

# InsulStar<sup>®</sup> Plus Insulating Foam Spray Adhesive Wind-Uplift Resistance

## ARCHITECTURAL SPECIFICATIONS and INSTALLATION INSTRUCTIONS for WIND-UPLIFT RESISTANCE

### PART 1—GENERAL

#### 1.01 SUMMARY

InsulStar<sup>®</sup> Plus insulating foam spray adhesive provides building envelopes with wind uplift resistance which can substantially reduce damage during high wind events while greatly decreasing air and water infiltration. InsulStar Plus insulating foam spray adhesive 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 each case wind uplift resistance is substantially increased.

#### 1.02 QUALITY ASSURANCE

InsulStar Plus must be installed by an InsulStar<sup>®</sup> Plus Certified Applicator who will be familiar with NCFI's InsulStar Plus system, and the operation and maintenance of spray applied insulating foam adhesive equipment.

#### 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. The shelf life of InsulStar Plus is 6-months. See individual product data sheets for specific storage recommendations and shelf life information.

## 1.04 SEQUENCE AND SCHEDULING

For new construction, InsulStar Plus insulating foam spray adhesive can be applied once the roof deck is applied to the trusses and after rough-in plumbing and electrical is complete. Protect any finished materials that may be installed such as windows and doors from overspray.

## 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](http://www.polyurethane.org)).

B. 15-MINUTE THERMAL BARRIER: Federal, state, and local building codes vary. All have requirements that foam plastic 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.

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 foam plastic 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 is not exposed.

## PART 2—PRODUCTS

### 2.01 POLYURETHANE INSULATING FOAM SPRAY ADHESIVE

The polyurethane insulating foam spray adhesive used shall be NCFI InsulStar® Plus. InsulStar Plus is a nominal 2.0 lb/ft<sup>3</sup> density closed-cell polyurethane foam adhesive, when applied through conventional spray foam equipment.

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

### 2.02 ACCESSORIES

Moisture Detection Paper (MDP) Strips: MDP Strips manufactured by NCFI Polyurethanes, Mount Airy, NC.

## PART 3—EXECUTION

### 3.01 RECORD KEEPING

Record the lot number of the chemicals you are using, the address of the structure you are protecting, and date of application.

### 3.02 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 as appropriate to avoid vapor introduction to other parts of home. Review NCFI's "Retrofit Application Guidelines for InsulStar® Plus" for more requirements.

### 3.03 SURFACE PREPARATION

All surfaces to be sprayed with InsulStar Plus insulating foam spray adhesive 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. Use primers 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 InsulStar Plus insulating foam spray adhesive with masking tape and plastic sheeting. Where needed, apply release agent to stud facing to facilitate removal of foam.

### 3.04 FOAM APPLICATION

Level 1 Protection: Fillet Only and Sheathing Seams: Apply InsulStar Plus insulating foam spray adhesive using a picture framing technique. For fillet application, spray 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 such that it provides continuous contact between the deck and rafter, from the roof ridge to the roof eave. Also spray a minimum ½-inch lift across the horizontal seams in the roof decking to aid in water protection. Do not exceed 2 inches per pass and allow 10 minutes between each pass. Refer to Figure 1.

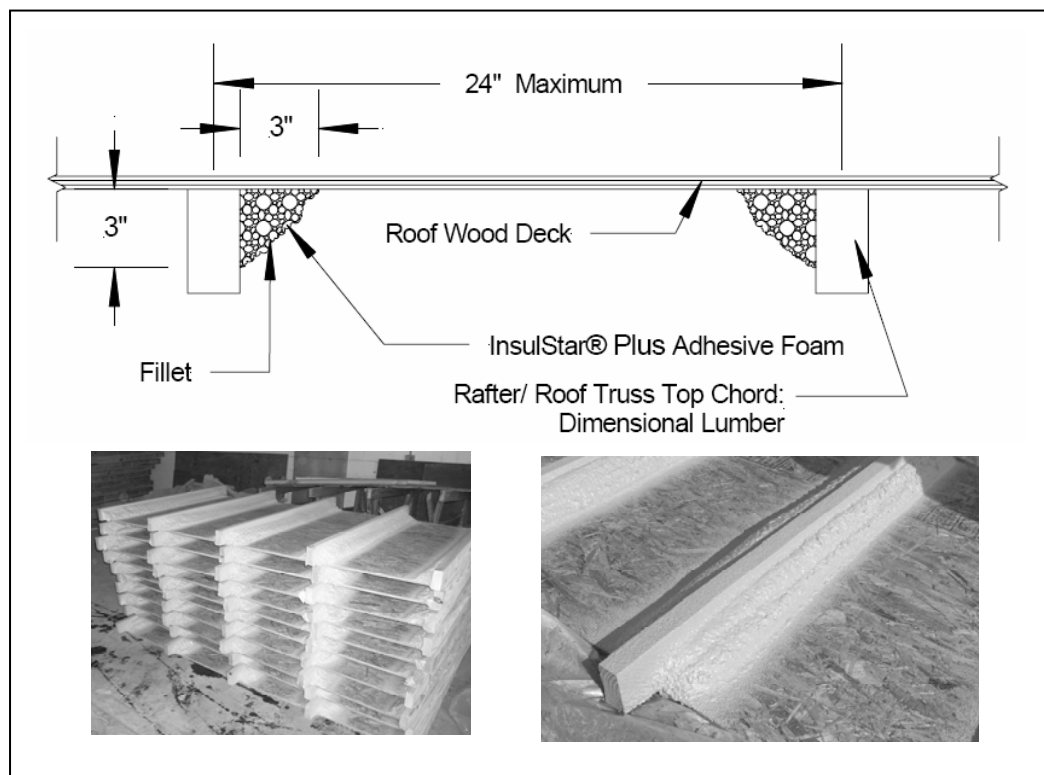


Figure 1 – Fillet Only

**Level 2 Protection: Fillet Plus Minimum ½-inch Covering Protrusions:** For ½-inch minimum option, utilize the fillet application in Level 1 then spray apply the required thickness of InsulStar Plus insulating foam spray adhesive against the roof deck between the rafters to completely cover any protrusions such as nails. Application of this additional layer is in lieu of the requirement in Level 1 to cover the sheathing seams separately.

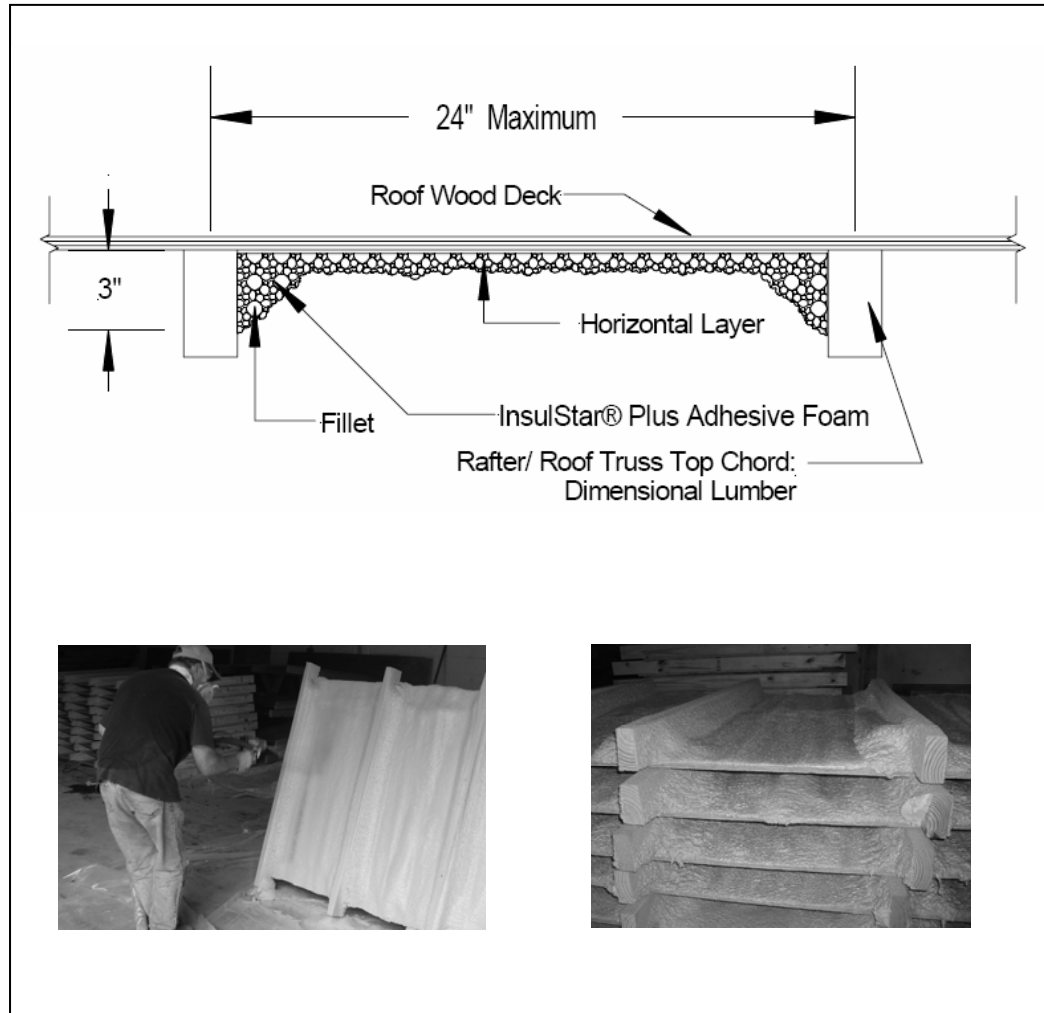
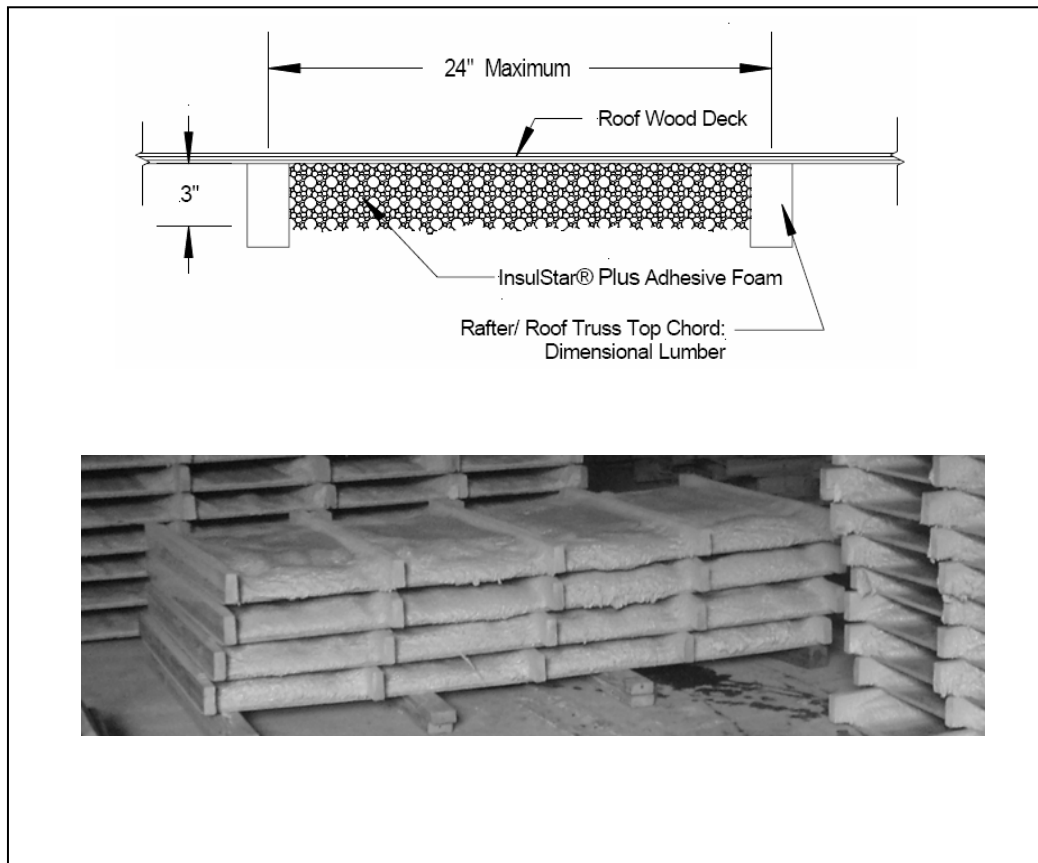


Figure 2 – Fillet Plus ½-inch Minimum

**Level 3 Protection: Fillet Plus Minimum 3-inch Complete Fill:** For minimum 3-inch option, utilize the fillet application in Level 1 then apply InsulStar Plus insulating foam spray adhesive against the roof deck in two or more passes. Application of this additional layer is in lieu of the requirement in Level 1 to cover the sheathing seams separately. Additional passes can be added once the original coat is no longer tacky to the touch. Do not exceed 2 inches per pass and allow 10 minutes between each pass.



*Figure 3 – Fillet Plus 3-inch Minimum*

### 3.05 ACCESSORY APPLICATION

**Supplemental Insulation (Optional):** If the 3-inch option is not employed, supplemental insulation may be installed to achieve desired R-values. Verify that the use of additional insulation is consistent with the appropriate building code and will prevent condensation.

### 3.06 CLEAN UP

If attic space will be converted to an occupied space, clean off all overspray and overfill from the interior stud facings. 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 flex to avoid the recirculation of vapors back into the residence.