

Applications of Spray Polyurethane Foam:

Residential Wall Insulation:

Little Product... BIG Benefits!

Spray Polyurethane Foam (SPF) insulation is rigid, lightweight, flexible, wind resistant, and effective in extreme temperatures and weather conditions. SPF insulation has the highest R-value per square inch of any commercially available insulation material.

Total Comfort Control, Not Just R-Value

The building envelope is a system of construction components which protect against the uncontrolled movement of: heat, air, and moisture.

The true performance of your building envelope can not be measured with the R-value of the insulation alone, but must also consider air movement, moisture control, health, safety, durability, comfort, and energy efficiency.

This is true whether your building is commercial, residential, or multifamily: SPF addresses all these needs in both new construction and improvements to existing structures.

Six Mechanisms of Heat Loss Through a Wall or Ceiling That Are Bad for Your Home and Your Health

1. Conduction
2. Radiation
3. Convection Currents
4. Infiltration (Wind Pressure)
5. Intrusion (Wind Wash)
6. Moisture Accumulation (Humidity, Dew, and Frost)

Did you know ?

- Air infiltration can increase energy costs in buildings 10 to 40%.
- SPF reduces air infiltration allowing insulation to be more effective and reducing the demands on HVAC equipment.
- SPF reduces moisture infiltration by reducing air leakage.
- SPF adds structural strength to walls and ceilings.
- SPF reduces sound transfer into buildings. Most sound from outside the building is carried into the building through cracks and air leaks. SPF by stopping the air infiltration also helps keep sound out.
- SPF minimizes dew point problems and condensation.
- SPF resists heat transfers through air infiltration regardless of flow direction.
- SPF provides reliable R-values under the most extreme conditions, dependable and durable protection against heat loss or gain.
- SPF minimizes thermal bridging, which can cause higher energy usage and cost.
- SPF out-performs conventional insulation materials because they trap still dry air and if that air moves or becomes wet, the thermal resistance can drop by 50%.
- According to ASHRAE, a 3% void area in a wall cavity represents a 15% reduction in wall R-value.

Commercial Wall Insulation

Spray foam insulation could be the best insulation system yet invented.

Look at the following advantages:

- On the inside of the wall panel of a building it has an extremely high R value, it has been shown to dramatically increase the racking strength in steel and timber frame buildings, in some instances has been specified to prevent wind uplift in commercial roofing systems.
- On the outside of the building it can be used as a combined vapor and air barrier system and is recognized as such when applied to the American Air Barrier Association standards. It can also be used below grade for the insulation of basements and foundation.
- It does not emit VOCs or hydrocarbons and has a proven track record over the last 20 years.

Commercial Roofing

Spray polyurethane foam (SPF) roofing consists of an application of specifically designed foam covered with an elastomeric coating (typically acrylic, silicone or polyurethane) or aggregate covering to protect the foam from ultraviolet rays. Specialized equipment mixes two liquid components at the spray gun that applies the SPF to a prepared substrate. The mixed liquid expands many times its original volume in a matter of seconds, forming a rigid foam plastic that chemically bonds to the surface to which it is sprayed. Spraying the foam in ½+to 1-1/2+lifts allows the applicator to reach the desired thickness to fill in low areas, build up slope, and provide insulation.

SPF has a closed cell structure that makes it water resistant. It must, however, be protected by elastomeric coatings or other coverings (such as aggregate) to prevent ultra-violet-induced surface degradation. Such coverings can also be used for other purposes, including, inhibiting moisture vapor transmission, enhancing the aesthetics of the system, increasing the impact and abrasion resistance of the system, achieving non-flammability and meeting code requirements.

SPF roofing systems have good adhesion to a variety of substrates including metal, wood, concrete and built up roofing (BUR). Since SPF adds little weight to existing roof coverings and can build slope to fill in low areas, these systems are used frequently as a recover roofing system. Caution should be used when specifying any recover roofing system. The existing roof covering and roof deck assembly should be thoroughly evaluated by a structural engineer to verify that it can be a safe substrate for SPF roofing systems.

Hail and wind driven missiles (such as tree limbs, broken roof tile, metal flashing, etc.) can damage the SPF roofing system. However, this type of damage typically does not cause leaks and can be repaired later without compromising the long-term performance of the system.

SPF roofing systems also excel when the following conditions exist:

- Additional insulation is required
- There are severe temperatures
- The roof substrate has numerous penetrations
- The roof deck is an unusual configuration
- The roof is in an area where high winds are likely to occur
- Lightweight materials are required
- Slope must be added to provide positive drainage

Because of the energy saving characteristics and low maintenance costs of SPF roof systems, these roofs are suited to companies or organizations that own their own buildings and must pay their own energy and maintenance costs.

Specialty Applications

Tanks and Vessels

Spray Polyurethane Foam (SPF) can be used in a variety of different applications, one of those is tanks and vessels. SPF can be a solution for cold vessel insulation for products such as wine, chemicals, and soft drinks. It is excellent to store products that need controlled temperatures. SPF systems are perfect for these type insulations because of the superior durability and ease of application.

Spray Polyurethane Foam can also be used for hot/warm vessel insulation. If there is a need to maintain temperature control and/or viscosity levels of chemicals or other liquids, SPF fluid-applied systems and protective coatings offer superior performance.

Sealants

Use polyurethane foam sealant to improve your homes envelope in its outer walls, ceiling, windows and floors. This is a cost effective way to improve your homes energy efficiency and comfort.

1. Thermal and sound insulation
2. Seals windows and doors
3. Blocks insects and rodents

One-Component

One component can foam is an economical and effective insulating and sealing expanding polyurethane foam. Designed for sealing cracks, seams and smaller gaps, it will eliminate drafts, block insects, deaden sound and repel moisture.

Can foam expands to 2-3 times the original size of the dispensed bead and cures by reacting with the moisture (humidity) present in the air when it is dispensed. This polyurethane foam takes approximately 45 minutes to an hour to cure in 50% relative humidity. While air sealing is the primary use for these materials, they also insulate with R-values (aged) in the 3.5 to 5 inch range.

Two-Component

Two-component polyurethane foams (or froth foam units) come in separate containers, one for each component, and tanks operate conveniently from an upright position. Two-Component Standard Foams are ideal for Insulating and Sealing jobs that require a product designed for spray application over large surface areas or for filling large voids and gaps. Two-Component Foam is a chemically cured foam system. Each Foam pack includes both an A+ & B+ component. Dispensed through the included dispensing tool, the foam A+ and its curing agent B+ are mixed at the nozzle and cure much more quickly than One-Component Foams.

Fast chemical curing results in a higher expansion ratio for two-component polyurethane foams. This makes them suitable for spray-on applications and for filling holes and cavities. They have an R-value (aged) of approximately 6.0 per inch.

Adhesives

Spray polyurethane foam is used as an adhesive in the commercial roofing industry and the manufactured housing industries.

SPF is used to adhere EPDM membranes or boardstock insulation to various roofing substrates. The SPF is used to stick the boardstock to the roof deck and then again stick the membrane to the boardstock. The SPF is spray-applied which reduces application time and labor. The foam provides an added degree of insulation and forms a strong bond, earning it excellent wind uplift ratings.

SPF is also used in manufactured housing. The foam adhesive is used to attach wall panels and ceiling panels to structural stud framing. This has many advantages to the builder, speed of building, added strength, and lower costs.

Cold Storage

The performance of a spray applied polyurethane foam insulation (SPF) system for cold storage facilities can be affected by all the component parts of the building structure, as well as the atmospheric conditions inside and outside the structure. Proper structural design, specifications review, contractor and material selection, coupled with the compatibility and positioning of the various components of the building are a necessity to produce a successful cold storage facility.

Consult with the designer/specifier and the successful contractor to receive written confirmation of their agreement/opinion to all facets of the cold storage project, including, but not be limited to, material selection, moisture vapor transmission, load design, expansion joints, and refrigeration requirements, flashing details, and floor, wall, ceiling preparation, and pull down schedule.

Types of cold storage facilities

1. Refrigerated warehouses generally have a single function of storing previously processed or frozen food at a constant temperature between -40oC (-40oF) and 10oC (50oF). They are often one room buildings. Packaged goods are stored on pallets or food racks.
2. Processing plants for meats, poultry, dairy or other food products are multi-functional type structures which are quite complex. They typically consist of many rooms, each with a certain function, operating temperature and humidity condition.
3. Distribution centers are multi-room buildings for packaged dry goods, frozen foods, fresh produce, baked goods and dairy products. In addition to the above, these centers may contain specialty rooms such as banana rooms or ice cream holding rooms.
4. Existing facilities may be converted to another use, i.e., a cooler may be converted to a freezer, or a new room may be added within an existing structure.