

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: 1/13/2025

Return Request: 1/23/2025

Project: HSU – Reynolds Hall Lap Renovation

Supplier: Pro Insulation

Manufacturer: Various

Submittal: HVAC Duct Insulation

Submittal Number: 23 00 00-02

Drawing # and Installation: Mechanical Drawings

ARCHITECT

SCM Architects
1400 Kirk Road, Suite 220
Little Rock, AR 72223
501-224-3055

ENGINEER

Pettit & Pettit
201 E. Markham, Suite 400
Little Rock, AR 72201
501-374-3731

GENERAL CONTRACTOR

Nabholz
612 Garland St.
Conway, AR 72032
501-505-5800

MECHANICAL SUBCONTRACTOR

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

Notes:

***Plan Page M1.01; Keyed Note 3**

CSUSA PROJECT NO.

22-6091

sean@comfortar.com

9924 Landers Rd.
No. Little Rock, AR 72117

Pro Insulation

4414 South 16th Street
Ft. Smith, AR 72901
Ph. 479-646-5644
Fax 479-646-5654

December 26, 2024

Comfort Systems USA, Inc.
P.O. Box 16620
Little Rock, AR 72231

Mr. Sean Cross

Re: Mechanical Insulation Submittals for HSU Bid, Arkadelphia, Arkansas.

No spec or notes on plans.

The following items will be insulated with Knauf $\frac{3}{4}$ lb fiberglass duct wrap with a foil skim kraft vapor barrier jacket. All joints and seams will be sealed with 3" wide FSK tape.

Item #1 New Supply Duct at New Fume Hood, Exhaust Fan, FCU----- 2 3/16" Thick

Item #2 New Return Duct at New Fume Hood, Exhaust Fan, FCU----- 2 3/16" Thick

Item #3 New Exhaust Duct at New Fume Hood, Exhaust Fan, FCU----- 2 3/16" Thick

Item #4 New OSA Duct at New Fume Hood, Exhaust Fan, FCU----- 2 3/16" Thick

Thank You,

Mike Galatzer

DATA SHEET

Atmosphere® Duct Wrap

with ECOSE® Technology



DESCRIPTION

Atmosphere Duct Wrap is a thermal and acoustical insulation blanket made from highly resilient, inorganic fiberglass bonded by ECOSE Technology. It is available unfaced, with a foil-scrim-kraft (FSK) jacket and with a white metalized polypropylene-scrim-kraft (PSK) jacket. Vapor retarders provide a 2" (51 mm) staple flange on one edge, and the factory-applied facing assures uniform quality.

APPLICATION

- External insulation on commercial or residential heating or air conditioning ducts
- Suitable for the exterior of rectangular or round sheet metal ducts and spaces or surfaces where temperature and condensation must be controlled

SPECIFICATION COMPLIANCE

U.S.

- ASTM C1290
- ASTM C553
 - Type I, Type II - 0.75 PCF (12 kg/m³)
 - Type I, Type II - 1.0 PCF (16 kg/m³)
 - Type I, II, III - 1.5 PCF (24 kg/m³)
- ASTM C1136; Type II
- NFPA 90A and 90B
- California Title 24 (installed at 25% compression)
- UL/ULC Classified

Canada

- CAN/ULC S102

INDOOR AIR QUALITY

- UL Environment
 - GREENGUARD Certified
 - GREENGUARD Gold Certified
 - Validated to be Formaldehyde-Free
- Does not contain polybrominated diphenyl ethers (PBDE) such as: Penta-BDE, Octa-BDE or Deca-BDE
- EUCEB Certified

CONTRACTOR: _____

JOB: _____

DATE: _____

DOING MORE FOR THE WORLD WE LIVE IN.

Knauf Insulation products with ECOSE® Technology are made using our patented, bio-based binder - a smarter alternative to the phenol/formaldehyde (PF) binder traditionally used in fiberglass products. The bio-based binder holds our product together, gives the product its unique appearance and makes it formaldehyde-free.

All of our products are made from sustainable resources, such as recycled glass and sand. And we're proud to be putting glass bottles back to work rather than into landfills. Our products are made with a minimum of 50% recycled glass—totaling an average of 26 million bottles each month.

with ECOSE[®]
TECHNOLOGY



FIBERGLASS AND MOLD

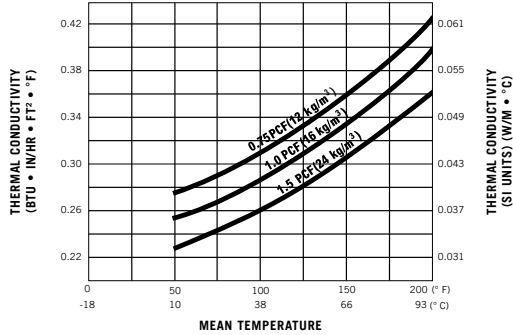
Fiberglass insulation will not sustain mold growth. However, mold can grow on almost any material when it becomes wet and contaminated. Carefully inspect any insulation that has been exposed to water. If it shows any sign of mold, it must be discarded. If the material is wet but shows no evidence of mold, it should be dried rapidly and thoroughly. If it shows signs of facing degradation from wetting, it should be replaced.

Insulation used in direct contact with air streams that provide conditioning to occupied spaces must be discarded if exposed to water.

TECHNICAL DATA		
Property (Unit)	Test	Performance
Corrosiveness	ASTM C665	Does not accelerate corrosion of steel
Corrosion	ASTM C1617	Pass
Maximum Service Temperature	ASTM C411	Faced: 250° F (121° C), Unfaced: 350° F (177° C)
Water Vapor Permeance	ASTM E96, Procedure A	0.02 perms or less (FSK and PSK facings)
Water Vapor Sorption (by weight)	ASTM C1104	Less than 5%
Mold Growth	ASTM C1338	Pass
Surface Burning Characteristics (flame spread/smoke developed)	ASTM E84, UL 723, CAN/ULC S102	UL/ULC Classified FHC 25/50 (Unfaced and FSK facing)
	ASTM E84	25/50 (PSK facing)

FORMS AVAILABLE						
Density	Thickness	Width	Length	Facing	R-Value (K Value) @ 75°F Mean Temperature	
					Out-Of Package	Installed [at 25% Compression]
0.75 PCF (12 kg/m³)	1½" (38 mm)	48" (1,219 mm)	100' (30.48 m)	FSK, PSK, Unfaced	R-5.1 (0.29)	R-4.2 (0.27)
	2" (51 mm)		75' (22.86 m)		R-6.8 (0.29)	R-5.6 (0.27)
	2¾" (56 mm)		75' (22.86 m)		R-7.4 (0.29)	R-6.0 (0.27)
	3" (76 mm)		50' (15.24 m)		R-10.2 (0.29)	R-8.4 (0.27)
	4⅝" (110 mm)		45' (13.71 m)		R-14.7 (0.29)	R-12 (0.27)
1.0 PCF (16 kg/m³)	1½" (38 mm)		100' (30.48 m)		R-5.6 (0.27)	R-4.5 (0.25)
	2" (51 mm)		75' (22.86 m)		R-7.4 (0.27)	R-6.0 (0.25)
1.5 PCF (24 kg/m³)	1½" (38 mm)		75' (22.86 m)		R-6.1 (0.24)	R-4.8 (0.23)
	2" (51 mm)		50' (15.24 m)		R-8.2 (0.24)	R-6.4 (0.23)

THERMAL EFFICIENCY ASTM C177							
Mean Temperature	0.75 PCF (12 kg/m³)		1.0 PCF (16 kg/m³)		1.5 PCF (24 kg/m³)		
	k	k (SI)	k	k (SI)	k	k (SI)	
50° F (10° C)	0.28	0.040	0.26	0.037	0.23	0.033	
75° F (24° C)	0.29	0.042	0.27	0.039	0.24	0.035	
100° F (38° C)	0.31	0.045	0.29	0.042	0.26	0.037	
125° F (52° C)	0.33	0.048	0.31	0.045	0.28	0.040	
150° F (66° C)	0.36	0.052	0.34	0.049	0.31	0.042	
175° F (80° C)	0.39	0.056	0.37	0.053	0.33	0.048	
200° F (93° C)	0.43	0.063	0.40	0.058	0.36	0.052	



**INSERTION LOSS I (REDUCTION OF SOUND TRANSMITTED THROUGH DUCT WALL)
(SOUND AND VIBRATION DESIGN AND ANALYSIS, NATIONAL ENVIRONMENTAL BALANCING BUREAU, 1994)**

		Duct Wrap		Insertion Loss, dB/LF of Duct						
Duct Dimensions	Sheet Metal	Nominal Thickness	Nominal Density	63Hz	125Hz	250Hz	500Hz	1000Hz	2000Hz	4000Hz
12" x 12" (305 mm x 305 mm)	24 GA	1½" (38 mm)	0.75 PCF (12 kg/m³)	0.6	0.6	0.6	0.7	7.4	14.2	20.9
24" x 12" (610 mm x 305 mm)	24 GA	1½" (38 mm)		0.6	0.6	0.6	0.7	7.4	14.2	20.9
48" x 12" (1219 mm x 305 mm)	22 GA	1½" (38 mm)		0.5	0.5	0.5	0.6	7.4	14.1	20.9
24" x 24" (610 mm x 610 mm)	22 GA	1½" (38 mm)		0.5	0.5	0.5	0.6	7.4	14.1	20.9
24" x 12" (610 mm x 305 mm)	26 GA	1½" (38 mm)		0.8	0.8	0.8	0.8	7.5	14.2	21.0
24" x 8" (610 mm x 203 mm)	26 GA	2" (51 mm)		1.0	1.0	1.0	3.6	10.4	17.1	23.9

STRETCH-OUTS

Labeled Thickness	Installed Compressed Thickness	Round	Square	Rectangular
1½" (38 mm)	1⅝" (29 mm)	P+9½" (241 mm)	P+8" (203 mm)	P+7" (178 mm)
2" (51 mm)	1½" (38 mm)	P+12" (305 mm)	P+10" (254 mm)	P+8" (203 mm)
2⅜" (56 mm)	1⅝" (42 mm)	P+13" (330 mm)	P+11" (279 mm)	P+8½" (216 mm)
3" (76 mm)	2¼" (57 mm)	P+17" (432 mm)	P+14½" (368 mm)	P+11½" (292 mm)
4⅜" (110 mm)	3¼" (83 mm)	P+22½" (572 mm)	P+18" (457 mm)	P+19" (483 mm)

P = Perimeter of duct to be installed.

APPLICATION & SPECIFICATION GUIDELINES

Storage

- Protect stored insulation from water damage, construction damage and other abuse.
- If stored outside, proper protection from weather conditions should be provided.

Preparation

- Install over clean, dry sheet metal ducts.
- All sheet metal joints and seams must be sealed to prevent air leakage from the duct.

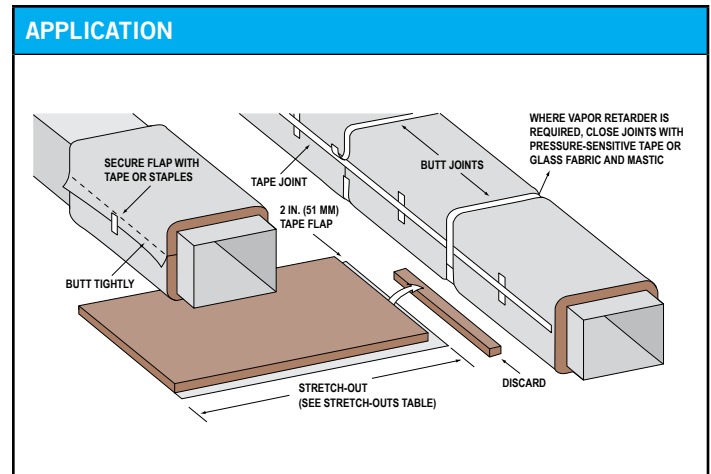
Application

- Install with facing to the outside to obtain specified R-value using a maximum of 25% compression.
- Butt all insulation joints firmly together. Longitudinal seam of the vapor retarder must be overlapped a minimum of 2" (51 mm). A 2" (51 mm) tab is provided for the circumferential seam and must be overlapped.
- Where vapor retarder performance is necessary, all penetrations, joints, seams and damage to the facing should be sealed with an FSK, PSK or foil tape or glass fabric and mastic prior to system startup.
- Pressure sensitive tapes should be a nominal 3" (76 mm) wide and be applied with moving pressure using an appropriate sealing tool. Staples should be outward clinch and placed approximately 6" (152 mm) on center.
- Closure systems should have a 25/50 F.H.C. per UL 723.
- For rectangular ducts over 24" (610 mm) wide, secure the insulation to the bottom side of the duct with mechanical fasteners spaced on 18" (457 mm) centers to reduce sag. Care should be taken to avoid over-compressing the insulation with the retaining washer.

- The use of bonding adhesive is not recommended for attaching duct wrap to the duct surface. The use of bonding adhesive may restrict duct wrap from expanding to full thickness. This loss of thickness will result in decreased thermal performance which may lead to condensation issues on below ambient ductwork. Use of bonding adhesive voids warranty and performance claims and potentially the UL rating of Knauf Insulation duct wrap.
- Unfaced Duct Wrap should be overlapped with a minimum of 2" (51 mm) and fastened with 4" (102 mm) to 6" (152 mm) nails or skewers placed 4" (102 mm) apart, or secured with a wire or banding system. Care must be taken to avoid damaging the duct wrap. Refer to diagram for staple stitching and butt-joint method.

Installation Procedures

- Use the Application graphic to determine stretch-outs required for the nominal thickness of insulation to limit average compression of the insulation 25% or less.



CERTIFICATIONS



Check with your Knauf Insulation Territory Manager to ensure information is current.

The chemical and physical properties of this product represent average values determined in accordance with accepted test methods. The data is subject to normal manufacturing variations. The data is supplied as a technical service and is subject to change without notice. References to numerical flame spread ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

This product is covered by one or more U.S. and/or other patents.
See patent www.knaufnorthamerica.com/patents

Visit knaufnorthamerica.com to learn more.

KNAUF INSULATION, INC.

One Knauf Drive
Shelbyville, IN 46176

Technical Support
(317) 398-4434 ext. 8727
info.us@knaufinsulation.com

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FASSON® 0828

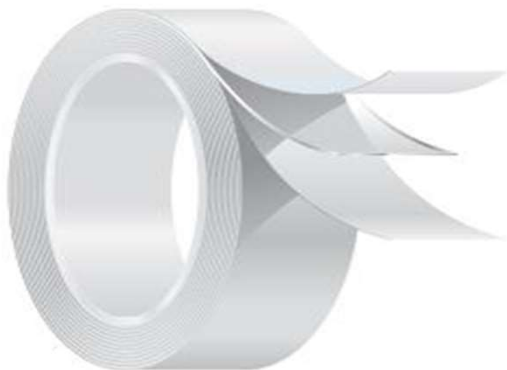
Avery Dennison FASSON® 0828 is suitable for die-cut shapes, shielding, moisture and vapor barrier sealing components or lamination to insulation materials.

FEATURES

- Specially formulated antimicrobial, extreme weather, COLD TOUGH® acrylic adhesive
- High initial tack and quick stick
- Meets ASTM C-1136 Type II and Type IV
- PSA complies with CDPH Standard Method V1.2
- UL 723 Recognition under File No. BVYS.R7078
- UL ULC S102 Recognition under File No. BVYS7.R7078

BENEFITS

- Tri-directional 8.0 mil FSK facestock reinforces seal
- Strong bond to a variety of substrates
- CDPH V1.2 recognized by USGBC LEED, WELL building standard, ANSI/GBI 01-2019, and more
- High-strength reinforced FSK reinforces seal and is decaBDE free
- Application temperature as low as 0°F
- Made in the USA



CONSTRUCTION:

Liner:

60# White Kraft

Adhesive:

COLD TOUGH® Acrylic

Carrier:

Tri-directional FSK Foil Laminate

General Use Tape Surface Burning Characteristics to

UL 723	Flame Spread	10
722S	Smoke Developed	15

FASSON® 0828**Adhesive Properties:****Typical Values**

Thickness	ASTM D3652	US Mils	MM's	Micron's (µm)
Liner		3.5	0.09	89
Adhesive		1.7	0.04	43
Carrier		8.0	0.20	203
Total Caliper without Liner:		9.7	0.25	246
Total Caliper:		13.2	0.34	335

Peel Adhesion

ASTM D3330

180° 12 in (300 mm) min @ Room Temp

Substrate		Lbf / in	N / Meter
SS	INITIAL	6.5	1,145

Static Shear

ASTM D3564

180° 1" sq (6.5 cm2) 2500 g @ Room Temp

Substrate		Min to Fail
SS	INITIAL	> 10000

Tensile

ASTM D882

180° 2 in (50.8 mm) / min @ Break @ Room Temp

Substrate		Lbf / in	N / Meter
Product	MD	40	7,044
Product	CD	25.0	4,403

TLMI Release

Product		Gf / 2 in w
	INITIAL	40.0

VOC

VOC		mg / m ³
Product		< 0.5

TEMPERATURES

	° F	° C
Minimum Application Temperature	0° F	-18° C
Maximum Continuous Operating Temperature	200° F	93° C
Maximum Intermittent Operating Temperature	250° F	120° C

THE LISTED VALUES ARE TYPICAL AND NOT INTENDED TO SERVE AS PRODUCT SPECIFICATIONS

APPLICATION TECHNIQUES

- It is essential, as with all pressure-sensitive tapes, that the surface to which the tape is applied be clean, dry, and free of grease or oil
- Bond strength is dependent upon the amount of adhesive-to-surface contact developed
- Note that different pressure, time and temperature on different (film / rigid) surface achieves different performance

STORAGE / SHELF LIFE

- One year when stored at 64-72°F (18-22°C) / 30-70% relative humidity, out of direct sunlight and in original packaging.

Please refer to Tapes.AveryDennison.com for complete terms and conditions, including warranty terms, relating to this product. You should periodically review the site as terms and conditions are subject to change without notice.

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Performance
Tapes

Asia Pacific
Kunshan, China,
NO. 618 Nanhe Road
Kunshan Economic &
Technological Zone
China, 215335
+86 512 57155001
Fax: +86 512 57155059

Europe
Tieblokkenlaan 1
B-2300 Turnhout
Belgium
+32 (0)14 40 48 11
Fax: +32 (0)14 40 48 55

North America
250 Chester Street
Painesville, Ohio
44077 USA
+1 866-462-8379
Fax: +1 888-358-4469