Spray Foam Insulation with ZIP System® Sheathing and ZIP System® R-sheathing

Low-Density (Open-Cell) spray foam and Medium-Density (Closed-Cell) spray foam are growing in popularity in today's construction environment. This tech tip will explore the usage of spray foams with ZIP System® sheathing and ZIP System® R-sheathing.

Low-Density Foam (Open Cell)

Low-density foam typically weighs 0.5 pound per cubic foot and carries an average insulation value of R-3.5 per inch of thickness. It is important to note that low-density foam is an air barrier when satisfying minimum thickness requirements but is not a vapor retarder as it allows air to fill the open voids in the insulation during installation.

Medium-Density Foam (Closed Cell)

Medium-density foam typically weighs 2.0 pounds per cubic foot and carries an average insulation value of R-6 to R-6.6 LTTR per inch of thickness. Unlike low-density spray foams, medium -density foam is an air barrier as well as a vapor retarder. Medium -density foam packs and fills the tiny air bubbles with a gas which in turn allows the foam to rise and expand.

Any spray-foam insulation formulation (*icynene, soy, polyisocyanurate, and polyurethane*) that is code recognized to be used in roof and wall applications may be used on the inboard surface of ZIP System® sheathing and ZIP System® R-Sheathing[1]. The spray foams must be installed in accordance to the spray foam manufacturers written instructions and requirements. The use of low-density or medium -density spray foam will not void the ZIP System warranty. Prior to installation, ensure the ZIP System panels are dry and free of debris as not to deter the adhesion of the spray-in foam. For more PRO TIPs please see pages 2-3.

If medium-density foam is installed behind ZIP System sheathing, we recommend back venting the finished wall cladding. Back venting with a minimum a minimum 1/8" air gap is a best construction practice and can be defined as incorporating a minimum gap between the structural sheathing and finished wall cladding to allow for enhanced drainage and air flow, which will accelerate drying of ZIP System sheathing if any moisture build-up occurs. Backing venting will maintain lower moisture content from the OSB sheathing. Vinyl siding inherently allows for adequate air movement without additional back venting.

The use of any spray-in foam insulation in direct contact with the underside of ZIP System sheathing installed on a roof assumes the attic space will be designed in strict accordance with the International Residential Code, section R806, Roof Ventilation[2].

PRO TIPS:

- Evaluate the inboard surface moisture conditions of the panels prior to installing the spray foam. Take moisture content (MC) readings of the panels and frame and ensure they do not exceed the spray manufacturer's installation requirements. The presence of excessive moisture in a substrate can reduce the spray foam's adhesion due to evaporating moisture causing a potential chemical reaction from the blowing agent during the curing process.

- Spray foam should not be installed when the ambient relative humidity (RH)is above 80 percent. The temperature of the substrate should be above 50° Fahrenheit, and the spray foam should be installed in low wind. Verify with your specific foam manufacturer's requirements for relative humidity, temperature and wind requirements. Another industry "rule of thumb" is to have at least a 5°Fahrenheit difference between the ambient temperature and the dew point temperature for proper foam installation.

- Ventilate the house a few hours before spray foam installation to dilute any potential residual moisture buildup. It is also recommended to use a temperature and relative humidity logger(s) to confirm interior conditions are within allowable limits. For best results, place one inside the house for a few days before spray foam installation.

- When the weather is cold or weather conditions are not favorable, it is best practice to install spray foam on sunny days when solar radiation is expected. This should help reduce the fast cooling of the spray foam applied to the inside surface of the panels. See spray foam manufacturer's recommendations.

- When installing in hot weather, especially in the attic space, ensure the inside ambient and panel surface temperature do not exceed the spray foam manufacturer's instructions. High heat can cause the spray foam to cure too quickly causing the foam to become brittle and to shrink. Shrinking can create an air space to form between the stud and the spray foam.

- Ensure the installer understands proper spray foam application techniques as stated by the spray foam manufacturer's instructions. Proper spray foam installation can eliminate or reduce the trapping of gasses caused by the spray foam's curing process. These gasses are generally trapped between the foam and panels. Ideally, each pass of the foam should be between 1" and 2" in depth and time between passes should meet the spray foam manufacturer's minimum requirements. It is recommended to perform a trial of the spray foam on a sample of the substrate to verify the adhesion is good before proceeding with full install.

- If bonding issues occur with an OSB substrate, apply heat to the back of the panel (ie. with heat gun) to warm up and dry the panel surface and/or scuff the inboard surface of the panels mechanically to help the foam adhere to the panels.

1: ZIP System R-Sheathing is manufactured with closed-cell polyisocyanurate foam integrally bonded to inorganic coated glass-mat facer. The glass-mat facer provides a compatible substrate of low-density and medium-density spray foams.
2: ZIP System R-Sheathing panels are currently code-recognized in wall applications.