Johns Manville

Performance Materials

Tuf-Skin Rx™

HVAC Equipment Liner

Indoor Environmental Quality. Tuf-Skin Rx HVAC equipment insulation is your prescription for Indoor Environmental Quality (IEQ) concerns:

- Shedding
- Cleanability
- Acoustical control
- Damage resistance

Tuf-Skin Rx combines two proven products to solve these tough IEQ problems. Tuf-Skin®, the most widely-used equipment insulation, is made even tougher with a Permacote® acrylic coating which has been proven for years in duct systems. The coating, combined with the dual-density construction of Tuf-Skin, enhances sound absorption in both low and high frequency ranges.

Microbial Growth. The coating is formulated with an immobilized EPA registered, anti-microbial agent to protect the coating from microbial growth. Tuf-Skin Rx passed ASTM C 1338, G 21, and G 22 as required in ASTM C 1071.

Shedding. Tuf-Skin Rx has a maximum rated air velocity of 5,000 fpm when tested per UL 181, Section 17. In addition, isokinetic sampling at an air velocity of 5,000 fpm detected no shedding.

Cleanability. The tough Permacote coating can handle the abuse of maintenance and cleaning practices listed by NAIMA (North American Insulation Manufacturers Association).

Acoustical Control. The insulation's high-density skin and light-density core, combined with the acrylic coating, provide excellent acoustical performance in the intensity and frequency ranges normally encountered in appliances and HVAC equipment.

Damage Resistance. The high-density skin and coating resist damage during installation and maintenance.

Applications:

- ***Residential & Commercial Furnaces***
- ***Air Conditioners***
- ***Mixing Boxes***

Insulation Properties:

- ***Excellent Medium to Low Frequency Acoustical Performance***
- ***Good Thermal Performance***
- ***Easy to Handle and Install***

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Product Description. Tuf-Skin Rx provides the same thermal performance as Tuf-Skin insulation. Like Tuf-Skin, Tuf-Skin Rx liner is easily cut to any size or shape with a knife, steel rule die, or shears. It can be firmly bonded to metals, plastics, and other materials with commercial adhesives or mechanical fastening devices. Tuf-Skin Rx has a black skin and core. The coating makes Tuf-Skin Rx a more economical and practical choice than double-wall construction.

Applications. Tuf-Skin Rx offers affordable, yet efficient, acoustical and thermal control in air conditioning and heating equipment where sound control, fire safety, resistance to air, and erosion are also required. The insulation is recommended for operating temperatures up to 250° F (121° C).

Edge Coating and Repair. A companion product, Permacote SuperSeal®, is specifically designed for edge coating and repair. It can either be applied by a fabricator or on the job. SuperSeal maintains the tough internal surface and overall performance of Tuf-Skin Rx. SuperSeal is a brushable/sprayable liquid available in 1 and 5-gallon pails. It meets the requirements of NFPA Standards 90A and 90B.

Custom Fabrication. In addition to standard rolls, a Johns Manville Approved Fabricator can provide specially-cut shapes and pieces to particular customer specifications, with or without coated edges.

ASTM C 1071. Tuf-Skin Rx has been tested and conforms to the physical properties and requirements of ASTM C 1071 as listed below.

- **Corrosiveness.** The metal plate in contact with the back side (non-air surface side) of the insulation shall show no corrosion greater than the comparative plates in contact with sterile cotton which has been tested in the same manner.
- **Moisture Vapor Sorption.** The moisture vapor sorption of insulation shall not be more than 3% by weight.
- **Fungi Resistance.** The insulation shall have growth no greater than that observed on the comparative items.
- **Temperature Resistance.** The air stream surface shall have no evidence of flaming, glowing, smoldering, smoking, or delamination.
- **Erosion Resistance.** The insulation shall not break away, flake off, or show evidence of delamination or continued erosion when air is passed through typical sections at a velocity specified.
- **Odor Emission.** A detectable odor or objectionable nature recorded by more than two of five panel members shall constitute failure of the materials.
- **Surface Burning Characteristics.** The air stream surface of the insulation shall have a maximum flame spread rating of 25 and a maximum smoke developed rating of 50.
- **Apparent Thermal Conductivity.** The thermal conductivity (k) of the insulation, expressed as Btu • in./(hr. • ft.^{2} • °F) or W/mK for the specified thickness shall not exceed the required values.
- **Sound Absorption Coefficients.** The insulation shall have sound absorption coefficients not less than that required for specified frequencies.

Specifications

Temperature Limit:
250° F (121° C)

Fire Hazard Classification:
25/50 (per ASTM E 84 and UL 723 and CAN/ULC S102-M88). Labels supplied when requested on order.
Meets NFPA 90A and 90B.

Maximum Air Velocity:
5,000 fpm (1,500 mpm) for Tuf-Skin Rx equipment liner. Tuf-Skin Rx is tested at two and one-half times (12,500 fpm) (3,800 mpm) this velocity. Meets the erosion requirements of UL 181.

Fabricated Products:
Tuf-Skin Rx equipment insulation is manufactured to specific customer width requirements. Contact your Johns Manville sales representative for limitations. Die-cut or fabricated pieces are generally supplied by strategically-located Johns Manville fabricators that are specially equipped to provide prompt service to manufacturers in their area.

SuperSeal Products:
Johns Manville manufactures a complete line of SuperSeal products derived from the tough, black acrylic polymer used for factory coating the airstream surface of Tuf-Skin Rx:

- SuperSeal HV - a high-viscosity coating in a caulking tube for spot or edge repair.
- SuperSeal Edge Treatment - a sprayable coating for high-volume shop applications.
- SuperSeal Duct Butter - a black aerosol foam for easy shop and field use.

Thermal Conductance (C)*

Thicknesses		Mean Temp. @ 75° F (23° C)	
inches	mm	Btu/(hr. • ft.² • °F)	W/m²K
1/2	13	.48	2.7
3/4	19	.31	1.8
1	25	.24	1.4

* Since Tuf-Skin Rx Insulation is a dual-density material, thermal conductivity (k) cannot be used. It applies only to homogeneous materials. The effective thermal conductivity of 1/2" (13mm) and 1" (25mm) Tuf-Skin Rx is .24.

Acoustical Performance

Type "A" Mounting Sound Absorption Coefficients*

Thicknesses		Frequency (Hz)						
inches	mm	125	250	500	1000	2000	4000	NRC**
1/2	13	.02	.18	.40	.64	.89	1.06	.55
3/4	19	.05	.22	.54	.79	.97	1.06	.65
1	25	.06	.39	.77	.99	1.08	1.03	.80

* Tested in accordance with ASTM C 423-90a and ASTM E 795-83
** Noise Reduction Coefficient

SuperSeal General Information

SuperSeal Product	Shipping Unit	Approx. Coverage*	Shelf Life at 40-95° F (4-35° C)	Application Temp. Limit	Tack-free Time
Edge Treatment	1 pail; 5 gal. (18.9 l)	1700 sq. ft. (158m²)	18 months	250° F (121° C)	1 hour (approx.)
Edge Treatment	1 carton; 4 pails 1 gal. (3.8 l)	1350 sq. ft. (125m²)	18 months	250° F (121° C)	1 hour (approx.)
Duct Butter	1 carton; 12 cans 16 fl. oz. (470 ml)	2500 sq. in. (16130 cm²)	18 months	250° F (121°C)	2 hours (approx.)
HV	1 carton; 12 tubes 10.5 fl.oz. (310 ml)	Usage-dependent	12 months	250° F (121° C)	2 hours (approx.)

*Coverage estimates are based on minimum application weight to ensure product performance; actual application requirements may be higher, depending upon the surface and application method.

For Information

Write Johns Manville Product Information Center, P.O. Box 5108, Denver, Colorado 80217-5108, or call toll-free 1-800-654-3103 (outside Colorado); (303) 978-4900 (inside Colorado).

Limited Warranty

All Johns Manville products are sold subject to Johns Manville's Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville Limited Warranty and Limitation of Remedy, write to:

Johns Manville Product Information Center
P.O. Box 5108
Denver, CO 80217-5108

or call toll free: 1-800-654-3103 or contact your local Johns Manville sales representative.

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The physical and chemical properties of Johns Manville Tuf-Skin Rx represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. The data is supplied as a technical service and is subject to change without notice. Check with your Johns Manville representative to obtain current information.

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