

InsulStar[®]

ARCHITECTURAL SPECIFICATIONS and INSTALLATION INSTRUCTIONS for HURRICANE MITIGATION

PART 1—GENERAL

1.01 SUMMARY

InsulStar[®] provides building envelopes with wind uplift resistance which can substantially reduce damage during high wind events while greatly decreasing air and water infiltration. InsulStar can be applied: (1) in a 3-inch fillet for adhesion only applications in combination with conventional insulation; or (2) in a fillet as described above and ½ to 1-inch thickness for adhesion, rigidity, insulation and water protection in combination with conventional insulation; or (3) with at least 3 inches in the roof rafter cavities for full energy efficiency along with adhesion, rigidity, water protection, and wind blown debris protection. In any case wind uplift resistance is substantially increased.

1.02 QUALITY ASSURANCE

InsulStar must be installed by a qualified spray polyurethane foam applicator who is familiar with the operation and maintenance of his equipment and who is familiar with the properties of the NCFI Spray System which is being applied.

1.03 MATERIAL DELIVERY AND STORAGE

A. Materials shall be delivered in their original, tightly sealed containers.

B. Keep the temperature of the chemicals above 70°F for several days prior to use. Cold chemicals can cause pump cavitation and, therefore, incorrect metering. Storage temperatures should not exceed 90°F. Do not store in direct sunlight. Keep drums tightly closed when not in use and under dry gas pressure of 2-3 psi after they have been opened. See individual product data sheets for specific storage recommendations and shelf life information (refer to Section 2.01).

1.04 SEQUENCE AND SCHEDULING

For new construction, the spray polyurethane insulation used in the InsulStar can be applied once the roof deck is applied to the trusses and after rough-in plumbing and electrical is complete. Be careful of overspray over any finished materials that may be installed such as windows and doors. In retrofit applications, this does not apply.

1.05 SAFETY

A. HANDLING OF LIQUID COMPONENTS: Use caution in removing bungs from 55- gallon drums. Loosen $\frac{3}{4}$ -inch bung and let gas escape before completely removing. Avoid breathing of vapors. In case of chemical contact with eyes, flush with water for at least 15 minutes and get medical attention. For further information refer to the resources available from the Center for the Polyurethanes Industry in their Resources section on their website (www.polyurethane.org).

B. 15-MINUTE THERMAL BARRIER: Federal, state, and local building codes vary. All have requirements that spray-applied polyurethane foam insulation be separated from occupied spaces with an approved 15-minute fire rated thermal barrier. One typically approved material is $\frac{1}{2}$ -inch gypsum wallboard (sheetrock) applied over the spray polyurethane foam insulation.

Exceptions to the thermal barrier requirement include certain headers, sill plates, attics and crawl spaces. Check the applicable building code and with local officials for specific requirements.

C. IGNITION BARRIER: Federal, state and local building codes vary. All have requirements that spray-applied polyurethane foam insulation be covered by an approved ignition barrier in attics and crawl spaces where entry is made only for service of utilities. The ignition barrier must be consistent with the requirements for the type of construction required by the applicable code, and must be installed in a manner so that the foam plastic insulation is not exposed.

PART 2—PRODUCTS

2.01 POLYURETHANE CLOSED-CELL INSULATION

The polyurethane insulation used shall be NCFI InsulStar® Foam System. InsulStar is a nominal 2.0 lb/ft³ density closed cell polyurethane foam.

See specific product data sheet for actual physical properties and application information.

2.02 ACCESSORIES

A. Joint Filler Foam: Hilti CF 124 Filler Foam or equivalent.

B. Caulk: Sikaflex 1a: Single component polyurethane or equivalent

PART 3—EXECUTION

3.01 BEFORE APPLICATION

All travel paths and finished floors in the vicinity of the application area should be covered using masking tape, plastic sheeting and/or contractor paper. Temporarily install wood planking over recessed lighting and wiring on attic floor for ease of movement. Turn off HVAC system to avoid vapor introduction to other parts of home.

3.02 SURFACE PREPARATION

All surfaces to be sprayed with NCFI polyurethane foam must be dry, clean, and secure. Remove sawdust and other debris from areas to be sprayed by blowing with compressed air or vacuuming with a shop vacuum. Check surfaces with NCFI MDP strips to verify dryness. All metal to which foam is to be applied must be free of oil, grease, rust, etc. Primers should be used where necessary.

Soffits, ridge vents and other openings must be blocked off using a local building code approved material. Mask off all areas not to receive spray foam with masking tape and plastic sheeting. Apply release agent to stud facing to facilitate removal of foam.

3.03 FOAM APPLICATION

Apply spray foam using a “picture framing” technique. For fillet application, apply a cant of foam along the junction between the roof deck and roof rafter. The cant must measure at least 3 inches horizontally covering the roof deck and 3 inches vertically covering the rafter. Apply the cant of foam such that it provides continuous contact between the deck and rafter, from the roof ridge to the roof eave. Refer to Figure 1.

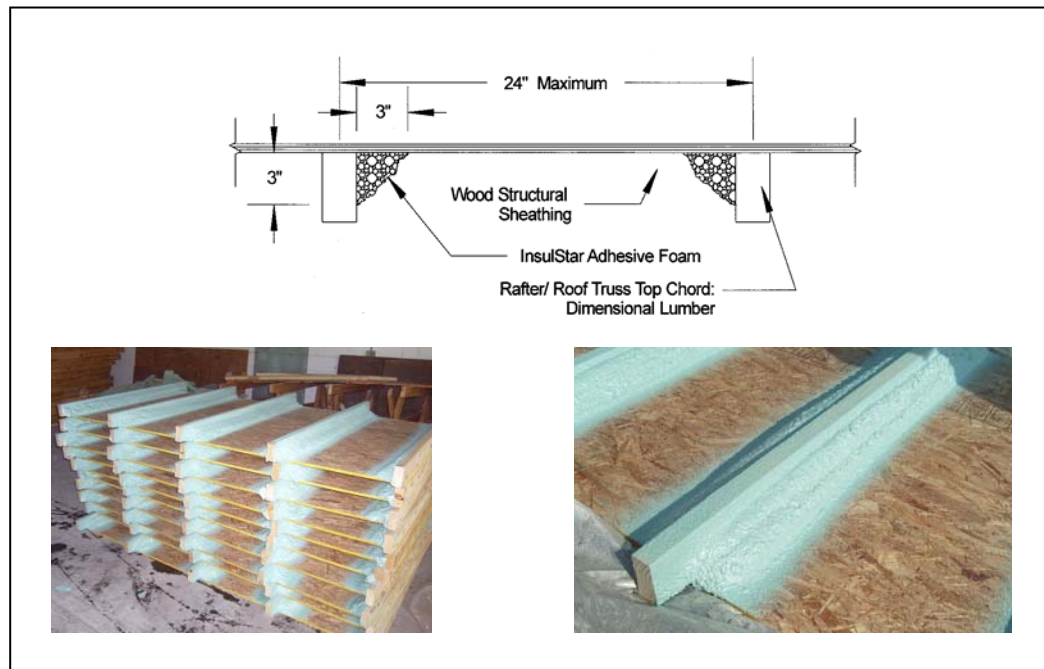


Figure 1 – Fillet Only

For ½-inch minimum option, utilize fillet application then spray apply the required thickness of foam against the roof deck between the rafters in one pass.

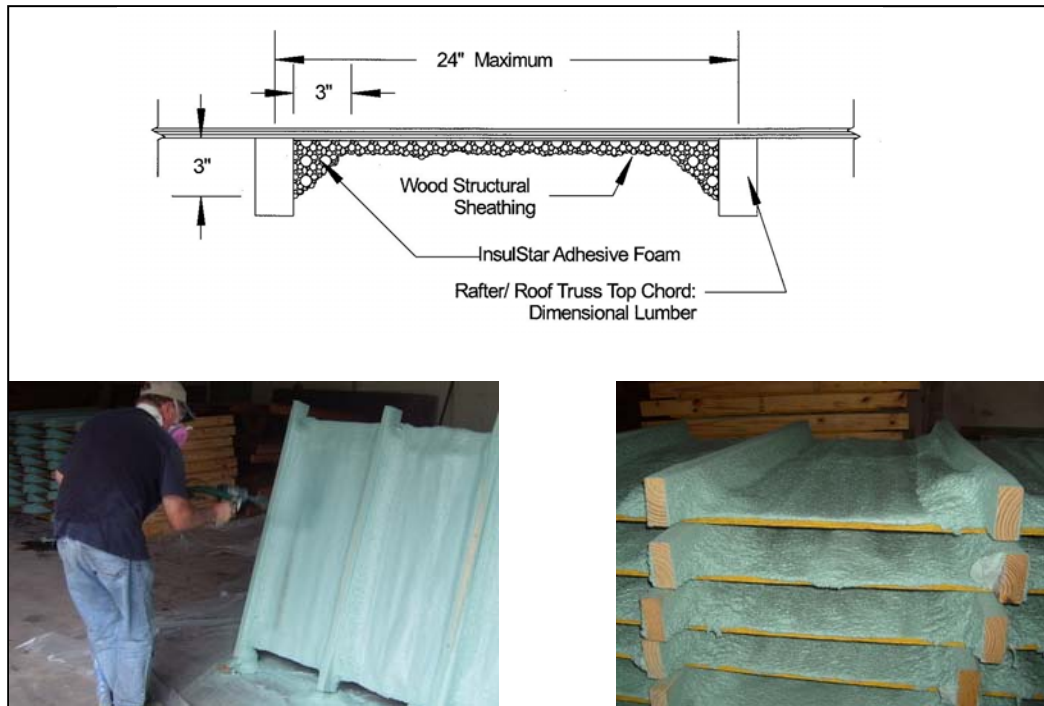


Figure 2 – Fillet Plus ½ Inch Minimum

For 3-inch option, utilize fillet application then apply foam against the roof deck in two or more passes. Additional passes can be added once the original coat is no longer tacky to the touch. Pass thickness may not exceed a nominal 1-1/2-inches (+/- 1/2-inch).

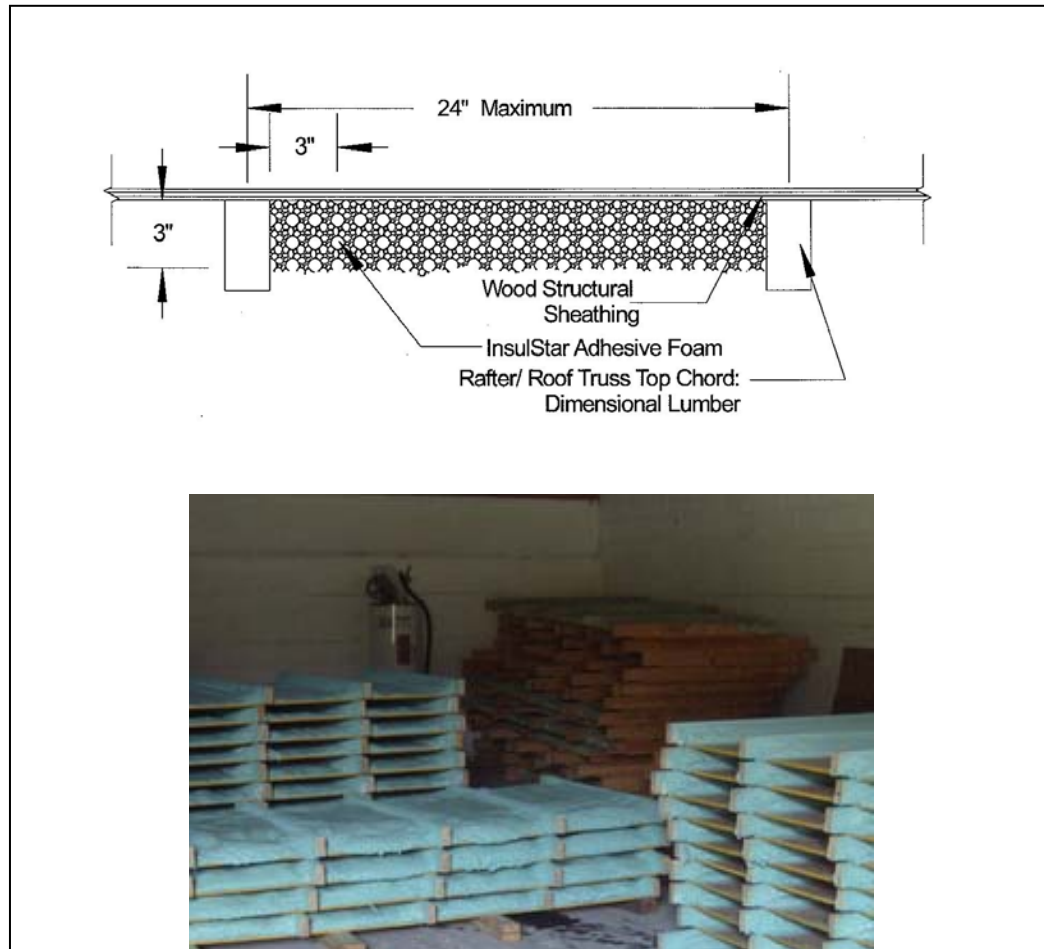


Figure3 – Fillet Plus 3 Inchs

3.04 ACCESSORY APPLICATION

A. Supplemental Insulation (Optional): If the 3-inch option is not employed, supplemental insulation may be installed to achieve desired R-values.

B. Joint Filler Foam and Caulk: Use joint filler foam and/or caulk to seal around windows, doors, chimneys, electrical raceways, sill plates, multiple studs, etc.

Caution: Joint filler foam can tighten window frames and door jambs to the point that they will not open or close properly. Care must be used in these areas to avoid distortion of these members.

3.05 CLEAN UP

If attic space will be converted to an occupied space, clean off all overspray and overfill from the interior stud facings. For fully filled stud cavities, shave off the foam face to provide a surface flush with the stud for drywall installation. Remove all masking materials.

A forced air circulation system should be utilized by using two fans operating in opposite directions placed at different ends of the area connected to flex duct. Outgoing flex opening should be placed far enough away from incoming to avoid recirculating of vapors back into the residence.