

# SPUF 450

## **SPRAY- ON POLYURETHANE FOAM TWO-COMPONENT CLOSED CELL POLYURETHANE RIGID SPRAY-ON FOAM**

### **General**

Generally the sequence of work described below should be carried out by a insulation specialist approved by the Superintendent Officer. All works carried out should be strictly in accordance with the manufacturer's specification. This ensures that works are completed satisfactorily, thus, the long term performance of the material is assured.

### **Areas of Application**

*SPUF 450* is used to insulate areas as indicated below:-

- R.C. Flat Roof
- Inverted Roof
- Build Up Roof-Retrofit
- Metal Deck
- Wood Wall
- Gypsum Board

### **Application Method**

#### **Surface Preparation**

##### **A. Built-up Roof (Retrofit)**

1. All loose gravel, dust and residue shall be removed using power vacuum equipment, power sweeper, air blowing, or other suitable means.
2. The roof shall be thoroughly inspected or tested to determine if moisture is present within the roof assembly. Saturated insulation must be removed and replaced with compatible materials.
3. The existing roof shall be thoroughly inspected for adhesion between felts, insulation, and deck. Areas of poor adhesion should be fastened. Blisters, buckles, wrinkles and fish mouths shall be cut out and/or fastened.
4. All soft mastic or other materials that impede polyurethane adhesion shall be removed.
5. Remove or refasten all loose base flashing, counter flashing and gravel stops as required.
6. The need may exist for structural design analysis to determine expansion joint requirements. Existing expansion joints should be inspected and repaired if necessary.
7. Lightning rods shall be masked prior to foaming. Lightning rod cables shall not be embedded in the polyurethane foam and should be removed prior to foaming. Electrical and mechanical conduits should be relocated or raised above the finished roof surface.

### **B. Metal Deck**

1. The metal roof deck shall be constructed of a minimum 22-gauge steel. Construction shall conform to local building codes.
2. Ferrous Metal: Sandblast iron and steel surfaces which are not primed, shop painted, or otherwise protected in accordance with SSPC SP-6, Commercial Blast Cleaning. Remove loose rust and unsound primer from shop-primed iron and steel surfaces by scraping or wire brushing.
3. Non-Ferrous Metal: Clean galvanized metal, aluminum, and stainless steel surfaces as recommended by the manufacturer issuing the warranty.
4. If the metal surface is free of loose scale, rust, weathered or chalking paint, it can be cleaned using compressed air jet, vacuum equipment, and hand or power broom to remove loose dirt. Grease, oil or other contaminants shall be removed with proper cleaning solutions.
5. Fluted metal decks require a suitable method of covering or filling the flutes prior to polyurethane foam application. Flutes may be covered with mechanically fastened board stock, open weave mesh fabric, or filled with pre-cut board stock or spray applied polyurethane foam.

### **C. Concrete**

1. Remove loose dirt, dust and debris by using compressed air, vacuum equipment or brooming. Oil, grease, form release agents or other contaminants shall be removed with proper cleaning solutions.
2. All joint openings in concrete decks that exceed 6mm (1/4 Inch) shall be grouted or caulked prior to application of polyurethane foam.
3. Priming is required on concrete surfaces, and it is recommended that poured concrete decks be permitted to cure for twenty-eight (28) days prior to the application of primer or sprayed Polyurethane foam.
4. Sprayed polyurethane foam is not recommended for lightweight or insulating concretes unless tests have been made to determine that adequate adhesion can be obtained or unless an overpayment is installed.

### **D. Wood**

1. Plywood shall be exterior grade not less than 12mm (1/2 inch) thick, nailed firmly in place. Attachment must meet building code requirements for resistance to wind uplift.
2. Plywood shall contain no more than 18% water, as measured in accordance with ASTM D 4444-84, or ASTM D 4442-84.
3. All untreated and unpainted surfaces shall be primed with an exterior grade primer. Priming is required to minimize moisture absorption and eliminate potential polyurethane foam adhesion problems.
4. Plywood joints in excess of 6mm (1/4 Inch) shall be taped or filled with a suitable sealant material.
5. Deck shall be free of loose dirt, grease, oil or other contaminants prior to priming or foam application.
6. Remove loose dirt or debris by use of compressed air, vacuum or brooming. No washing shall be permitted.
7. Tongue & Groove, Sheathing, Planking: Due to the frequency of joints, possibility of variable openings and effects of aging and shrinking, these surfaces must be overlaid with minimum 6mm (1/4 Inch) thick exterior grade plywood or suitable covering.

### **E. Other Surfaces (i.e. Gypsum Board, Isocyanurate Board)**

1. These materials are generally used over fluted metal decks and must be fastened to achieve necessary wind uplift requirements.
2. Boards shall be firmly butted together along all edges without gaps or openings. Joints exceeding 1/4 inch shall be caulked with a suitable sealant material.
3. Special care must be taken to prevent these materials from getting wet in storage on the job site and after installation prior to being protected by polyurethane foam. Moisture exposure will damage these materials and may be a cause for replacement.
4. Remove loose dirt and debris by using compressed air, vacuum or light brooming. No power brooming is permitted due to possibility of damage.
5. The installed materials shall be protected from spills of contaminants such as oil, grease, solvents, etc., as these materials cause soiling that cannot be readily removed from the board surfaces.

## **POLYURETHANE FOAM APPLICATION**

### **A. Inspection**

1. Prior to application of the foam, the surface shall be inspected to insure that conditions required as above have been met.
2. Substrate shall have sufficient slope to eliminate excessive ponding water. Ponding is defined as "an area of 10m<sup>2</sup> (100 sq.ft) or more which holds in excess of 12mm (1/2") of water as measured 24 hours after a rainfall." If the substrate does not have sufficient slope, then the ponding water must be eliminated by building in slope by the application of polyurethane foam, channeling the polyurethane foam or by the proper placement of drains, or a combination thereof.
3. The polyurethane foam application shall not proceed during periods of inclement weather. The applicator shall not apply the polyurethane foam below the temperature and/or humidity specified by the manufacturer for ambient air and substrate. Wind barriers may be used if wind conditions could affect the quality of installation.

### **B. Application**

1. The spray polyurethane foam shall be applied in accordance with the manufacture's specification and instructions.
2. Areas to be built-up to remove ponding water are to be filled in with spray polyurethane foam before the specified thickness of polyurethane foam is applied to the entire roof surface.
3. The spray polyurethane foam must be applied in a minimal pass thickness of 1/2 inch.
4. Spray polyurethane foam thickness shall be a minimum of one inch (or more if specified). The polyurethane foam shall be applied uniformly over the entire surface with a tolerance of plus 1/4" per inch of thickness minus 0", except where variations are required to insure proper drainage or to complete a feathered edge.
5. The spray polyurethane foam shall be uniformly terminated a minimum of 100mm(4 inches) above the roofline at all penetrations (except drains, parapet walls, or building junctions). Foamed in place cants shall be smooth and uniform to allow positive drainage.
6. Detailing skylights is particularly important in that the spray polyurethane foam MUST be terminated below existing weep holes. DO NOT COVER WEEP HOLES WITH FOAM OR COATING.

### Curing

The polyurethane foam surface shall be allowed to cure sufficiently. The full thickness of polyurethane foam in any area shall be completed prior to the end of each day. If due to weather conditions more than 24 hours elapse between polyurethane foam and coating application, the polyurethane foam shall be inspected for UV degradation, oxidation or contamination. If any of the above conditions exist, the surface shall be prepared in conformity with the recommendations of the manufacturer issuing the warranty.

### Protection

1. Protect the freshly applied waterproof membrane from rain, dirt, grease or other loose materials during its drying time.
2. The Contractor should also take precautions to protect the **SPUF 450** from any mechanical damage during the construction of other trade of works.

Note : Information of this method of statement is to the best of our knowledge. However, we have no control over the method of application and the amount of care taken when using this product and therefore, the liability of POLYCELL Sdn Bhd is limited to the quality of the delivered material.

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