

## DESCRIPTION

Knauf Insulation Atmosphere Duct Wrap with ECOSE technology is a thermal and acoustical insulation blanket made from highly resilient, inorganic glass mineral wool 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.

## ECOSE® TECHNOLOGY

ECOSE Technology is a revolutionary binder chemistry that enhances the sustainability of our products. The "binder" is the bond that holds our glass mineral wool product together and gives the product its shape and brown color. ECOSE Technology is a plant-based, sustainable chemistry that replaces the phenol/formaldehyde (PF) binder traditionally used in glass mineral wool products. Products using ECOSE Technology are formaldehyde-free and have reduced global warming potential when compared to our products of the past.

## APPLICATION

Knauf Insulation Atmosphere Duct Wrap is used as external insulation on commercial or residential heating or air conditioning ducts. It is suitable for the exterior of rectangular or round sheet metal ducts and spaces or surfaces where temperature and condensation must be controlled.

## PRODUCT FEATURES

- Low "k" factor significantly reduces heat gain or loss when applied with proper compression
- Flexible and lightweight
- Excellent acoustical properties
- Tough and resilient
- Energy conservation, which lowers operating costs
- System efficiency increases; energy usage/costs decrease
- Conforms easily to flat or irregular surfaces
- Rolls allow for faster installation, lower labor costs
- Reduces sound transmission through the duct wall
- Assured condensation control when installed at proper thickness using FSK or PSK facings, proper installation and sealed joints, seams and penetrations.
- Resists damage in shipment and during and after installation
- Low emitting for indoor air quality considerations

## SUSTAINABILITY

Knauf Insulation's products used for thermal insulating purposes recover the energy that it took to make them in just hours or days, depending on the application. Once installed, the product continues to save energy and reduce carbon generation as long as it is in place.

Glass mineral wool insulation with ECOSE Technology contains three key ingredients:

- Recycled glass content, verified every six months by UL Environment
- Sand, one of the world's most abundant resources
- Our green chemistry initiative ECOSE Technology, which is validated to be formaldehyde-free

## SPECIFICATION COMPLIANCE

### In U.S.

- ASTM C1139 - unfaced; Type I, Type II,
  - Grade 1 - 0.75 lb/ft<sup>3</sup>
  - Grade 2 - 1.0 lb/ft<sup>3</sup>
  - Grade 3 - 1.5 lb/ft<sup>3</sup>
- ASTM C553; Type I, II, III
- ASTM C1136; Type II
- ASTM C1290
- NFPA 90A and 90B
- California Title 24 (installed at 25% compression)

### In Canada

- CAN/ULC S102

## INDOOR AIR QUALITY

- UL Environment
  - GREENGUARD Certified
  - GREENGUARD Gold Certified
  - Validated to be formaldehyde-free
  - UL/ULC Classified
- FHC 25/50 (FSK, Unfaced)
- Does not contain polybrominated diphenyl ethers (PBDE) such as: Penta – BDE, Octa – BDE or Deca – BDE
- EUCEB

## 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 Knauf Insulation Atmosphere Duct Wrap over clean, dry sheet metal ducts.
- All sheet metal joints and seams must be sealed to prevent air leakage from the duct.

### Application

- Install Knauf Insulation Atmosphere Duct Wrap 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 minimum 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.
- It is neither necessary nor desirable to adhere duct wrap to duct surfaces with adhesive.

- 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

- UL Environment
  - GREENGUARD
  - GREENGUARD Gold
  - Formaldehyde-free
  - UL/ULC Classified
- Declare Red List Free
- EUCEB
- USGBC LEED

## GLASS MINERAL WOOL AND MOLD

Glass wool 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. Air handling insulation used in the air stream must be discarded if exposed to water.

## NOTES

The chemical and physical properties of Knauf Insulation Atmosphere™ Duct Wrap represent typical average values determined in accordance with accepted test methods. The data is subject to normal manufacturing and testing 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.

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

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/m <sup>3</sup> )	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)
	2½" (64 mm)		75' (22.86 m)		R-8.5 (0.29)	R-7.0 (0.27)
	3" (76 mm)		50' (15.24 m)		R-10.2 (0.29)	R-8.4 (0.27)
1.0 PCF (16 kg/m <sup>3</sup> )	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/m <sup>3</sup> )	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)

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	25/50
	ASTM E84 (PSK facing)	

Stretch-Outs				
Labeled Thickness	Installed Compressed Thickness	Round	Square	Rectangular
1½" (38 mm)	1⅛" (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)
2¾" (56 mm)	1⅝" (42 mm)	P+13" (330 mm)	P+11" (279 mm)	P+8½" (216 mm)
2½" (64 mm)	1⅞" (48 mm)	P+14½" (368 mm)	P+12½" (318 mm)	P+9½" (241 mm)
3" (76 mm)	2¼" (57 mm)	P+17" (432 mm)	P+14½" (368 mm)	P+11½" (292 mm)

P = Perimeter of duct to be installed.

## Insertion Loss | (Reduction of Sound Transmitted Through Duct Wall) (Sound and Vibration Design and Analysis, National Environmental Balancing Bureau, 1994)

Duct Dimensions	Sheet Metal	Nominal Thickness	Nominal Density	Insertion Loss, dB/LF of Duct						
				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

## Condensation Control | Recommended min. install R-Values for condensation control on flat surfaces. Surface emittance: 0.2 (aged aluminum foil or galvanized sheet metal)

RH	Operating Temperature														
	45° F (7° C) Ambient Temperature (° F)					55° F (13° C) Ambient Temperature (° F)					60° F (18° C) Ambient Temperature (° F)				
	70	80	90	100	110	70	80	90	100	110	70	80	90	100	110
60	2.2 <sup>1</sup>	3.3 <sup>1</sup>	4.3 <sup>2</sup>	4.3 <sup>2</sup>	5.4 <sup>3</sup>	1.1 <sup>1</sup>	2.2 <sup>1</sup>	3.3 <sup>1</sup>	3.3 <sup>1</sup>	4.3 <sup>2</sup>	1.1 <sup>1</sup>	1.1 <sup>1</sup>	2.2 <sup>1</sup>	3.3 <sup>1</sup>	4.3 <sup>2</sup>
70	3.3 <sup>1</sup>	5.4 <sup>3</sup>	6.5 <sup>4</sup>	7.6 <sup>5</sup>	—	1.1 <sup>1</sup>	3.3 <sup>1</sup>	4.3 <sup>2</sup>	6.5 <sup>4</sup>	6.5 <sup>4</sup>	1.1 <sup>1</sup>	1.1 <sup>1</sup>	3.3 <sup>1</sup>	5.4 <sup>3</sup>	6.5 <sup>4</sup>
80	7.0 <sup>4</sup>	—	—	—	—	3.3 <sup>1</sup>	6.5 <sup>4</sup>	—	—	—	2.2 <sup>1</sup>	3.3 <sup>1</sup>	6.5 <sup>4</sup>	—	—
90	—	—	—	—	—	—	—	—	—	—	6.5 <sup>4</sup>	—	—	—	—

<sup>1</sup>All Duct Wrap products

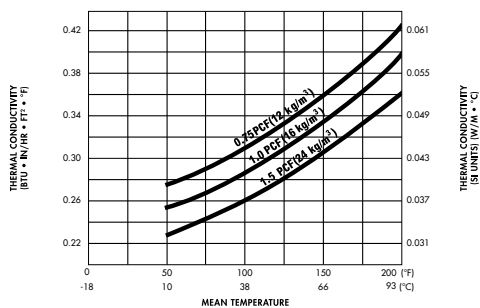
<sup>2</sup>0.75 PCF, 2" and greater; 1.0 PCF, 1½" and greater; 1.5 PCF, 1½" and greater

<sup>3</sup>0.75 PCF, 2" and greater; 1.0 PCF, 2"; 1.5 PCF, 2" +0.75"

<sup>4</sup>0.75 PCF, 3" PCF, 2½" and greater

## Thermal Efficiency | ASTM C177

Mean Temperature	0.75 PCF		1.0 PCF		1.5 PCF	
	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



This product is covered by one or more U.S. and/or other patents. See patent [www.knaufinsulation.us/patents](http://www.knaufinsulation.us/patents).