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TECHNICAL BULLETIN — Residential Building Products

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JM Johns Manville | spider® CUSTOM INSULATION SYSTEM

Overhead Applications

With only slight modifications in installation technique, The Johns Manville Spider® Custom Insulation System that is commonly used in wall cavities can also be installed overhead on sloped or horizontal surfaces. This presents an attractive new option for insulating many challenging locations such as cathedral ceilings, garage ceilings, sealed attics, and under floors.

Cathedral Ceilings

JM Spider insulation delivers high R-values in residential sloped or cathedral ceilings where space for insulation is limited. After the installation of the vent chutes generally required for ventilation under the roof sheathing, JM Spider insulation can be sprayed directly onto the vent chutes to completely fill the rest of the cavity space. For instance, in a 2x10 rafter space with a 1" vent chute installed, filling the cavity with 8¼" JM Spider insulation provides R-34. In a 2x12 rafter space, 10¼" JM Spider insulation provides R-42. For additional moisture control in cold climate areas (particularly in Zones 6 and above on the climate zone map used in building codes) a vapor retarder should be installed towards the interior living space.

JM Spider® Custom Insulation picture reprinted by permission from Challenger Insulation in Edmonton, AB

Bonus Rooms Over Garages

The JM Spider® Custom Insulation System can be used to effectively insulate around the irregular framing, pipes and wires in garage ceilings. In this application, Spider insulation is sprayed against the sub-floor above and is layered to fill the cavity space. The garage ceiling may be covered with gypsum board the next day.

Another approach to consider for minimizing bonus room temperature issues is to apply a 1" or thicker layer of spray polyurethane foam to the sub-floor above the garage, making sure to coat and air seal all the hard to reach nooks and crannies. Then fill the rest of the cavities completely with JM Spider insulation. This combination or "hybrid" insulation system is considered to be the most cost effective way to deliver bonus room comfort.

Sealed Attics

There has been a growing interest in building houses with sealed, unventilated attics where the insulation is installed against the underside of the roof deck to create a conditioned attic space. In this application, JM Spider insulation can often be installed to a higher R-value than spray polyurethane foam whose thickness is restricted by fire codes. However, since JM Spider insulation is moisture-permeable, this application is normally limited to warm climates (Zones 1 and 2 on the climate zone map used in building codes) to avoid wintertime condensation at the cool roof deck if the interior humidity in the building approaches 50% RH.

A sealed attic design that is adaptable to all climate zones combines a layer of spray foam against the roof sheathing with a layer of JM Spider insulation sprayed onto the foam. This combination or "hybrid" insulation system uses the best features of each insulation type to safely achieve a high total roof R-value while addressing the possible shortcomings of either material alone. The foam insulation reduces moisture migration to protect the roof deck from wintertime condensation, while the JM Spider insulation protects the foam from fire exposure. Through independent fire testing, JM Spider insulation qualifies as the "ignition barrier" required over typical open cell and closed cell spray polyurethane foam insulations used in sealed attic systems. In fact, comparative attic fire testing demonstrates that a coating of at least 2" of Spider insulation over the spray polyurethane foam slows the time of fire spread by a factor of four compared to exposed foam.

For those considering a "hybrid" sealed attic system, be aware of the maximum thickness that spray polyurethane foam can be applied in a single pass or within a 24 hour period. This maximum thickness is restricted to prevent excessive heat build up from the foam exotherm. Follow the spray foam manufacturer's maximum thickness recommendations. Similarly, due to the potential for trapping exotherm heat, do not apply JM Spider insulation over fresh spray foam applied at its maximum recommended thickness; wait until the next day.

A variation of this design places rigid foam insulation boards above the roof deck combined with JM Spider insulation sprayed underneath to reach the total required roof R-value.

This fiber glass/foam hybrid insulation system can be the most cost-effective approach for reaching code required R-values in sealed attics. Please contact Johns Manville for advice on installed thickness of each layer of insulation for best performance under different climate conditions. Also, builders designing a sealed attic structure should consider their shingle or tile manufacturer's warranties related to roof deck ventilation.

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Basement and Crawlspace Ceilings

The JM Spider insulation system can be installed under floors or to basement ceilings to provide both thermal and acoustic benefits. Since JM Spider fiber glass insulation meets the low flame spread and nonflammable requirements it can be left exposed. JM Spider insulation only a few inches thick provides excellent acoustical benefit and still permits ready access to the mechanical, electrical and plumbing when the basement is eventually finished.

JM Spider insulation applied to the underside of floors equipped with radiant heating is a great way to ensure the radiant heater is warming the floor/room above and not the cavity space below.

For More Information

Certified contractors can refresh their overhead installation training on the JM Spider website. To discuss other possible residential or commercial applications, call the technical and product support line at 303-978-5280.