

HUNTSMAN

BUILDING SOLUTIONS



Resiliency with Closed-Cell Spray Foam

With the increased number of severe weather events in recent years, it is apparent that climate change is not going to stop. Therefore, resiliency should be kept in mind during building design. Closed-cell spray polyurethane foam (SPF) can help in many ways to make buildings stronger, healthier and more durable.

Flood Resistance

Flooding can be one of the most costly weather events to a home or building owner. Provisions are in place to help limit the damage potential of flooding, but the best way to lessen these effects is to use flood resistant materials. According to FEMA, closed-cell SPF qualifies as a Class 5 building material and is considered highly resistant to floodwater, damage caused by moving water, and can be successfully cleaned after a flood event.



Mold Resistance

Aside from the water damage that may be caused by flooding, the growth of mold and mildew can become a pestering issue. Mold and mildew can result in musty odors and severe health concerns if left untreated. Closed-cell SPF has been tested for fungi resistance and shown to support no fungal growth. In addition to being impermeable to mold growth, HBS closed-cell SPF is UL GreenGuard Gold certified for low chemical emissions. The combination of these tests show additional benefits closed-cell SPF can contribute to the air quality of your home or building.

Radon Abatement

Radon is a noxious gas that travels through soil and can infiltrate into a building, typically through cracks in the foundation floors and/or walls, and cause serious health concerns for its occupants. Starting in 2015, the International Residential Code (IRC) introduced measures that should be taken to protect your building from Radon infiltration. Closed-Cell SPF is one of the few materials that has been tested and approved as a soil-gas-retarder and can be used as a radon abatement material.



Racking Strength

Walls are typically the main structural components in a wood-framed building. They must be designed to withstand the vertical loads (weight of structure, occupants and furnishings, standing water/snow, etc.) and lateral loads (wind and earthquake). The shear forces exerted from lateral loads can cause racking of your structure. Racking is the term used when your structure “tilts” or is forced out of plumb. While buildings that are designed and built to the specifications of the building code should resist racking, a severe event can cause excessive movement and even permanent damage, such as cracking in wall finishes. Many studies have demonstrated how walls filled with closed-cell SPF are better suited to handle the peak loads associated with severe weather events and add peace of mind to the building owner.

Wind Uplift

Wind forces can be catastrophic, causing widespread damage to buildings during extreme weather events. Wind uplift occurs when the air pressure below the roof deck is greater than the air pressure above the roof deck. This causes an upward pressure on the roof deck and its supporting members and can even cause a complete roof blow-off to occur.

The use of closed-cell SPF to create an unvented attic assembly can help reduce the stresses of wind uplift on a building in two separate ways. First, creating an unvented attic assembly seals off all openings and penetrations in the attic space, reducing additional air pressure from building inside the attic. Second, closed-cell SPF acts as an “adhesive” by connecting joints between sheathing panels and by strengthening the connections between the roof sheathing and the structure.



Air and Water Infiltration

One of the most efficient ways to insulate your building is using continuous insulation on the exterior side of your wall. Closed-cell SPF can be used as an exterior continuous insulation, while also being able to resist air and water infiltration through the wall assembly. Assemblies testing has shown closed-cell SPF can to be used as an exterior continuous insulation without the need for additional full-surface air and vapor barriers. Along with its ability to resist air infiltration, closed-cell SPF has also been tested to show it can resist water penetration through an exterior wall assembly.

Weather Resistance During Construction

When closed-cell SPF is used as an exterior continuous insulation, it is common for the product to be left exposed during typical construction sequencing before the exterior facade is completely installed. Even though closed-cell SPF is not UV stable, it has shown an ability to maintain its performance characteristics even when left exposed for extended periods of time. HBS conducted a program to confirm closed-cell SPF maintained its ability to resist water penetration and air leakage for up to 12 months of exposure. Using closed-cell SPF as an exterior continuous insulation allows you to maintain flexibility with construction sequencing and timing, while still ensuring the overall building performance once the project is completed.

