulfoam or its designated representative shall have free access to inspect the Insulation System during regular business hours.

The Owner will be obligated to pay for all sample test cuts conducted by the independent laboratory as stated in Section II. If a justifiable claim under the R-Value Warranty is determined by testing, Insulfoam will reimburse Owner for the costs of test cuts, as part of the repair or the replacement costs, not exceeding the limits of liability stated in Section I.

Insulfoam shall not be obligated under the terms of this Warranty Agreement until:

1. The party contracting for services has paid in full all invoices and charges for System installation supplies and services due and owing; and
2. The Authorized Applicator has paid in full all invoices and charges for Insulation System material suppliers and Insulfoam.

Originals or copies of invoices and bills showing the cost of the EPS Insulation shall be submitted along with any claims under this Warranty Agreement.

Insulfoam failure at any time to enforce any terms or conditions stated herein shall not be construed to be a waiver of its right to enforce that term or condition.

THERE ARE NO WARRANTIES, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR PURPOSE, WHICH EXTEND BEYOND THE WARRANTY SET FORTH IN THIS WARRANTY AND INSULFOAM SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL LOSSES OR DAMAGES.

No representative of Insulfoam has the authority to make any representations or promises except as stated in this Warranty Agreement.

By: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Owner: \_\_\_\_\_

Address: \_\_\_\_\_

Contact: \_\_\_\_\_

Phone: \_\_\_\_\_

WARRANTY NUMBER: \_\_\_\_\_

WARRANTY DATE: \_\_\_\_\_



# Insulfoam Insulations & LEED

The U.S. Green Building Council (USGBC) has developed a nationally accepted system to rate the design, construction and operation of buildings. The USGBC's Leadership in Energy and Environmental Design (LEED) is a standard that recognizes the life-cycle cost of construction and helps to guide and distinguish high-performance commercial and institutional projects. The LEED rating system allows designers and building owners to acquire credits by meeting certain conditions pertaining to the use of sustainable, energy-efficient and environmentally-friendly products and systems. Buildings can become LEED Certified by achieving certain point levels. There are four levels of certification. Using R-Tech® and InsulFoam® products in building designs can assist in obtaining LEED credits in several categories.

Listed below are the categories where Insulfoam products may assist in achieving LEED credits. A brief description of the credit is also included.

## SUSTAINABLE SITES (SS CREDITS)

### SS Credit 7.2 – Heat Island Effect: Roof (1 point possible)

**Purpose:** Reduce heat islands to minimize impact on microclimate and habitat. The credit requires the use of a reflective roofing material or the use of a roof garden.

Although this credit does not relate solely to insulation, Insulfoam insulation can be used in roof systems with reflective membranes and in garden roof assemblies to help reduce the urban heat island effect.

## ENERGY & ATMOSPHERE (EA CREDITS)

### EA Credit 1 – Optimize Energy Performance (10 points possible)

**Purpose:** Reduce the negative environmental impact resulting from excessive energy use by demonstrating a measurable improvement in the building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2004 (without amendments). This credit encompasses the entire building.

An increase in the R-value of the Insulfoam insulations used in the roof, wall and below-grade systems of a project would contribute to this credit.

### EA Credit 5 – Measurement & Verification (1 point possible)

**Purpose:** Provide for the ongoing accountability of building energy consumption over time by developing and implementing a Measurement & Verification Plan.

Although this credit does not relate solely to insulation, proper R-value provided by the Insulfoam products will contribute to the overall energy savings and the subsequent accounting of building energy consumption.

## MATERIALS & RESOURCES (MR CREDITS)

### MR Credit 2.1 & 2.2 – Construction Waste Management: Divert 50% or 75% From Disposal (2 points possible)

**Purpose:** Recycle and/or salvage at least 50% (1 point) or 75% (2 points) of non-hazardous construction and demolition debris.

Insulfoam can receive and reuse uncontaminated polystyrene removed from rehabilitated buildings and the scrap generated on new construction projects.

### MR Credit 3.1 & 3.2 – Materials Reuse: 5% or 10% (2 points possible)

**Purpose:** Use salvaged, refurbished or reused materials so the sum of these materials, based on cost, constitutes at least 5% (1 point) or 10% (2 points) of the total value of materials on the project to reduce demand for virgin material and minimizing generation of waste.

Insulfoam Roof Insulation is suitable for and often reused in new roof systems at the end of the original roof system's life.

### MR Credit 4.1 & 4.2 – Recycled Content 10% or 20% (2 points possible)

**Purpose:** Increase demand for building products that incorporate recycled content of at least 10% (1 point) or 20% (2 points), thereby reducing impacts resulting from extraction and processing of virgin materials.

Insulfoam can provide product suitable for use in several different construction applications with up to a 25% pre-consumer recycled content.

### MR Credit 5.1 & 5.2 – Regional Materials (2 points possible - 1 point for 10% & 2 points for 20%)

**Purpose:** Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation. If only a fraction of a product or material is extracted/harvested/recovered and manufactured locally, then only that percentage (by weight) shall contribute to the regional value.

From some of its locations, Insulfoam can provide products that include only components extracted, harvested or recovered, as well as manufactured, within 500 miles of the project site for a minimum of 10% (based on cost) of the total materials value.

**To access the Green Building Rating System for New Construction and Renovations, visit [www.usgbc.org](http://www.usgbc.org).**



## Section 07210 Building Insulation (R-Tech X, 15 Psi Expanded Polystyrene)

### Part 1 General

#### 1.01 Summary

- A. Section Includes: R-Tech, Expanded Polystyrene (EPS) Insulation used as building insulation.

#### 1.02 References

- A. General standards listed by reference, including revisions by issuing authority, form a part of this specification section to the extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number, title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

B. American Society for Testing and Materials (ASTM)

1. ASTM C 203-Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation
2. ASTM C 272-Test Method for Water Absorption of Core Materials for Structural Sandwich Construction.
3. ASTM C 423-Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.
4. ASTM C 518-Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
5. ASTM C 578-Specifications for Rigid, Cellular Polystyrene Thermal Insulation.
6. ASTM D 1621-Test Method for Compressive Properties of Rigid Cellular Plastics.
7. ASTM D 1622-Test Method for Apparent Density of Rigid Cellular Plastics.
8. ASTM E 84 -Test Method for Surface Burning Characteristics of Building Materials.
9. ASTM E 96 - Test Methods for Water Vapor Transmission of Materials.

C. Factory Mutual Research Corporation (FMRC)

1. Factory Mutual Research Corporation Approval Guide. Contact manufacturer for approval standard and number.

#### 1.03 Definitions

- A. Special definitions that apply to this section include:

1. EPS Board: Expanded polystyrene board insulation product specifically manufactured and recommended by its manufacturer for building insulation applications, based on its R-Value and other physical properties when tested in accordance with ASTM C578.

#### 1.04 System Description

- A. Design Requirements: Provide products and system that have been manufactured, fabricated and installed to meet the following criteria.

1. Specify System design criteria



- B. Performance Requirements: Provide products and system that have been manufactured, fabricated and installed to meet the following criteria:
  - 1. Specify system performance criteria

#### 1.05 Submittals

- A. General: Submit listed submittals in accordance with conditions of the contract and division 1 submittal procedures section.
- B. Product Data: Submit manufacturer's product data and installations instructions.
- C. Shop drawings: Provide drawings indicating (specify requirements for shop drawings)
- D. Quality Assurance/control submittals: submit the following
  - 1. Certificates: Submit manufacturer's certificate that products meet or exceed specified requirements.
- E. Closeout submittals: Submit the following:
  - 1. Warranty documents specified herein.

#### 1.06 Quality Assurance

- A. Installer Qualifications: Utilize and installer having demonstrated experience on projects of similar size and complexity.
- B. Regulatory requirements and approvals: (Specify applicable requirements of regulatory agencies).
  - 1. (code Agency name)
    - A. Report or approval number
- C. Certifications:
  - 1. Provide third party certification for testing, inspection and review of product production practices for compliance with ASTM C578
  - 2. Underwriters Laboratories, inc. (UL)
    - A. UL building materials Directory
- D. Mock-Ups: (Specify Requirements for mock-up)
  - 1. Subject to acceptance by owner, Mock-up may be retained as part of finish work.
  - 2. If mock-ups is not retained, remove and properly dispose of mock-up.
- E. Pre-installation Meetings: (specify requirements for meeting)

#### 1.07 Delivery, Storage & Handling

- A. General: Comply with Division 1 product requirements section.
- B. Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened undamaged containers with identification labels intact.
- D. Storage and Protection: Store Materials protected from exposure to harmful environmental conditions and at temperature and humidity conditions recommended by the manufacturer
  - 1. Prolonged exposure to sunlight will cause slight discoloration and surface dusting of EPS insulation.
  - 2. EPS insulation exposed to moisture should be replaced or thoroughly dried to application of finish or covering materials.

#### 1.08 Warranty

- A. Project Warranty: Refer to Conditions of the contract for project warranty provisions.
- B. Expanded Polystyrene (EPS) Insulation: Manufacture must provide written 20 year warranty stating that in situ R-Value will not degrade below 100% of published values. Decreasing percentage or time weighted average thermal performance warranties will not be accepted.

## **PART 2 Products**

2.01 R-Tech, Expanded Polystyrene Board

- A. Manufacturer: InsulFoam 6004 N. Westgate Blvd, ste 120 Tacoma, WA 98406, Toll free 800-248-5995 / T 253-572-5111 [www.insulfoam.com](http://www.insulfoam.com)
- B. R-Tech X Insulation, expanded polystyrene with polyethylene skinned surfaces and insect resistant treated core, ASTM C 578 Type II
  - 1. Density: Minimum 1.35 pcf, tested to ASTM D 1622.
  - 2. Thermal Resistance (R-Value): Minimum R-4.55 adds an R-2 with appropriate air space to total R-Values, Example 2" thick R9.1 adds R2 gives you an R11.1 at 40 degree F, tested to ASTM D 518.
  - 3. Sizes available ¼" to 4.5" thick 4 ft x 8 ft scored to snap at 12", 16" or 24"
  - 4. Compressive Strength: Minimum 15 psi, tested to ASTM D 1621.
  - 5. Flexural Strength: Minimum 40.0 psi, tested to ASTM C 203.
  - 6. Water Absorption: Maximum .3 percent by volume, tested to ASTM C 272
  - 7. Water Vapor Permeance: Less than 1.5 tested to ASTM E 96
  - 8. Flame Spread: 20 Smoke Developed: 150-300, tested to ASTM E84
  - 9. Recycled Content: Minimum 20 percent post consumer content, or minimum 40 percent post industrial content material as required to qualify for US Green Building Council, LEED points.
  - 10. Warranty: 20 year non drifting thermal warranty at Values given.

2.02 Product Substitutions

- A. Substitutions: No substitutions permitted

2.03 Accessories

- A. Provide installation accessories as follows
  - 1. Adhesive, Wall Ties, Mechanical Fasteners and Furring Channels:
    - a. Material, Type and manufacturer: Compatible with EPS insulation board and acceptable to eps insulation board manufacturer, Specify material, type and manufacturer.

**PART 3 Execution**

3.01 Manufacturers Instructions

- A. Comply with the instructions and recommendations of the EPS insulation board Manufacturer.

3.2 Examination

- A. Site Verification of Conditions
  - 1. Verify that site conditions are acceptable for installation of EPS insulation board.
  - 2. Do not proceed with installation of EPS insulation board until unacceptable conditions are corrected

3.3 Installation

- A. General
  - 1. Install EPS board insulation in a single or double layer to achieve required R-Values as indicated in drawings. Cut and fit tightly around projections and penetrations
  - 2. Secure insulation to substrate with mechanical fasteners or spot adhesive applied to back of board using quantity and pattern recommended by manufacturer.

- B. Insulation board joints: Stagger EPS insulation board joints in one direction for each course. Butt edges and ends tightly to adjacent EPS boards.
- C. Sheathing and Underlayment installations: on exterior side of stud framing, install EPS insulation board vertically or horizontally. ON interior side of stud framing, install minimum ½" thick gypsum wall board over EPS board.
- D. Concrete and masonry walls: Install EPS insulation board over furring channels attached to concrete and unit masonry substrates. Fasten vertically 12" maximum on centers using fasteners recommended by manufacturer.
- E. Cavity Walls: Install EPS insulation board on exterior surface of interior wythe of cavity wall, fitting board between wall ties and other projections and penetrations.
- F. Perimeter Foundation: Install EPS insulation board on exterior surface of perimeter foundation walls, secure board with spot adhesive applied to back of board using quantity and pattern recommended by manufacturer.
- G. Slab-On-Grade: Install EPS insulation board under slab on grade and over properly prepared sub grade of compacted fill and vapor retarded. Place EPS board with sides and ends butted.

#### 3.4 Cleaning

- A. Remove and legally dispose of trash and debris resulting from the work.

#### 3.5 Protection

- A. Protect installed work from damage due to subsequent construction activity on the site.