ROOF INSULATION SYSTEMS
Consistently Predictable Value

Technical & Construction Reference Binder

Nationwide Manufacturing  n  Toll Free: (800) 248-5995  n  www.Insulfoam.com
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**PREDICTABLY CONSISTENT VALUE.**
General Information

This manual has been prepared by Insulfoam, a division of Carlisle Construction Materials, for architects, engineers, roof consultants, building owners and roofing contractors, as a reference guide for designing, selecting and constructing roofing systems that utilize Insulfoam roofing products. However, Insulfoam believes that the design and construction of the building that receives these products are best left to the owner, the owner’s design representatives and/or the contractor. Prior to selecting or installing a particular roof system, the user should become familiar with all the relevant material in this manual.

Many factors can impact the performance of a roof. Workmanship is as important as the use of quality materials and the proper design of the roof system. The recommendations contained in this manual cannot substitute for the knowledge, skill and experience of a qualified professional roofing contractor or the design expertise of architects and engineers.

This manual cannot address or anticipate every feature of a particular roofing system or the incorporation of alternate or new products, roof decks or building designs. If an unusual condition, which is not explained in this manual, is encountered, contact your local Insulfoam representative or the Insulfoam Technical Center.

Many roof membrane manufacturers have specific restrictions or limitations (technical and/or regional) on the use of roof components in assemblies for which they offer a warranty. All technical and regional recommendations in this manual must be confirmed with the roof membrane manufacturer when a roof system warranty is required.

Consideration must be given to the interaction (chemical and physical compatibility) of the various roof system components with each other and the substrates and decking materials on which they will be installed. When designing a roof system, architects and engineers must ensure that they are familiar with the limitations and characteristics of the specified components.

Statement of Policy

INSULFOAM MANUFACTURES ROOF INSULATION AND SHEATHING MATERIALS. WE DO NOT PRACTICE ARCHITECTURE OR ENGINEERING. THE ROOF INSULATION AND SHEATHING SYSTEMS IN THIS MANUAL WILL PROVIDE SATISFACTORY INSTALLATIONS WHEN PROPERLY APPLIED. INSULFOAM IMPLIES NO WARRANTIES WHATSOEVER.

Insulfoam is not responsible for and will not accept, under any circumstances, any responsibility for the adequacy of a building design, INCLUDING ADEQUACY OF ANY STRUCTURE SUPPORTING THE WEIGHT OF ANY ROOF SYSTEM. Review of plans and specifications by an Insulfoam representative shall be for the sole purpose of making suggestions or recommendations concerning details for the application of Insulfoam and R-Tech insulations and sheathings. Under no circumstances will Insulfoam be responsible for any failure of the roofing system due to structural defects, damage from other building trades or for failure due to errors in design of any building element.

Because all the factors creating uncharacteristic wind conditions on a roof cannot be predicted, Insulfoam does not accept wind damage liability. The information and specifications contained in this manual are based on manufacturing knowledge, extensive field experience and continuous research. The insulation and sheathing systems are intended for use under typical or normal conditions. If unusual conditions are encountered, contact your local Insulfoam representative or the Insulfoam Technical Center for alternative methods of attachment. Insulfoam does not assume responsibility for decisions as to when and where vapor retarder systems or special attachment procedures are advisable. When such decisions are factors, the recommendations and procedures outlined in this manual are to be used as guidelines only, and shall not be taken as an express or implied warranty to fit a particular purpose, WHICH INSULFOAM EXPRESSLY DISCLAIMS.

All information and specifications contained in this manual supersede all prior data published by Insulfoam on this subject. We reserve the right to change or modify the contents of this manual at our discretion, without prior notification. Refer to the most current version of this manual.

The physical properties and characteristics of Insulfoam’s roofing insulations, sheathings and roof accessories, as published in this manual, represent average values obtained in accordance with accepted test methods conducted under controlled laboratory test conditions. They are subject to normal manufacturing variations and could change without notice. Check with your Insulfoam representative to ensure that you are using the most current information.

Safety Data Sheets

Insulfoam develops and maintains Safety Data Sheets (SDS) for all of its products. These SDS contain health and safety information regarding the appropriate product handling procedures that will protect the users of our products.

These SDS are available through the Insulfoam website, or from your local Insulfoam representative, and should be read and understood by everyone involved in specifying, using and/or handling the products.

Additional Resources

For more on Roof Decks, Roof Membranes, detailed Insulation Specifications, and other information, please visit www.insulfoam.com.
Insulfoam has created this manual to help you select the right product for your roofing system from our diverse line of InsulFoam® and R-Tech® brand expanded polystyrene (EPS) roof insulations and sheathings. Our product offering includes flat and tapered insulations, composite insulations (InsulFoam laminated to assorted utility boards) and Insulfoam’s specialty roofing products – InsulFoam SP, InsulFoam HD Composite, R-Tech and R-Tech Fanfold Roof Underlayment.

About Insulfoam
Insulfoam, headquartered in Washington, with manufacturing locations throughout the United States, is the largest manufacturer of block-molded expanded polystyrene (EPS) and offers one of the broadest range of roof insulation product lines in the industry. Insulfoam provides products for commercial, industrial and residential roofing, wall/sheathing systems, OEM garage door manufacturers, foundation and slab insulation and numerous other building system and geofoam applications. Insulfoam’s growth over the years has been accomplished by establishing diversified, state-of-the-industry regional manufacturing facilities and by offering one of the highest levels of customer service in the industry. Additional information can be found at www.Insulfoam.com.

Insulfoam is strategically aligned with major membrane manufacturers that provide total system warranties.

The Obvious Choice
Experience - Insulfoam has been manufacturing quality roofing products for over 40 years. Our product line and service capabilities allow us to meet the insulation and sheathing needs of today’s commercial, industrial and residential roofing markets virtually anywhere in the United States.

Technical Support - The Insulfoam product line is supported by one of the most comprehensive technical facilities in the industry. Located in Prior Lake, Minnesota, the Insulfoam Technical Center uses its state-of-the-art facility, along with a cadre of independent and allied partner-company laboratories, to identify new product opportunities and to solve roofing problems before they happen. Insulfoam is recognized as the leader in the expanded polystyrene industry for new product development and quality product offerings.

Selling Organization - Insulfoam employs a team of experienced Territory Managers (Sales Representatives) located throughout the United States to service the roofing trade. In addition, Insulfoam has a team of tapered roofing technicians who provide comprehensive tapered insulation layouts for use with virtually any roof system. These two teams are available to provide information and solutions for roofing contractors, building owners and designers. Please contact the Insulfoam location nearest you for the name and contact information of the tapered technician or Territory Manager.

The Insulfoam Advantage!
• Proven Performer – manufactured for more than 50 years using the same basic chemistry.
• Stable R-Value – no thermal drift; eligible for a 20-year 100% thermal-performance warranty.
• Environmentally Friendly – made with recycled materials and includes no formaldehyde or ozone-depleting CFCs or HCFCs; InsulFoam products are 100% recyclable.
• Water-Resistant – does not readily absorb moisture from the environment; does not promote migration of moisture.
• Code & System Approved – InsulFoam is recognized by ICC-ES, has numerous UL and FM approvals, and is accepted by most major membrane manufacturers.
• Strongest Warranty – Insulfoam warrants 100% of insulation product thermal values for 20 years.

The entire InsulFoam family of roofing products is well suited for single ply roof applications employing mechanically fastened or ballasted TPO, PVC, EPDM and CSPE as well as BUR, modified bitumen or fully adhered single ply systems utilizing a cover board.

How To Reach Us
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   800.775.9424
3. Dixon, CA
   707.678.6900
4. Chino, CA
   800.472.4291
5. Tooele, UT
   800.735.4621
6. Phoenix, AZ
   800.437.4437
7. Aurora, CO
   800.735.4621
8. Mead, NE
   800.228.4412
9. Lakeland, FL
   800.242.8879
About Expanded Polystyrene Insulation

At the core of every InsulFoam and R-Tech product is a state-of-the-art expanded polystyrene, foamed-plastic insulation core. Its unique closed-cell structure provides remarkable physical and thermal properties. While lightweight and resilient, it is also capable of supporting virtually any of the loads typically encountered on a roof. This material has long-term, non-degenerative thermal properties (R-Value), excellent moisture resistance and dimensional stability. It is compatible with virtually every commercial, low-slope roofing system offered, with only a few exceptions.

Styrene is the primary ingredient used in the production of InsulFoam and R-Tech insulations. Styrene (styrene monomer) is a derivative of both crude oil and natural gas processes. The styrene is polymerized to form polystyrene. Expandable polystyrene resin is processed in a molten state into which a pentane blowing agent is introduced and formed into tiny spheres, similar in size to beach sand. With steam, these miniature beads expand up to 40 times their original resin size. The expanded beads are stabilized in curing bins, fused into billets or blocks in a block mold, and cut into roof insulation and sheathing boards of various thicknesses, sizes and tapers. Typical roof insulations are manufactured to a nominal density of 1.25 pounds per cubic foot; however, products may be ordered in nominal densities ranging from 1 to 3 pounds per cubic foot.

Energy Efficiency

The escalating price of petroleum and natural gas continues to make energy consumption and conservation a critical issue for building owners and designers. Typically, the initial or design R-Value of an insulation product is the primary factor in determining which product to use. Some insulations exhibit a phenomenon known as thermal drift. This is a result of diffusion or dilution of the blowing agent (a gas that has high resistance to heat flow) in the insulation’s cells. Some insulations will lose up to 30% of their initial insulation capability over the design life. InsulFoam and R-Tech products do not use these blowing agents for insulating purposes, and therefore do not exhibit this degradation. The products provide the same consistent and reliable thermal performance after 60 days, one year or twenty years, as they did on the day they were purchased. Designers should request the specific thermal design value from the manufacturer and not rely on general, typical or average R-Value tables found in most manufacturers’ literature. Additional factors to be considered in a design are roof components that can cause thermal shorts or bridging, air infiltration, as well as unique construction details and quality of workmanship. Each of these factors can have a significant impact on the thermal performance of the roof assembly.

Environmental Issues

Another issue facing the building design and construction industry is the impact a product will have on the environment. While many products are marketed as green or environmentally friendly, it is difficult for the owner and designer to determine the real impact of a given product. The designer should consider the long-term characteristics of the insulation, its thermal resistance, initial recycled material content, recyclability after the system’s life-cycle, and the re-usability in the next roof system. Some insulations contain ozone-depleting gases. InsulFoam and R-Tech products have never contained these chemicals. Manufacturers of products that contained these gases were forced to re-formulate their products several times in the past decade, and as a result, the thermal and physical product properties have changed dramatically. Today, of these products employ the same family of blowing agents that have been used in InsulFoam and R-Tech since their origin. However, while the chemistry used to make these Insulfoam products is tried and true, the alternative insulations have limited track records.

For more information regarding the environmental characteristics of expanded polystyrene insulation, visit www.epsindustry.org.
**InsulFoam® I, VIII, II, IX, XIV and XV**

**Flat and Tapered – EPS Roofing Insulation**

**Application**
All roofing and reroofing applications. Tapered panels used for increasing slope for additional drainage.

**Characteristics**
Available in compressive strengths from 10-60 psi, flat thicknesses of ½" to 40", and tapered start thicknesses of ⅛" to maximum thicknesses of 40"; multiple slopes available.

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**InsulFoam SP**

**InsulRoof with a Factory-laminated Glass Facer**

**Application**
For recover or new applications, approved for single-ply roof systems without an additional slip sheet on non-combustible decks.

**Characteristics**
Available in thicknesses 1½" - 7", 4' x 4' and 4' x 8' panels.

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**InsulFoam HD Composite**

**¼" High Density Polyiso Bonded to InsulFoam**

**Application**
For new construction or recover applications approved for single-ply roof systems.

**Characteristics**
Available with ½" 100 psi high density polyiso bonded to InsulFoam in compressive strengths from 10-60 psi, thicknesses 1½" - 6", 4' x 4' and 4' x 8' panels.

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**InsulLam®**

**Composite EPS Insulation**

**Application**
High performance nailbase insulation for use in commercial and residential roof applications.

**Characteristics**
Standard substrates include OSB, Plywood, Gypsum and other cover boards, 4' x 4', 4' x 8' panels are available in thicknesses of 1½" – 7". Also available vented as InsulVent.

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**R-TECH®**

**Recover Roof Insulation**

**Application**
For recover applications, approved for use under single-ply roof systems without the use of a slip-sheet.

**Characteristics**
4' x 8' panels in thicknesses of ⅜" - 1".

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**R-TECH FF**

**Fanfold Underlayment**

**Application**
For recover applications, approved for use under single-ply roof systems without the use of a slip-sheet. EPDM is acceptable in the northern US.

**Characteristics**
Available in 200 sq. ft. fanfold bundles with thicknesses of ⅜", ½", or ¾".

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**InsulFoam FL**

**Flute Fill**

**Application**
Recover insulation for existing metal roof profiles.

**Characteristics**
Available in taper, straight, or custom-cut profiles to fit any metal roofing system.

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**InsulFoam HB**

**Holey Board**

**Application**
For use in lightweight concrete systems.

**Characteristics**
Typically provided in 2' x 4' panels in thicknesses from ¾" to 20".
Roof Insulation Product Considerations

Roof insulation should perform two basic functions; it is a thermal barrier for the building’s roof and a substrate for the roof system. In order to perform these functions, it should have the following basic characteristics:

- Stable thermal resistance (R-Value) to meet the long-term needs of the designer and building owner
- Resistance to damage during typical construction traffic during the installation of the roof or roof-top units (antennae, HVAC, etc.)
- Rigidity to span rib openings in metal decks and minor deck irregularities, and to support the roofing membrane
- Dimensional stability
- Resistance to moisture absorption
- Recognized by Underwriters Laboratories and other local and national code agencies
- Meet applicable building code requirements or designer requirements

Physical Properties

InsulFoam mechanical properties depend on two primary factors: the density of the material and the fusion, or integral bonding, of the expanded polystyrene beads. Although density plays a key role in defining the mechanical properties, density alone does not adequately define the important characteristics and should not be the sole criteria used to specify the product. The degree of fusion achieved in the forming process is a critical factor. InsulFoam’s ongoing investment in state-of-the-art manufacturing equipment and controls results in the highest quality material available. Not all expanded polystyrene products are created equally. Care should be taken to make certain the manufacturer is able and willing to certify the mechanical properties of their product will meet those prescribed for the project. For roofing systems, the most critical mechanical properties to consider are compressive strength, flexural strength, dimensional stability, water and moisture absorption and thermal value.

ASTM C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation is the generally accepted document used to define the physical properties of expanded polystyrene used in the United States. Note that the values in this specification are the minimum properties recommended for each material type. These properties are determined using ASTM C203, Test Method for Breaking Load and Flexural Properties of Block-Type Thermal Insulation, ASTM C165, Test Method for Measuring Compressive Properties of Thermal Insulations and ASTM D1621, Test Method for Compressive Properties of Rigid Cellular Plastics.

Compressive Strength is required to support or resist dynamic loads (e.g. foot and construction traffic) as well as static loads (e.g. mechanical fasteners) to which typical roof systems will be exposed during the construction process and while in service. InsulFoam VIII, II, IX, XIV and XV will best meet or exceed the desired compressive resistance for mechanically attached systems. Compressive strength increases as density increases, and depending on the product, ranges between 10 and 60 psi. InsulFoam I performs best when overlaid with a cover board or with InsulFoam’s SecurePly (fibrous-glass slip sheet). Without either a cover board or SecurePly, InsulFoam I may exhibit creep when under load for extended periods of time. Compressive strength must be considered during the design and selection process.

Flexural Strength is required to ensure the product can be handled without being damaged, can span irregularities and roof deck flutes, and can resist bending forces from wind loads on the roof system. The flexural strength of the InsulFoam product increases with improved fusion and increased density.

Dimensional Stability is imperative to the long-term performance of a roof system. Inadequate dimensional stability can result in the exposure of roof membranes to stresses that can lead to splits, punctures, wrinkles and membrane delamination. InsulFoam products are among the most dimensionally-stable insulations available in the roofing industry. This dimensional stability remains even at thicknesses of 3” and above. InsulFoam products may exhibit some dimensional changes when under load or when exposed to extreme temperatures above 185 °F. The use of cover boards, light covered membranes or reflective coatings can protect the product from these exposure conditions.

Absorption indicates a product’s susceptibility to take on moisture. InsulFoam products do not readily absorb moisture from the environment. All foam-plastic insulations absorb some moisture over time. However, in the long-term, InsulFoam will better retain its mechanical properties and outperform most alternative insulation materials. InsulFoam products are successfully used in Geofoam, marine and below-grade applications, as well as roofing applications.

The mechanical properties of the insulation are very important in adhered assemblies. The performance of the roof assembly depends greatly on the integrity and characteristics of the insulation. Typically, adhered single ply and built-up roofing systems will require a cover board. Insulfoam I may be used when a cover board is part of the system.

Finally, an additional factor to consider is the overall resiliency of InsulFoam products. The products not only have the ability to resist loads, but can also recover their original thickness once the load has been removed. This characteristic enables the InsulFoam products to deflect or elongate when exposed to forces such as roof-top traffic and deck or building movement from thermal expansion and contraction, and then return to their original configuration. Because InsulFoam easily accommodates irregularities in decks, substrates and existing roof systems, it provides a uniform and even base for new roofs.
The physical properties provided in this manual are average values determined by Insulfoam, Insulfoam raw material suppliers and independent testing agencies. Testing results were obtained under controlled laboratory conditions and do not represent minimum standards. Insulfoam is not obligated to manufacture its products per a designer’s specifications or physical standards unless agreed to in advance by Insulfoam. It is the purchaser’s obligation to ensure any purchased Insulfoam materials meet a specification’s physical properties.

### Certification
Insulfoam must be notified at the time materials are ordered if product must be certified to meet an ASTM or other specification and/or must bear an Underwriters Laboratories, Inc. (UL) or Factory Mutual (FM) label or marking. Insulfoam will perform the required tests and certify that materials meet specifications, with or without exception, upon acceptance of the order.

### Typical Physical Properties of InsulFoam*

<table>
<thead>
<tr>
<th>Property</th>
<th>Type I</th>
<th>Type VIII</th>
<th>Type II</th>
<th>Type IX</th>
<th>Type XIV</th>
<th>Type XV</th>
<th>Test Method</th>
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<tr>
<td>Nominal Density (pcf)</td>
<td>1.0</td>
<td>1.25</td>
<td>1.5</td>
<td>2.0</td>
<td>2.50</td>
<td>3.0</td>
<td>ASTM C303</td>
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<td>C-Value (Conductance) BTU/(hr•ft•°F)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(per inch) @ 25° F</td>
<td>.230</td>
<td>.220</td>
<td>.210</td>
<td>.200</td>
<td>0.198</td>
<td>0.196</td>
<td>ASTM C518 or ASTM C177</td>
</tr>
<tr>
<td>@ 40° F</td>
<td>.240</td>
<td>.235</td>
<td>.220</td>
<td>.210</td>
<td>0.206</td>
<td>0.198</td>
<td></td>
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<tr>
<td>@ 75° F</td>
<td>.260</td>
<td>.255</td>
<td>.240</td>
<td>.230</td>
<td>0.222</td>
<td>0.217</td>
<td></td>
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<tr>
<td>R-Value (Thermal Resistance) (hr•ft•°F)/BTU</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>(per inch) @ 25° F</td>
<td>4.35</td>
<td>4.55</td>
<td>4.76</td>
<td>5.00</td>
<td>5.05</td>
<td>5.10</td>
<td>ASTM C518 or ASTM C177</td>
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<td>@ 40° F</td>
<td>4.17</td>
<td>4.25</td>
<td>4.55</td>
<td>4.76</td>
<td>4.85</td>
<td>5.05</td>
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<tr>
<td>@ 75° F</td>
<td>3.85</td>
<td>3.92</td>
<td>4.17</td>
<td>4.35</td>
<td>4.50</td>
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<td>Compressive Strength (psi, 10% deformation)</td>
<td>10 - 14</td>
<td>13 - 18</td>
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<td>25 - 33</td>
<td>40</td>
<td>60</td>
<td>ASTM D1621</td>
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<td>Flexural Strength (psi)</td>
<td>25</td>
<td>30</td>
<td>35</td>
<td>50</td>
<td>60</td>
<td>75</td>
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<td>Dimensional Stability (maximum %)</td>
<td>2%</td>
<td>2%</td>
<td>2%</td>
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<td>Water Vapor Permeance (max. perm., 1 inch)</td>
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<td>3.5</td>
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<td>Water Absorption (max. % vol.)</td>
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### Typical Physical Properties of R-Tech*

<table>
<thead>
<tr>
<th>Property</th>
<th>Type I</th>
<th>Type VIII</th>
<th>Type II</th>
<th>Type IX</th>
<th>Test Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressive Strength (psi, 10% deformation)</td>
<td>13</td>
<td>16</td>
<td>20</td>
<td>28</td>
<td>ASTM D1621</td>
</tr>
<tr>
<td>Flexural Strength (psi)</td>
<td>33</td>
<td>40</td>
<td>50</td>
<td>70</td>
<td>ASTM C203</td>
</tr>
<tr>
<td>Water Vapor Transmission (perms)</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
<td>ASTM E96</td>
</tr>
<tr>
<td>Absorption (% vol.)</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
<td>&lt; 1.0</td>
<td>ASTM C272</td>
</tr>
</tbody>
</table>

*Properties are based on data provided by resin manufacturers, independent test agencies and Insulfoam.
Thermal Values & Roof Insulation

An effective roof insulation reduces overall energy consumption, brings about improved comfort for the building’s occupants and provides an excellent substrate for a new roof system. The InsulFoam product line can satisfy these needs for virtually every type of roof system. The preceding section reviews the complete InsulFoam product line. To ensure correct selection of any roof system, contact your local InsulFoam representative for a list of membrane manufacturers with which Insulfoam is a partner.

Thermal Values of Insulfoam Products

The following chart provides the InsulFoam thicknesses needed to obtain the corresponding R-Value. Over the last century, the average temperature within the contiguous United States as reported by the National Oceanic and Atmospheric Administration (NOAA) was 52.8 °F. Insulfoam generally quotes the R-Values of its products at 40 °F, which is one of the testing temperatures provided within ASTM C518. This temperature most closely reflects the average overall temperature throughout the U.S. The R-Values were determined per ASTM C518, Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.

Thermal Warranties

Insulfoam warrants 100% of the insulation’s thermal value for 20 years for registered warranties. The owner of a low-slope roof may wish to receive a material and labor warranty that covers both the InsulFoam insulation and the membrane. InsulFoam insulations are eligible for inclusion in many membrane manufacturers’ total system warranties. Contact your local Insulfoam representative for a list of membrane manufacturers with which Insulfoam is a partner.
Material Storage, Handling & Installation Guidelines

General Storage Recommendations

- Roofing materials can be damaged by exposure to the elements and may be susceptible to moisture retention; all material should be protected from the weather and stored in a dry location.
- Insulation that is stored outside should be covered by canvas tarpaulins that can breathe. Tarpaulins or other covers should be properly secured.
- Loose insulation material should be weighted down to prevent wind blow-off or damage.
- Materials that are stored outside should be placed on pallets or raised platforms to keep them off the ground or roof deck.

General Handling and Installation Recommendations

- Use caution when handling any roofing insulation to avoid breaking, crushing or cracking the board or its edges.
- Load or stage insulation in a manner that will minimize repetitive movement of the material.
- Install only as much insulation as can be covered by a roof system and/or made watertight by the end of each day.
- Any temporary water cut-offs or roof tie-ins should be completely removed before additional insulation is installed.
- InsulFoam insulations should be protected from solvent-based or petroleum-based adhesives and from direct contact with coal-tar products.
- InsulFoam insulations should not come in contact with asphalt at temperatures above 250 °F.
- InsulFoam insulation should not be exposed to open flames or other ignition sources.
- Any decks or substrates that require a primer should be primed at least 24 hours before the installation of InsulFoam insulations.
- All insulation boards must be walked-in immediately after being placed in the mopping asphalt.
- End cuts should be marked with a permanent marker with the same letter or number as the piece from which they were cut.
- Any temporary water cut-offs or roof tie-ins should be completely removed before additional insulation is installed.
- Materials that are stored outside should be placed on pallets or raised platforms to keep them off the ground or roof deck.
- Insulation that is stored outside should be covered by canvas tarpaulins that can breathe. Tarpaulins or other covers should be properly secured.
- Loose insulation material should be weighted down to prevent wind blow-off or damage.
- Materials that are stored outside should be placed on pallets or raised platforms to keep them off the ground or roof deck.

General Tapered Insulation Recommendations

- Review the layout of Tapered InsulFoam systems before loading and installing panels.
- In cut-up areas and for complex tapered layouts, material should be laid out unattached to allow for trimming and fitting.
- The use of a chalk line is recommended to start the installation of any Tapered InsulFoam system.
- Whenever practical, Tapered InsulFoam systems should be installed starting from the thickest point and working towards the thinnest point. This will allow any trimming or cutting to be done at the drain points. This will not be feasible for factory-fabricated valley or ridge systems.
- When starting first and second rows of taper, start one of the rows with a half length board so that joints are staggered between rows. Repeat throughout the tapered system.
- Do not dispose of any end cuts until the installation is complete. These pieces may have been figured in and required elsewhere in the system.
- End cuts should be marked with a permanent marker with the same letter or number as the piece from which they were cut.

Asphalt Recommendations

- Asphalt-applied roofing membranes are not to be installed directly to InsulFoam insulations.
- Always mop an area 6"-8" larger than the insulation piece being installed.
- The asphalt mop should not come in contact with any previously installed insulation pieces.
- Only solid mopping of InsulFoam insulation is recommended. Spot or strip mopping is not recommended. Do not overload the mop, as asphalt will cool more slowly than normal if excessive quantities are applied.
- InsulFoam should not come in contact with asphalt at temperatures above 250 °F. A common rule-of-thumb for appropriate asphalt temperature is the lack of visible fuming of the installed asphalt.
- All insulation boards must be walked-in immediately after being placed in the mopping asphalt.
- If the board is slightly cupped, apply the cupped face downward.
- Asphalt is not recommended for InsulFoam-to-InsulFoam attachment. For these applications, contact your Insulfoam representative for recommendations on approved adhesives.
- When InsulFoam is used in a hot-asphalt system (BUR or modified bitumen), a suitable cover board is required. The membrane manufacturer should be contacted for recommendations on approved cover boards.
- The joints between the cover board and the joints of the initial layer of InsulFoam should be staggered a minimum of 6".
- Cover boards to be mopped to InsulFoam should have the asphalt applied to their bottom side only. Asphalt should not be applied directly to the InsulFoam insulation.
- To minimize asphalt migration between insulation joints, Insulfoam recommends the use of 6’ strips of an ASTM D2178 Type VI ply felt over the joints and the application of asphalt over the strips using a small mop. Asphalt should be hot enough at the point of application to bleed through the ply felt so that it will attach to the insulation. Mechanized equipment may also be available for strip application.
- An alternate means of addressing asphalt migration through insulation joints would be to apply a protection sheet (e.g., red rosin, Kraft paper) between the cover board joints and the InsulFoam insulation.
Tapered Roof Insulation

The performance risks associated with a roof that does not have positive drainage have been known in the roofing industry for many years and are covered further in the Roof Decks Section of this manual. Tapered InsulFoam offers the designer an easy and economical means of adding positive slope to virtually any building. With a trained tapered design staff at every location, Insulfoam can efficiently assist roofing professionals with recommendations on designing, ordering and installing Tapered InsulFoam insulation systems. To facilitate the installation process, Insulfoam provides detailed shop drawings for every Tapered InsulFoam project.

Tapered InsulFoam systems can be used for new, re-roof and re-cover projects. Assemblies can include complete and integral systems that incorporate sloped panels for the field of the roof as well as crickets and saddles to further assist in directing water to drainage outlets.

There are several basic elements that should be considered for every project: minimum slope required, locations of drains (internal and external), mechanical equipment, curbs, expansion and control joints, allowable overall insulation thickness (imposed by parapets or equipment curbs), and alternative system layouts. Alternative tapered layouts and additional roof drains should be considered when existing project conditions limit the performance of a system.

Tapered InsulFoam is available in six standard slopes: “A” panels have a slope of 1/8” per foot, “B” panels have a slope of 3/16” per foot, “C” panels have a slope of 1/4” per foot, “D” panels have a slope of 3/8” per foot, “E” panels have a slope of 1/2” per foot and “F” panels have a slope of 3/4” per foot. Custom slopes are available upon request. To facilitate installations, each panel is hand-labeled at the Insulfoam plant. Tapered InsulFoam panels can be provided in thicknesses up to 40” from most Insulfoam manufacturing locations.

The ability to produce specific panels (up to 40” thick) for each course of insulation eliminates many of the complexities associated with those tapered insulation systems in which individual panel thickness is limited to approximately 3”. With fewer pieces to handle, Tapered InsulFoam systems are significantly less labor-intensive to install. In addition, pre-cut ridge and valley panels are available. These panels are typically cut to 45° angles, though other angles can be provided upon request. Tapered InsulFoam panels can also be easily fabricated on site by the roofing mechanic.

Tapered Insulation Profiles

Insulfoam EPS Tapered System

Use InsulFoam Taper and save money on labor, installation, adhesives and material costs.
- 0-40” in a single layer application - no fill pieces needed
- no limitations on slope

Alternative Hybrid Tapered System

Insulfoam EPS is approved in Hybrid Tapered Systems where the InsulFoam is used as the fill with a top layer of polyiso. This system has increased labor and material savings compared to systems that use only polyiso, and is approved for fully adhered systems.

Contact your local Insulfoam sales rep and they will create a custom design to meet your job-specific needs.

SAMPLE SLOPE CROSS SECTIONS
1/8” to 1” Per Foot Slopes

NO SEPARATE FILLER PANELS REQUIRED
WITH THICKNESSES UP TO 40”

SAMPLE HYBRID CROSS SECTIONS
1/8” to 1” Per Foot Slopes

ISO TAPER - EPS FLAT  EPS TAPER - ISO FLAT
### Tapered Insulation System Options

#### Continuous Perimeter Drainage
A simple tapered insulation solution for moving water from the field of the roof to the gutter edge is a full or partial hip-style tapered insulation design. A hip-style layout is well suited for buildings that can drain water freely around the entire perimeter. In the following example, the arrows indicate the direction in which the water will drain.

#### Interior Drains and Parapet Walls
A common tapered insulation solution for buildings with parapet walls and interior drains consists of compound mitered panels with overlay crickets. In the field of the roof, the tapered system will divert the water away from the parapets, while the crickets (dashed line) and mitered panels will direct water into the valleys and towards the drains (shown as dark circles).

Note: Even if not required by local building codes, consideration should be given to have backup or overflow drains at each drain location. Set slightly higher, the backup drain will provide a safety outlet in the event the primary (lower) drain becomes obstructed or clogged.

#### External Drains and Parapet Walls
If the building has parapet walls around its perimeter and exterior drains (scuppers, shown as trapezoids), a combination of sloped field-panels can be used to form a ridge in the center of the roof, and be overlaid with factory-fabricated crickets (dashed lines) to direct the water away from the parapets and towards the valleys and scuppers.

### Crickets and Saddles

Directing water to or from specific areas of the roof can be achieved quite easily with Tapered InsulFoam cricket and saddle systems. These materials can be used with numerous other insulation systems or integrated into a total Tapered InsulFoam package. In the roofing industry, the terms cricket and saddle are often used interchangeably. For this manual, the term saddle is defined as a relatively small, elevated area of a roof that is constructed to divert water around a chimney, curb or other projection. See example below.

A cricket is defined as a small structure that directs surface water to drains, frequently located in a valley, and often constructed like a small hip-roof or a pyramid with a diamond shape base. Several examples are given below.

### Equipment Curb Drainage

A cricket is defined as a small structure that directs surface water to drains, frequently located in a valley, and often constructed like a small hip-roof or a pyramid with a diamond shape base. Several examples are given below.

### Diamonds Between Drains

### Drain To Scuppers

### Drain Corners

### Inset Perimeter Drains

Buildings with multiple sections often employ combinations of all the systems previously shown. Insulfoam can provide assistance in determining which alternatives best suit your needs.
Basic Heat Flow Fundamentals

Heat is the energy associated with the random motion of molecules, atoms or smaller structural units of matter. Heat always flows from higher to lower temperatures. All materials and matter, including air, contain heat down to a temperature of absolute zero (approx. 460 °F). There is no such thing as cold! Cold is the absence of heat. When we feel cold it is not cold penetrating our clothes or structures, but rather the rapid loss of heat from our bodies. The flow of heat cannot be stopped but only slowed by the use of insulation, trapped air or heat-reflective surfaces.

Heat flows by means of conduction, convection or radiation or a combination of any or all of these.

- **Conduction** – The transfer of heat in a material due to the molecule-to-molecule transfer of kinetic energy. An example is when the handle on a skillet gets hot when the bottom of the pan is heated on the stove. With most materials, the denser the material, the higher the rate of heat flow due to conduction.

- **Convection** – The transfer of heat by physically moving the molecules from one place to another through fluid flow either in air or liquid. An example would be a forced-air heating system in a building or the heat rising from a steam or hot-water-heated pipe.

- **Radiation** – The transfer of heat through space from a very hot object through electromagnetic energy. An example would be when you feel the heat from a fireplace while standing many feet away. Another example is the heating from the sun during the day. Radiant heat is not affected by air. In a roofing system, radiation is seldom a cause of concern in heat lost.

Radiation from the sun during the day impacts the roof-top surface of a dark-colored roof membrane. In these situations, insulation is typically used to block the heat flow into the building. Another method to minimize heat flow from radiation on a roof surface is to use a reflective roof membrane or a “cool roof”. Contact the membrane manufacturer for additional “cool roof” information.

Heat Flow Terminology

Heat is measured in terms of BTUs, or British Thermal Units. A BTU is the amount of heat required to change the temperature of one pound of water by one degree Fahrenheit at sea level. An example of 1 BTU would be the energy released by a typical wood match that is allowed to burn end to end.

**Thermal Conductivity, k-Value (BTU•inch/hr•ft²•°F)**

Thermal conductivity, or k-Value, is the measure of the amount of heat that will be transmitted through a 1” piece of a homogeneous material, per hour, per square foot, per degree Fahrenheit temperature difference. The smaller the k-Value, the better the insulator. This is the basic physical property of a material measured in the laboratory.

**Thermal Resistance, R-Value (hr•ft²•°F)/BTU**

Thermal resistance, or R-Value, is a material’s resistance to heat flow. The higher the R-Value, the higher the insulating value of the insulation. All materials that have the same R-Value, regardless of thickness, weight or appearance, are equal in insulating value.

Thermal Conductance, C-Value = BTU/(hr • ft² • °F)

Thermal conductance or C-Value is the measure of heat flow for any given thickness of material and is calculated as:

\[ C = \frac{k}{\text{Thickness}} \]

The C-Value is also equal to the reciprocal of the R-Value (\( C = \frac{1}{R} \)).

**Overall Coefficient of Thermal Transmission, U-Value**

The overall coefficient of thermal transmission, or U-Value, is determined by adding all of the R-Values of the ceiling and roof components in the system, and taking the reciprocal value. The formula for this coefficient is:

\[ U = \frac{1}{(R1 + R2 + R3...)} \]

The following is an example of the use of the various heat flow terms:

Remember that R-Values are cumulative. The above installation consists of a TPO membrane installed over 4 inches of InsulFoam SP that is installed directly to a metal deck. Take all of the R-Values of each component and list them in order from outside to inside. The following chart explains this further.

<table>
<thead>
<tr>
<th>Component</th>
<th>R-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside Air Film</td>
<td>0.17</td>
</tr>
<tr>
<td>Single Ply Membrane</td>
<td>negligible</td>
</tr>
<tr>
<td>4” InsulFoam SP (R = 4.25/in. @ 40 °F)</td>
<td>17.00</td>
</tr>
<tr>
<td>Steel Deck</td>
<td>negligible</td>
</tr>
<tr>
<td>Dead Air Space above Ceiling (not used as a return air plenum)</td>
<td>0.94</td>
</tr>
<tr>
<td>1/2” Ceiling Tile</td>
<td>1.40</td>
</tr>
<tr>
<td>Inside Air Film</td>
<td>0.61</td>
</tr>
</tbody>
</table>

R-Value of the Assembly = \( R_t = 20.12 \)

- The k-Value (thermal conductivity) of the InsulFoam SP is: \( k = 1/4.25 \) or 0.236
- The C-Value (thermal conductance) of the InsulFoam SP is: \( C = k/\text{Thickness} = .236/4.0 \) or 0.059
- The U-Value (overall transmission coefficient) of the assembly is: \( U = 1/ R_t = 1/20.12 \) or .050
Fastener Load Study

InsulFoam insulations have been used in single ply, mechanically attached systems since their inception. Questions have been raised regarding InsulFoam’s ability to resist membrane fastener loads. To address these questions, Insulfoam embarked on a study of fasteners typically used for membrane attachment and their effect on various insulation systems. Samples of the insulation systems were placed in a Dillon Compression Test Apparatus and covered with a single ply membrane. The membrane was attached to the insulation to duplicate a typical field application. Once the membrane and insulation systems were in place, a 2” membrane fastener plate was placed through the membrane. The force of the test apparatus was channeled through a 2” column onto the plate. A load was applied to the plate at a rate of 0.2 inches per minute until 120 pounds was reached. The load was recorded for a period of 72 hours.

A review of the final data showed that there was not a significant difference for the insulation systems tested. The following chart gives the insulation system tested and the average load retained for each system after the monitoring period.

<table>
<thead>
<tr>
<th>Insulation System</th>
<th>Fastener Load</th>
</tr>
</thead>
<tbody>
<tr>
<td>InsulFoam I</td>
<td>49.4 lbs.</td>
</tr>
<tr>
<td>InsulFoam VIII</td>
<td>56.5 lbs.</td>
</tr>
<tr>
<td>InsulFoam SP</td>
<td>60.3 lbs.</td>
</tr>
<tr>
<td>InsulFoam II</td>
<td>62.1 lbs.</td>
</tr>
<tr>
<td>InsulFoam IX</td>
<td>67.5 lbs.</td>
</tr>
<tr>
<td>Polyisocyanurate</td>
<td>50.6 lbs.</td>
</tr>
</tbody>
</table>

Test Conclusions

- Increased InsulFoam density improves fastener load retention.
- The addition of SecurePly to lower density InsulFoam products improves fastener load retention by 10-15%.
- Products exhibiting clamping pressures equal to or greater than those of polyisocyanurate would also be acceptable in mechanically fastened roof applications.
- InsulFoam SP or InsulFoam VIII overlaid with SecurePly are viable UL approved insulation systems. Other InsulFoam brand insulations may also be suitable under SecurePly.

For additional information, please contact the Insulfoam Technical Center at 952.447.5213 | techinfo@insulfoam.com or your local Insulfoam representative.
## Single Ply Systems

### Single Ply- Mechanically Attached Class A

<table>
<thead>
<tr>
<th>Deck:</th>
<th>Combustible or Non-Combustible</th>
</tr>
</thead>
<tbody>
<tr>
<td>System:</td>
<td>Single Ply- Mechanically Attached</td>
</tr>
</tbody>
</table>

**Barrier Board:** 1/2" (min.) gypsum board or 1/4" (min.) DensDeck.

**Insulation:** InsulFoam EPS, Tapered InsulFoam, R-Tech; any thickness, any density.

**Membrane:** Any UL-Classified EPDM, TPO, PVC, CPE, CSPE, CR, NBP, EIP, EP, PIB or TPA.

**Surfacing:** See membrane listing.

**Deck:** Non-Combustible

**System:** Single Ply- Mechanically Attached

**Insulation:** InsulFoam EPS, Tapered InsulFoam, R-Tech, InsulLam, InsulVent; any thickness, any density. InsulFoam/wood fiber or InsulFoam/perlite; factory-laminated or field-applied.

**Membrane:** Any UL-Classified EPDM, TPO, PVC, CPE, CSPE, CR, NBP, EIP, EP, PIB or TPA.

**Surfacing:** See membrane listing.

**Deck:** Non-Combustible

**System:** Single Ply- Mechanically Attached

**Insulation:** InsulFoam SP; any thickness, any density, mechanically attached.

**Membrane:** Any UL-Classified PVC, TPO, CSPE or reinforced Carlisle Sure-Seal; max. 60 mil.

**Surfacing:** See membrane listing.

**Deck:** Non-Combustible

**System:** Single Ply- Mechanically Attached

**Insulation:** InsulFoam HD Composite, any thickness, any density.

**Membrane:** Any UL-Classified EPDM, CPE, CSPE, PVC, NBP, TPA, EIP, or TPO.

**Surfacing:** See membrane listing.

**Deck:** Non-Combustible

**System:** Single Ply- Mechanically Attached

**Insulation:** InsulFoam HD Composite, any thickness, any density.

**Membrane:** Any UL-Classified EPDM, CPE, CSPE, PVC, NBP, TPA, EIP, or TPO.

**Surfacing:** See membrane listing.

**Note:** Classification (A, B or C) will be the same as the classification for the membrane when applied directly over polyisocynaurate insulation. The maximum incline cannot exceed 1/2:12.

**Deck:** Combustible

**System:** Single Ply- Mechanically Attached

**Insulation:** InsulFoam HD Composite, any density, 1-1/2" (min.), over any UL Classified Insulfoam EPS, 3" (min).

**Membrane:** Any UL Classified EPDM, PVC, TPO, CSPE, CPE, NBP, TPA or EIP.

**Surfacing:** See membrane listing.

**Note:** Classification (A, B or C) will be the same as the classification for the membrane when applied directly over polyisocynaurate insulation. The maximum incline cannot exceed 1/2:12.

### Single Ply- Ballasted Systems Class A

<table>
<thead>
<tr>
<th>Deck:</th>
<th>Combustible or Non-Combustible</th>
</tr>
</thead>
<tbody>
<tr>
<td>System:</td>
<td>Single Ply-Ballasted</td>
</tr>
</tbody>
</table>

**Insulation:** InsulFoam EPS, Tapered InsulFoam, InsulFoam HD Composite, R-Tech, InsulLam, InsulVent, InsulFoam SP; any thickness, any density.

**Membrane:** Any UL-Classified membrane system.

**Surfacing:** River bottom stone – 1000 lb/sq. min.

### For a complete listing of roofing codes go to insulfoam.com, click on "Roof insulation" and select Technical > Building Codes.

**Deck:** Combustible or Non-Combustible

**System:** Single Ply- Adhered

**Barrier Board:** 1/2” (min.) gypsum board or 1/4” (min.) DensDeck.

**Insulation:** InsulFoam EPS, Tapered InsulFoam, R-Tech; any thickness, any density.

**Membrane:** Any UL-Classified EPDM, TPO, PVC, CPE, CSPE, CR, NBP, EIP, EP, PIB or TPA.

**Surfacing:** See membrane listing.

**Deck:** Non-Combustible

**System:** Single Ply- Adhered

**Insulation:** InsulFoam EPS, Tapered InsulFoam, R-Tech, InsulLam, InsulVent; any thickness, any density. InsulFoam/wood fiber or InsulFoam/perlite; factory-laminated or field-applied.

**Membrane:** Any UL-Classified EPDM, TPO, PVC, CPE, CSPE, CR, NBP, EIP, EP, PIB or TPA.

**Surfacing:** See membrane listing.

**Deck:** Non-Combustible

**System:** Single Ply- Adhered

**Insulation:** InsulFoam SP; any thickness, any density, mechanically attached.

**Membrane:** GAF Material Corp. EverGuard Freedom TPO or TPO, max. 60 mil, self-adhered.

**Surfacing:** See membrane listing.

### Bituminous Systems

**Self-Adhered Modified Bitumen Class A**

**Deck:** Combustible

**System:** Single Ply- Adhered

**Insulation:** InsulFoam HD Composite, any thickness, any density.

**Membrane:** Any UL-Classified EPDM, CPE, CSPE, PVC, NBP, TPA, EIP, or TPO.

**Surfacing:** See membrane listing.

**Note:** Classification (A, B or C) will be the same as the classification for the membrane when applied directly over polyisocynaurate insulation. The maximum incline cannot exceed 1/2:12.

**Barrier Board:** 1/4” (min.) G-P Gypsum DensDeck® or 1/2” (min.) gypsum board with 6" offset to plywood joints.

**Insulation:** InsulFoam EPS, Tapered InsulFoam, InsulFoam SP; InsulFoam HD Composite; any thickness, any density.

**Surfacing:** River bottom stone – 1000 lb/sq. min.
Underwriters Laboratories Roof System Approvals*

Continued: Self-Adhered Modified Bitumen Class A

Membrane: 1. Polyglass Elastoflex SA V FR Base self-adhered/Polyglass Elastoflex SA V FR.
2. Polyglass Elastoflex SA V FR Base self-adhered/Polyglass Elastoflex VG FR.

Surfacing: See membrane listing.

Deck: Non-Combustible
System: Self-Adhered Modified Bitumen
Insulation: InsulFoam EPS, Tapered InsulFoam, InsulLam, InsulVent; any thickness, any density. InsulFoam/wood fiber or InsulFoam perlite; factory-laminated or field-applied.

Membrane: 1. Polyglass Elastoflex SA V FR Base self-adhered/Polyglass Elastoflex SA V FR.
2. Polyglass Elastoflex SA V FR Base self-adhered/Polyglass Elastoflex VG FR.

Surfacing: See membrane listing.

Modified Bitumen Class A

Deck: Non-Combustible
System: Modified Bitumen
Insulation: InsulFoam EPS, Tapered InsulFoam, R-Tech, InsulLam, InsulVent; any thickness, any density. InsulFoam/wood fiber or InsulFoam perlite; factory-laminated or field-applied.

Membrane: Any UL-Classified Modified Bitumen.

Surfacing: See membrane listing.

BUR Membrane Class A

Deck: Combustible or Non-Combustible
System: BUR Membrane
Insulation: InsulFoam EPS, Tapered InsulFoam, R-Tech, InsulLam, InsulVent; any thickness, any density. InsulFoam/wood fiber or InsulFoam perlite; factory-laminated or field-applied.

Membrane: 3-5 plies UL-Classified
A. Type 15 (organic) B. G1 or G2 (fiberglass)

Surfacing: A. 400 lbs. roofing gravel/square B. 400 lbs. crushed stone/square C. 300 lbs. crushed slag/square D. Type G3 mineral surfaced cap sheet

Maintenance and Repair Class A, B or C

Deck: Combustible or Non-Combustible
Existing Roof System: Class A, B or C built-up smooth surface, cap sheet or gravel surfaced, gravel may be removed.
Insulation: InsulFoam EPS, R-Tech or R-Tech Fanfold; any thickness, any density.
Membrane: Any UL-Classified EPDM, TPO, PVC, CPE, CSPE, CR, NBP, EIP, EP, PIB or TPA.
Surfacing: River bottom stone (3/4”-1 1/2” dia.) at a min. 900 lbs./square.

Deck: Combustible or Non-Combustible
Existing Roof System: Class A, B or C built-up smooth surface, cap sheet or gravel surfaced (gravel maintained) to retain the existing Classification.
Insulation: InsulFoam SP; any thickness, any density, mechanically attached.
Membrane: Any UL-Classified TPO, PVC or CSPE max. 60 mil., mechanically attached.
Surfacing: See membrane listing.

Deck: Non-Combustible
Existing Roof System: Class A, B or C built-up smooth surface, cap sheet or gravel surfaced, gravel may be removed.
Insulation: InsulFoam EPS, R-Tech or R-Tech Fanfold; max. 1” thickness, any density.
Membrane: Mechanically attach one of the following:
A. Conklin “Hi-Crown” (CSPE) B. Burke “358” (CSPE) C. Stevens Hypalon D. Seaman Fiberlite (EIP) E. Duro-Last (PVC)
Surfacing: See membrane listing.

Deck: Non-Combustible
Existing Roof System: Class A, B or C built-up smooth surface, cap sheet or gravel surfaced( gravel maintained ) to retain existing classification.
Insulation: InsulFoam EPS, R-Tech or R-Tech Fanfold; max. 1” thickness, any density.
Membrane: Mechanically attach one of the following:
Any UL-Classified EPDM, TPO, PVC, CSPE, EIP, TPA or CPA.
Surfacing: See membrane listing.

Deck: Non-Combustible
Existing Roof System: Class A, B, or C
Insulation: InsulFoam HD Composite, any thickness, any density.
Membrane: Any UL-Classified EPDM, CPE, CSPE, PVC, NBP, TPA, EIP, or TPO.
Surfacing: See membrane listing.

L. Combination (A, B or C) will be the same as the classification for the membrane when applied directly over polyisocynurate insulation. The maximum incline can not exceed 1/2:12

UL Roof Constructions

InsulFoam EPS Roof Insulations also qualify for the following UL Roof Constructions, as specified in the UL Roofing Materials Guide: Const. No. 219, 237, 374, 412, 419, 421, 458, 631, 666, 667, 669.

*Contact an Insulfoam Representative or consult UL Roofing Materials Guide for more specific listing information.
The screenshots on the following two pages illustrate how FM listings may be accessed by visiting www.Roofnav.com.

After criteria entered and "Search" is run, more than 50 FM approvals appear:

Please contact your Insulfoam Rep for assistance.