

**TECHNICAL BULLETIN — Insulation Systems**

Bulletin Number: IST-001  
Date: December 11, 2007  
Distribution: External



**JM SPIDER® Custom Spray Insulation for Commercial Building Application**

Johns Manville's Spider® Custom Insulation can be used as thermal and acoustic insulation for many types of wall and overhead assemblies found in commercial buildings. JM Spider insulation adheres well to typical commercial construction substrates making it ideal for a wide variety of commercial building applications.



Steel Stud Wall with Gypsum Sheathing



Overhead Thermal and Acoustic Treatment

Just like in residential buildings, JM Spider insulation used in commercial buildings can provide cost effective glass fiber insulation with no gaps, no voids, no settling, no waste, and no formaldehyde. JM Spider insulation can deliver different R values in a variety of wall and overhead applications while requiring only one product to take to the commercial jobsite. JM Spider insulation is not just cavity insulation; it can be applied to almost all new construction surfaces to add thermal and acoustical benefit. It adheres well to metal, concrete, gypsum and wood.

The JM Spider Custom Insulation System can deliver product at a distance of up to 600 feet away from the loose fill truck and up to four stories high.

Caution: JM Spider insulation may not be appropriate in some commercial applications where it will be left exposed. Over time, exposed JM Spider insulation will accumulate dust and lose its clean white appearance. Dirty JM Spider insulation is almost impossible to clean.

### **Commercial Specification Compliance**

JM Spider insulation complies with a broad list of specifications and certification requirements.

**Table I – JM Spider Insulation Specifications/Certifications**

<b>ASTM C 764 - Standard Specification for Mineral Fiber Loose-Fill Thermal Insulation:</b>	Meets Criteria
ASTM E 136 - Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C	Pass
ASTM E 970 - Critical Radiant Flux of Exposed Attic Floor Insulation Using a Radiant Heat Energy Source	Pass
ASTM C-518 - Steady-State Thermal Transmission Properties by Means of the Heat Meter Flow Meter Apparatus	As Measured
ASTM C-1338 - Test Method for Determining Fungi Resistance of Insulation Materials and Facings	Pass
ASTM C 764 - Corrosiveness (Carbon Steel, Aluminum, Copper, Galvanized Steel)	Pass
ASTM C 1104/C1104M - Std. Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation	Pass
ASTM C 1304 - Standard Test Method for Assessing the Odor Emission of Thermal Insulation Materials	Pass
<b>ASTM G 21 - Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi</b>	Pass
<b>ASTM C 1014 - Std. Spec. for Spray-Applied Mineral Fiber Thermal and Sound Absorbing Insulation:</b>	Meets Criteria
ASTM E 605 - Std. Test Method for Thick. and Density of Sprayed Fire-Resistive Material Applied to Structural Members	Pass
ASTM E 736 - Std. Test Method for Cohesion/Adhesion of Sprayed Fire-Resistive Materials Applied to Structural Members	Pass
ASTM C 518 - Steady-State Thermal Transmission Properties by Means of the Heat Meter Flow Meter Apparatus	As Measured
ASTM E 759 - Std. Test Method for Effect of Deflection on Sprayed Fire-Resistive Material Applied to Structural Members	Pass
ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials	< 25 FS/50 SD
ASTM C 1104/C1104M - Std. Test Method for Determining the Water Vapor Sorption of Unfaced Mineral Fiber Insulation	Pass
ASTM C 1149 - Smoldering Combustion	Pass
ASTM C 665 - Corrosiveness (Carbon Steel, Aluminum, Copper, Galvanized Steel)	Pass
ASTM C 1304 - Standard Test Method for Assessing the Odor Emission of Thermal Insulation Materials	Pass
ASTM C 423 - Std. Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverb. Room Method	As Measured
<b>ASTM C 1071 - Std. Air Erosion Test for Fibrous Glass Duct Lining Insulation</b>	Meets @ 1000 ft/min
<b>California Section ES 01350 - Volatile Organic Compound Emissions</b>	Pass Non-detect
<b>ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials</b>	See Table III
<b>New York City MEA:</b>	Meets Criteria
Burning Toxicity - University of Pittsburgh Protocol	Pass
ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials	< 25 FS /50 SD

<b>California Bureau of Home Furnishings and Thermal Insulation - Sections 19018 to 19022</b>	Meets Criteria
<b>SwRI-99-02 Attic/Crawl Space Criteria - IBC and ICC ES criteria for product use as an ignition barrier over cellular plastic insulation products</b>	Pass
<b>California Collaborative for High Performance Schools (CHPS) - Low VOC Emitting Material</b>	Pass
<b>Certified Recycle Content - Scientific Certification Systems (SCS) (Min. 25% Total, 20% post-consumer)</b>	25% min
<b>Minnesota Insulation Standards</b>	Meets Criteria
<b>Underwriters Laboratories, Inc.</b>	Meets Criteria
ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials	< 25 FS /50 SD
<b>Jobsite Waste - Zero; all trim is reused on-site</b>	Zero

**Table II – JM Spider® Insulation Sound Control**

<b>ASTM C 423 - Noise Reduction Coefficient (NRC) Rating</b>	<b>NRC</b>
3-1/2" thick HD Spider insulation without framing, one face exposed	1.15
3-1/2" thick HD Spider insulation installed in 16" o.c. wood stud framing, one face exposed	1.15
<b>ASTM C 423 - Sound Transmission Class (STC)</b>	<b>STC</b>
8" thick HD Spider insulation, interior double 2x4 wood stud wall, 16" o.c., 5/8" gypsum wallboard each side	58
3-5/8" thick HD Spider insulation, 25 gage steel stud, 24" o.c., 5/8" gypsum wallboard each side	47
3-5/8" thick HD Spider insulation, 25 gage steel stud, 24" o.c., double 5/8" gypsum wallboard each side	55

**Table III – JM Spider® Insulation Fire Rating**

<b>ASTM E 119 Testing</b>	<b>Rating</b>
3-5/8" thick HD Spider insulation, 25 gage steel stud, 24" o.c., 5/8" gypsum wallboard each side	1 hr.
3-5/8" thick HD Spider insulation, 25 gage steel stud, 24" o.c., double 5/8" gypsum wallboard each side	2 hr.
Fireblocking: HD Spider insulation, min. 16" height, single or double stud cavity	Equivalent to 2 layers 1X lumber

### Use & Limitations:

The following commercial wall and overhead applications are possible with JM Spider Insulation assuming the surfaces are relatively clean and free of moisture:

- Painted steel roof decks (fluted and flat assemblies)
- Galvanized steel roof decks (fluted and flat assemblies)
- Concrete (smooth or rough)
- Plywood
- Oriented Strand Board (OSB)
- Polystyrene and Polyiso Foam Sheathing including Foil faced foams
- Gypsum sheathing and gypsum wallboard
- Open & closed cell foam (spray applied)
- Open web truss systems
- Cavities with steel studs, or steel purlins
- Cavities with wood framing

Note: Maximum recommended thickness for open area application, or in cavities with framing members spaced more than 24 inches apart is 8 inches. For exposed application, a post-coating of adhesive is recommended to help encapsulate product.

The following commercial surfaces and conditions should be avoided:

- Porous plasters, stuccos, acoustic treatments, fire treatments, etc.
- Dusty or dirty surfaces
- Materials with Mylar® films or coatings
- Polypropylene or polyethylene films
- Loose or flakey concrete
- Materials with loose plastic films or loose coverings
- Fabric covered materials or surfaces
- Oily or greasy surfaces
- Porous insulations such as fiber glass batts
- Flaky surfaces with flaking paint, or old paint
- Wet or icy surfaces
- Surfaces prone to condensation
- Surfaces exposed to high winds or wind gusts
- Loose fitting panels or panels that are subject to severe deflection
- Surfaces that can be disturbed by human or equipment contact
- Application with diluted or old JM Spider adhesive
- Application to any surface at, or below, 32° F (0°C)



Do not apply over fire proofing insulation

## Wall Application

JM Spider Insulation can be sprayed into wall cavities of various widths, heights and depths, or onto open vertical surfaces. The installed density of JM Spider insulation is controlled by nozzle selection, distance sprayed from the wall, or by the blowing machine air pressure setting. For open surfaces, or application in cavities with framing members spaced more than 24 inches apart, Johns Manville recommends pre-coating the surface with a light mist of JM Spider adhesive before applying JM Spider insulation.

Wall Application	Cavity Application		Open Surface Application	
Installed Density, lbs./cu. ft.	1.0	1.8	1.0	1.8
JM Spider Spray Nozzle	LDN	HDN	LDN	HDN
Maximum Installed Spider Depth, inches	12	12	8	8

## Overhead Application

For all overhead applications, Johns Manville recommends pre-coating surfaces to be insulated with a light mist of JM Spider adhesive before applying JM Spider insulation. To ensure good overall adhesion, JM Spider insulation must be sprayed in 1 inch thick layers using a back and fourth sweeping action of the spray nozzle. It is also necessary to hold the spray nozzle perpendicular to the surface and no more than 18 inches away from the surface.

Overhead Application	Cavity Application	Open Surface Application
Installed Density, lbs./cu. ft.	1.8	1.8
JM Spider Spray Nozzle	HDN	HDN
Maximum Installed Spider Depth, inches	12	8

For questions on specific commercial applications, please contact Johns Manville.