

Quality People. Building Solutions.

Comfort Systems USA (Arkansas), Inc.
P.O. Box 16620
Little Rock, AR 72231
Phone 501-834-3320
Fax 501-834-5416

Date: 11/28/2023

Return Request: 12/5/2023

Project: MAC Building – 4th Floor

Supplier: Coleman Industrial

Manufacturer: Various

Submittal: Ductwork Insulation

Submittal Number: 23 07 13-01

Drawing # and Installation: Mechanical Drawings

ARCHITECT

Stocks Mann
401 W. Capitol, Suite 402
Little Rock, AR 72201
501-370-9207

ENGINEER

Insight
322 S. State Street, Suite 201
Little Rock, AR 72201
501-237-3077

GENERAL CONTRACTOR

Carson & Associates
1310 W. Daisy Bates Dr.
Little Rock, AR 72202
501-372-5816

MECHANICAL SUBCONTRACTOR

Comfort Systems USA (Arkansas), Inc.
9924 Landers Rd.
N. Little Rock, AR 72117
501-834-3320

Notes:

chowell@comfortar.com

9924 Landers Rd.
No. Little Rock, AR 72117

1001 Swift Ave
North Kansas City MO.
64116



Phone: (816)741-8383
Fax: (816)741-0542
Email: office@cickc.com

Nov 3, 2023

Comfort Systems USA
9924 Landers Rd
North Little Rock, AR 72117

Mr. Casey Howell

Re: Mechanical Insulation Submittals for **MAC Building**, Little Rock, Arkansas.

Spec# 23 07 13

The following items will be insulated with 3/4 LB Johns Manville Duct Wrap with a foil scrim kraft vapor barrier jacket. All joints and seams will be sealed with 3" wide FSK tape. Mechanical Rectangle Duct will be insulated with 3LB Johns Manville Duct Board with a foil scrim kraft vapor barrier jacket.

Item #1 Supply/Return/OSA Duct ----- 2" Thick

Item #2 Rectangle Duct in Mech Room ----- 1" Thick

Thank You,
Chad Bartlett

DESCRIPTION

Microlite® FSK Formaldehyde-free™ duct wrap insulation is a lightweight, highly resilient, blanket-type thermal insulation. The insulation blanket is manufactured from rotary-process fiberglass bonded with a formaldehyde-free resin.

AVAILABLE FORMS

Microlite Formaldehyde-free™ insulation is available in a variety of densities, thicknesses and roll lengths. It is supplied with an FSK (foil-scrim-kraft) vapor barrier facing to meet installed performance requirements, with a 2" (51 mm) stapling tab. Microlite FSK is 48" (1219mm) wide.

USES

Microlite insulation is recommended as thermal insulation for the exterior of HVAC systems or other spaces or surfaces where temperature control is required.

LIMITATION

Microlite FSK duct wrap is not recommended for use on duct systems in service at temperatures above 250°F (121°C). It should not be used in weather-exposed applications without proper protection.

STORAGE

Microlite FSK duct wrap should be kept clean and dry during storage, transport, installation, and system operation.

FACING INFORMATION

FSK Aluminum Foil

Reinforced with fiber glass scrim laminated to UL-rated kraft.

Permeance: 0.02 perms*

*Per ASTM E96, Procedure A for facing material prior to lamination. After lamination, permeance values may be higher.

GENERAL PROPERTIES

Temperature (max.) – ASTM C411	250°F (121°C)
Water vapor sorption – ASTM C1104	<5% by weight
Corrosivity with steel – ASTM C665	Does not accelerate
Fungi resistance – ASTM C1338	Does not breed or promote

STANDARD THICKNESSES AND PACKAGING

	100' Roll (31 m)	75' Roll (23 m)	50' Roll (15 m)	45' Roll (13.7 m)	35' Roll (10.6 m)	30' Roll (9.14 m)
Type	Thickness, in (mm)					
75	1 (24)*, 1 ½ (38)	2 (51), 2½ (56)	3 (76),	4 2/5 (112)	5 ¾ (146)	7 (178)
100	1 ½ (38)	2 (51)	–			
150	–	1 ½ (38)	2 (51)			

*1" for Canadian use only
Note: Additional thicknesses, widths and other lengths available on special order. Contact Regional Sales Office for availability.

RECYCLED CONTENT



SURFACE BURNING CHARACTERISTICS

Microlite insulation meets the Surface Burning Characteristics and Limited Combustibility of the following standards:

Standard/Test Method

- ASTM E84
- UL 723
- NFPA 90A and 90B
- UL Guide No. 40 U8.3. Card R3711
- CAN/ULC S102

Maximum Flame Spread Index	25
Maximum Smoke Developed Index	50

Note: Faced materials are tested as composite products (insulation, adhesive and facing).

SPECIFICATION COMPLIANCE

ASTM C1290	Type 75, 100, & 150
ASTM C553*	
Type I, Type II	Type 75 & 100
Type I, Type II, Type III	Type 150
<i>*For faced material: 250°F (121°C) maximum temperature.</i>	
ASTM C1136s†	
Type II	FSK Facing
<i>†Replaces HH-B-100B, Type II.</i>	
Canada: CGSB 51-GP-11M	
NYC MEA 40-75-M	

SUSTAINABLE BUILDING CERTIFICATIONS

GREENGUARD®	Certified
GREENGUARD® GOLD	Certified
FORMALDEHYDE FREE	Validated

GREENGUARD® Certified products have been screened for more than 10,000 volatile organic compounds (VOCs) and meet stringent standards for low chemical emissions based on established criteria from key public health agencies. This product is also a UL Validated Formaldehyde-Free product, meeting recommendations established by the California Air Resources Board and the EPA to use building materials and insulation made without formaldehyde.



MICROLITE® FSK
FSK-FACED FORMALDEHYDE-FREE™ FIBERGLASS DUCT WRAP

DATA SHEET

APPLICATION RECOMMENDATIONS

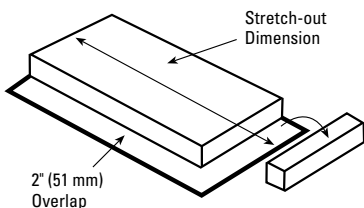
The R-value will vary depending upon how much the insulation is compressed during installation. To obtain the published installed R-values, the insulation stretch-out should be determined using the following table:

Duct Wrap Stretch-outs

Labeled Thick. (in)	Installed Compressed Thickness (in)	Stretch-out Dimension		
		Round	Square	Rectangular
1	0.75	P+ 7.0"	P+ 6.0"	P+ 5.0"
1½	1.125	P+ 9.5"	P+ 8.0"	P+ 7.0"
2	1.50	P+ 12.0"	P+ 10.0"	P+ 8.0"
2 ½	1.65	P+ 13.0"	P+ 11.0"	P+ 8.5"
3	2.25	P+ 17.0"	P+ 14.5"	P+ 11.5"
4 2/5	3.30	P+ 24.5"	P+ 21.0"	P+ 19.0"
5 ¾	4.31	P+ 30.0"	P+ 27.0"	P+ 25.0"
7	5.25	P+ 36.0"	P+ 33.0"	P+ 31.0"

Stretch-outs include 2" (51 mm) for overlap. P = perimeter of duct to be insulated.

Prepare overlap by removing approximately 2" (51 mm) of insulation from facing.



Before applying duct wrap, sheet metal duct shall be clean, dry and tightly sealed at all joints and seams.

Wrap insulation around duct with facing to the outside so the 2" (51 mm) flap completely overlaps facing and insulation at the other end of stretch-out. Insulation shall be snugly butted.

Secure seams with outward clinching staples placed approximately 6" (152mm) on center or tape tabs of 8" or longer. If required, seal seam with pressure-sensitive tape designed for use with duct insulation. Insulation on the underside of ducts spanning 24" (610 mm) or greater shall be secured with mechanical fasteners and speed clips spaced approximately 18" (457 mm) on center. Fasteners should be cut off flush after the speed clips are installed, and when required, sealed with the same tape as specified above.

Adjacent sections of duct wrap insulation shall be snugly butted with the circumferential 2" (51 mm) tape flap overlapping and secured as recommended for the longitudinal seam. When a vapor seal is required, two coats of vapor retarder mastic reinforced with one layer of 4" (102 mm) wide, open-weave glass fabric may be used in lieu of pressure-sensitive tape.

GUIDE SPECIFICATIONS

Insulation for Metal Ducts. All ducts shall be insulated on the outside with a Formaldehyde-free™, flexible glass fiber blanket. Microlite Formaldehyde-free™ fiber glass duct wrap insulation should have a minimum installed R-value* of _____, and a Type _____ facing. Insulation shall be furnished with a factory-applied facing with a composite UL FHC rating of 25/50.

*The minimum insulation installed R-value should be determined in accordance to the duct operating and ambient conditions.

THERMAL CONDUCTIVITY (ASTM C518)

Type	k* Compressed Thickness		k Labeled Thickness	
	Btu•in/(hr•ft²•°F)	W/m²•°C	Btu•in/(hr•ft²•°F)	W/m²•°C
75	0.27	0.039	0.29	0.042
100	0.25	0.036	0.27	0.039
150	0.24	0.035	0.25	0.036

Conductivity at 75°F (24°C) mean temperature.

*Tested with material thickness compressed 25%.

INSTALLED R-VALUES

Type	Labeled Thickness		Installed "R"***		Out-of-Package "R"	
	in	mm	(hr•ft²•°F)/Btu	m²•°C/W	(hr•ft²•°F)/Btu	m²•°C/W
Type 75 - 0.75 pcf (12kg/m³)						
75	1	25	3.0	0.53	3.8	.67
	1½	38	4.2	0.74	5.2	0.92
	2	51	5.6	0.99	6.9	1.22
	2 ½	56	6.0	1.08	7.5	1.33
	3	76	8.3	1.46	10.3	1.81
	4 2/5	112	12.0	2.16	15.0	2.66
	5 ¾	146	16.0	2.82	20.0	3.52
	7	178	19.0	3.35	23.0	4.05
Type 100 - 1.00 pcf (16kg/m³)						
100	1½	38	4.5	0.79	5.6	0.99
	2	51	6.0	1.06	7.4	1.30
Type 150 - 1.5 pcf (24kg/m³)						
150	1½	38	4.7	0.83	6.0	1.06
	2	51	6.3	1.11	8.0	1.41

***Installed R-value calculated with a material thickness compressed to a maximum of 25% following recommended duct wrap stretch-outs.



717 17th St.
Denver, CO 80202
800-654-3103
www.JM.com

North American Sales Offices, Insulation Systems

Eastern Region & Canada
P.O. Box 158
Defiance, OH 43512
800-334-2399
Fax: 419-784-7866

Western Region & Outside North America
P.O. Box 5108
Denver, CO 80217
800-368-4431
Fax: 303-978-4661

Technical specifications as shown in this literature are intended to be used as general guidelines only. Please refer to the Safety Data Sheet and product label prior to using this product. The physical and chemical properties of Microlite FSK listed herein represent typical, average values obtained in accordance with accepted test methods and are subject to normal manufacturing variations. They are supplied as a technical service and are subject to change without notice. Any references to numerical flame spread or smoke developed ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

All Johns Manville products are sold subject to Johns Manville's standard Terms and Conditions, which includes a Limited Warranty and Limitation of Remedy. For a copy of the Johns Manville standard Terms and Conditions or for information on other Johns Manville thermal insulation and systems, visit www.jm.com/terms-conditions or call (800) 654-3103.

DESCRIPTION

800 Series Spin-Glas® duct and equipment insulation is manufactured from inorganic glass fibers bonded together with thermosetting resin. This rigid fiberglass board insulation is available plain or faced in a variety of densities for use on systems that operate up to 450°F (232°C). For faced products, surface temperature should not exceed 150°F (66°C). AP, FSK, or Ultra vapor retarder-faced material meets the requirements of NFPA 90A and 90B. Types 813, 814, 815 and 817 provide neat square corners for an excellent finished appearance on duct and equipment systems. Spin-Glas insulation can be readily cut with an ordinary knife and secured with mechanical fasteners and/or adhesives.

APPLICATIONS

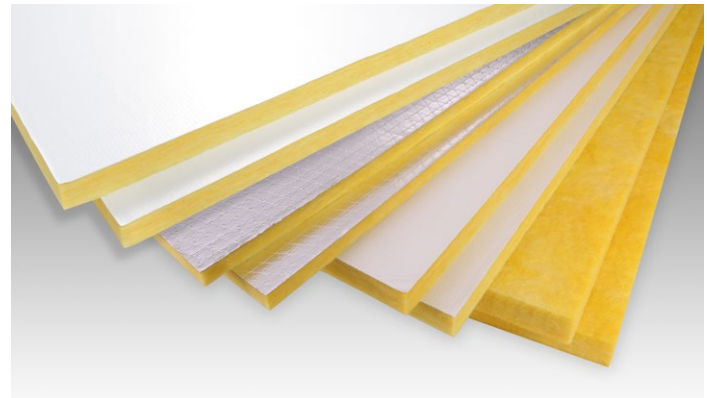
800 Series Spin-Glas insulation can be used in plain or faced form to insulate heating ducts and equipment. Faced 800 Series Spin-Glas insulation is designed for systems that operate below ambient temperatures where vapor barrier protection is required. 800 Series Spin-Glas insulation is ideal for application in commercial and industrial heating, air conditioning, power and process equipment. These products are not designed for use inside air distribution duct work or equipment where the insulation will be directly exposed to an airstream. On systems operating below ambient temperatures, all seams should be tightly sealed with quality ASJ, foil, FSK or Ultra tapes depending on the desired finish.

SPECIFICATION COMPLIANCE

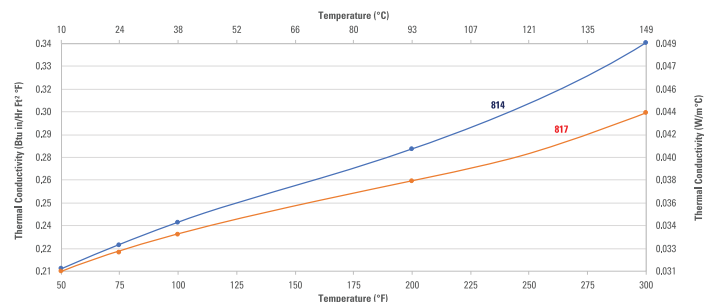
Type	812	813	814	815	817
ASTM C612, Type IA		X	X	X	X
ASTM C612, Type IB		X	X	X	X
ASTM C553 Type III (Plain material only)	X				
ASTM E84, UL 723, NFPA 255, CAN/ULC S102, FHC 25/50, Surface Burning Characteristics (Composite)	X	X	X	X	X
NRC 1.36, ASTM C795, MIL-DTL-24224D* (Cleburne material only)			X	X	X
Canada: CAN/CGSB-51.10-92		X	X	X	X
ASTM C1136		Type I: AP Facing Type II: AP, FSK, & Ultra			
NFPA 90A & 90B, FHC 25/50 & limited combustibility					

PHYSICAL PROPERTIES

Unfaced Temp Limit (Max)	450°F (232°C)
Faced Temp Limit (Max)	Unfaced Side: 450°F (232°C) Faced Side: 150°F (66°C)
Moisture Sorption	Less than 5.0% by weight
Corrosivity	Pass
Odor	None
Shrinkage	None
Resistance to fungi and bacteria	Does not breed or promote
Moisture Vapor Transmission	0.02 perms max: FSK, AP, & Ultra



Operating Temperature Limit: Up to 450°F (232°C)

THERMAL CONDUCTIVITY ("K")


Type	812	813	814	815	817
"k" @ 75°F mean	0.24	0.23	0.23	0.22	0.22
"k" @ 24°C mean	0.035	0.033	0.033	0.032	0.032

THERMAL PERFORMANCE (R-VALUES)

Type	Thickness						
	1"	1½"	2"	2½"	3"	3½"	4"
812		6.3	8.3	10.4	12.5	14.6	16.7
813	4.3	6.5	8.7	10.9	13.0	15.2	17.4
814	4.3	6.5	8.7	10.9	13.0	15.2	17.4
815	4.5	6.8	9.1	11.4			
817	4.5	6.8	9.1				

FACING INFORMATION

FSK Reinforced Foil and Paper (Foil-Scrim-Kraft). Aluminum foil reinforced with fiber glass yarn and laminated with fire-resistant adhesive to kraft paper.

AP (All Purpose). The AP or All Purpose facing is an ASJ comprised of white kraft bonded to aluminum foil, reinforced with fiber glass yarn and laminated with fire-resistant adhesive to kraft paper.

Ultra (Polypropylene-Scrim-Polyester). The Ultra facing is a white, poly-top ASJ. It is comprised of a polypropylene exterior, reinforced with fiber glass yarn and a metalized polyester inner layer. This facing has no paper components.

SOUND ABSORPTION COEFFICIENTS (ASTM C423 - TYPE "A" MOUNTING)

Type (Plain)	Thickness		Frequency (Hz)						
	in	mm	125	250	500	1000	2000	4000	NRC
812	1.0	25	0.07	0.24	0.63	0.87	1.00	1.02	0.70
	2.0	51	0.24	0.68	1.10	1.13	1.10	1.07	1.00
813	1.0	25	0.08	0.27	0.69	0.95	1.05	1.02	0.75
	2.0	51	0.19	0.88	1.15	1.14	1.10	1.07	1.05
814	1.0	25	0.06	0.29	0.75	0.99	1.04	1.02	0.75
	2.0	51	0.24	1.00	1.11	1.08	1.06	1.05	1.05
815	1.0	25	0.03	0.32	0.80	1.04	1.05	1.05	0.80
	2.0	51	0.27	0.91	1.11	1.09	1.09	1.09	1.05
817	1.0	25	0.10	0.35	0.85	1.04	1.05	1.03	0.80
	2.0	51	0.38	0.93	1.10	1.07	1.07	1.07	1.05

AVAILABLE DENSITIES, THICKNESSES AND FACINGS

Type	Density		Thickness (in ½" [13mm] increments)			
			Faced (FSK/AP/Ultra)		Plain	
	pcf	kg/m ³	in	mm	in	mm
812*	1.50	24	-	-	1½-4	38-102
813	2.25	36	1-4	25-102	1-4	25-102
814	3.00	48	1-4	25-102	1-4	25-102
815	4.25	68	1-2½	25-64	1-2½	25-64
817	6.00	96	1-2	25-51	1-2	25-51

Standard Sheet Size: 24" x 48" (610 mm x 1219 mm). Non standard sizes available upon request.

*Available from Defiance, OH, only.

GOVERNMENT CERTIFICATION

When ordering material to comply with any government specification or any other listed specification, a statement of that fact must appear on the purchase order. Government regulations and other listed specifications require specific lot testing and prohibit the certification of compliance after shipment has been made. There may be additional charges associated with specification compliance testing.

ISO 9001:2015 CERTIFICATION

Johns Manville mechanical insulation products are designed, manufactured and tested in our own facilities, which are certified and registered to stringent ISO 9001:2015 series quality standards. This certification, along with regular, independent third-party auditing for compliance, is your assurance that Johns Manville products deliver consistent high quality.

SUSTAINABLE BUILDING ATTRIBUTES

*AP and FSK Facings Only



717 17th St.
Denver, CO 80202
800-654-3103
www.JM.com

**North American Sales Offices,
Insulation Systems****Eastern Region and Canada**

P.O. Box 158
Defiance, OH 43512
800-334-2399
Fax: 419-784-7866

Western Region

P.O. Box 5108
Denver, CO 80217
800-368-4431
Fax: 303-978-4661

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Technical Data Sheet

3M™ Venture Tape™ Facing Tape 1540CW

Product Description

3M™ Venture Tape™ 1540CW is a kraft/scrim/foil (ASJ) laminate coated with a cold weather acrylic pressure sensitive adhesive.

Product Features

- Cold weather adhesive performs well over a wide temperature range
- Mold inhibitor helps maintain adhesive strength and effectiveness
- High puncture and tear resistance ensures long life and durability.
- Conforms well to curved and irregular surfaces



Technical Information Note

The following technical information and data should be considered representative or typical only and should not be used for specification purposes.





Typical Physical Properties

Property	Values	Additional Information
Backing	ASJ	
Adhesive Type	Acrylic	
Liner	Release Liner	
Color	White	
Backing Thickness (mm)	0.16 mm	View
Test Method: ASTM D3652		
Total Tape Thickness (mil)	7.5 mil	View
Test Method: ASTM D3652		
Total Tape Thickness (mm)	0.19 mm	View

Test Method: ASTM D3652

Backing Thickness	6.5 mil	View 
Test Method: ASTM D3652		
Water Vapor Transmission	0.02 Perms	View 
Test Method: ASTM E96		

Typical Performance Characteristics

Property	Values	Additional Information
Tensile Strength	70.1 N/cm	View 
Test Method: ASTM D3759		
180° Peel Adhesion	Exceeds the strength of tape backing oz/in	View 
Test Method: ASTM D3330		
Notes: 12 in/min (300 mm/min)		
Tensile Strength (lb/in)	40 lb/in	View 
Test Method: ASTM D3759		
Elongation at Break (%)	2 %	View 
Test Method: ASTM D3759		
Long Term Temperature Resistance	116 °C	
Minimum Long Term Temperature Resistance	-40 °C	
Long Term Temperature Resistance	240 °F	
Minimum Long Term Temperature Resistance	-40 °F	

Certifications/Standards

Property	Values	Additional Information
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Certifications

- UL723 Classified (15/10 Flame/Smoke Rating) [UL file #R10984]
- CAN/ULC Classified (15/10 Flame/Smoke Rating) [UL file #R10984]

Codes & Test Standards

Meets ASTM C1136, Type 1, II, III, IV. *ASTM C1136 testing based in part on third party test data of the product backing

Storage and Shelf Life

Store in a clean, dry place. Temperature of 40-80°F (4-26°C) and 40 to 50% relative humidity are recommended.

To obtain best performance, use this product within 24 months from date of manufacture.

Bottom Matter

3M

Industrial Adhesives and Tapes Division

3M Center, Building 225-3S-06

St. Paul, MN 55144-1000

800-362-3550

Trademarks

3M and Venture Tape are trademarks of 3M Company.

Handling/Application Information

Application Examples

- Closure system on ASJ faced duct piping systems
- Vapor seal on ASJ faced ductboard and pipe insulation

References

Property	Values
3m.com Product Page	https://www.3m.com/3M/en_US/p/d/b40067987/
Safety Data Sheet SDS	https://www.3m.com/3M/en_US/company-us/SDS-search/results/?gsaAction=msdsSRA&msdsLocale=en_US&co=ptn&q=1540CW

ISO Statement

This Industrial Adhesives and Tapes Division product was manufactured under a 3M quality system registered to ISO 9001 standards.

Information

Technical Information: The technical information, guidance, and other statements contained in this document or otherwise provided by 3M are based upon records, tests, or experience that 3M believes to be reliable, but the accuracy, completeness, and representative nature of such information is not guaranteed. Such information is intended for people with knowledge and technical skills sufficient to assess and apply their own informed judgment to the information. No license under any 3M or third party intellectual property rights is granted or implied with this information.

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