1-2015

K-FLEX

K-FLEX K-WOOL

FIBERGLASS INSULATION
with ECOSE® Technology

Phenol-formaldehyde free

Fire-resistant facing

Conforms to flat or irregular surfaces

Excellent acoustical properties

ECOSE Technology is a revolutionary binder based on **rapidly renewable bio-based** materials rather than non-renewable petroleum-based chemicals such as phenol, formaldehyde, acrylics, artificial colors or UREA.

K-FLEX K-WOOL FIBERGLASS

www.kflex.com

K-FLEX K-WOOL WITH ECOSE® TECHNOLOGY

K-FLEX K-WOOL PLAIN

K-FLEX K-WOOL FSK

Description
K-FLEX K-WOOL with ECOSE® Technology is a thermal and acoustical insulation blanket made from highly resilient Glasswool bonded by ECOSE Technology. It is available unfaced and with a foil-scrim-kraft (FSK).

ECOSE Technology
ECOSE Technology is a revolutionary binder chemistry that makes K-FLEX products even more sustainable than ever. It features rapidly renewable bio-based materials rather than non-renewable petroleum-based chemicals traditionally used in Glasswool insulation products. ECOSE Technology reduces binder embodied energy and does not contain phenol, formaldehyde, acrylics, artificial colors or UREA.

Application
K-FLEX K-WOOL is used as external insulation on commercial or residential heating or air conditioning or industrial applications. It is suitable for the exterior of rectangular or round sheet metal ducts and spaces or surfaces where temperature and condensation must be controlled.

Features and Benefits
- Low "k" factor significantly reduces heat gain or loss when applied with proper compression
- Flexible
- 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
- Assured condensation control when used with FSK proper installation and sealed joints, seams and penetrations
- Resists damage in shipment and during and after installation
- K-FLEX K-WOOL has achieved a UL Environment claim validation for over 50% post-consumer recycled glass content in our insulation products.

Free of Phenol-formaldehyde
K-FLEX K-WOOL with Ecose Technology is totally free from phenol and formaldehyde

Sustainability
- Carbon-negative, meaning K-FLEX K-WOOL products used for thermal insulating purposes recover the energy that it took to make them in just hours or a few days, depending on the application. Once installed, the product continues to save energy and reduce carbon generation as long as it is in place.
- Glasswool insulation with ECOSE Technology contains three primary ingredients:
  - Sand, one of the world's most abundant and renewable resources
  - A minimum 50% recycled post-consumer glass content and UL Environment verification every 6 months
  - ECOSE Technology which reduces binder embodied energy by up to 70%

Conformity to Standards
K-FLEX K-WOOL complies with following standards.

American Standards:
ASTM C 165, 167, 168, 177, 303, 411, 423, 518, 553,612(Type I, II &III), 665 (clause. 13.8 & 13.9), 795, 1045, 1071 , 1101/ 1101M, 1104/1104M, 1136(Type I & II), 1304, 1335; 1338, ASTM E 84, 96, 136, 795.
UL 723, NFPA 255, NAIMA Standards, ASHRAE 90.1 requirements.

British Standards:
BS476 (part 4, 6 & 7), 822, 823, 824, 825, 1602, 1608, 1604, 1609. 13501, 13162, 13823

Technical Data
Surface Burning Characteristics
Unfaced, FSK wrap have a Flame Spread 25 and Smoke Developed 50 when tested in accordance with ASTM E84,NFPA 255 and UL723.

Temperature Range (ASTM C 411)
- K-FLEX K-WOOL, is designed for applications to a maximum operating temperature of 650°F (343°C)
- K-FLEX K-WOOL with FSK can be used for operating temperature of 250°F (121°C)

Water Vapor Absorption (ASTM E 96, Procedure A)
- K-FLEX K-WOOL FSK facings have maximum water vapor permeance of .02 perms.

Water Vapor Absorption (ASTM C 1104)
- Less than 3% by weight when tested for 96 hours at 120°F (49°C) and 95% relative humidity

Corrosiveness (ASTM C 665 cl.13.8)
- Does not accelerate corrosion on steel, copper or aluminum

Mold Growth (ASTM C 1338)
- No growth

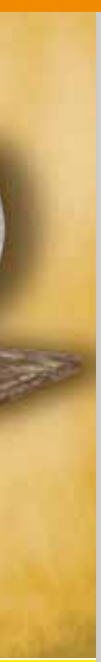
Glasswool and Mold
Glasswool insulation will not sustain mold growth. However, mold can grow on almost any material when it becomes wet and contaminated. Carefully inspect any insulation that has been exposed to water. If it shows any sign of mold, it must be discarded. If the material is wet but shows 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 K-FLEX K-WOOL Insulation 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 K-FLEX sales representative to assure information is current.

with ECOSE® TECHNOLOGY

K-FLEX K-WOOL WITH ECOSE® TECHNOLOGY



Technical Data for K-FLEX K-WOOL PLAIN INSULATIONS

Thermal conductivity values in W/mK for below mean Temperatures in accordance with ASTM C518*

Nominal Density*		0°C	10°C	25°C	50°C	75°C	100°C
Kg/m³	lbs/ft³						
10	0.625	0.038	0.040	0.044	0.055	0.064	0.074
12	0.75	0.036	0.038	0.041	0.048	0.059	0.065
16	1	0.034	0.036	0.039	0.044	0.051	0.057
24	1.5	0.031	0.032	0.035	0.039	0.043	0.047
32	2	0.030	0.031	0.033	0.037	0.040	0.044
36	2.25	0.029	0.030	0.032	0.036	0.039	0.043

* Other densities may be available on request

Thermal conductivity values in Btu.in/ft².h.F for below mean Temperatures in accordance with ASTM C518*

Nominal Density*		32°F	50°F	77°F	122°F	167°F	212°F
Kg/m³	lbs/ft³						
10	0.625	0.26	0.28	0.31	0.38	0.45	0.51
12	0.75	0.25	0.27	0.29	0.34	0.41	0.45
16	1	0.23	0.25	0.27	0.31	0.35	0.40
24	1.5	0.21	0.22	0.24	0.27	0.30	0.33
32	2	0.20	0.22	0.23	0.25	0.27	0.30
36	2.25	0.20	0.21	0.22	0.25	0.27	0.30

* Other densities may be available on request
These are typical values suject to normal manufacturing and testing variances

Thermal Resistance (m².K/W) at 25°C mean Temperature

Thickness mm	Density (kg/m³)						
	10	12	16	24	32	36	48
25	0.57	0.61	0.64	0.71	0.79	0.78	0.81
40	0.91	0.98	1.03	1.14	1.21	1.25	1.29
50	1.14	1.22	1.28	1.43	1.52	1.56	1.61
75	1.71	1.83	1.92	2.14	2.27	2.34	2.42
100	2.27	2.44	2.56	2.86	3.03	3.13	3.23

Thermal Resistance (ft².h.F/Btu) at 77°F mean Temperature

Thickness (inch)	Density (kg/ft³)						
	0,625	0,75	1	1,5	2	2,25	48
1	3.28	3.52	3.70	4.12	4.37	4.51	4.65
1.5	4.92	5.28	5.55	6.18	6.56	6.76	6.98
2	6.56	7.04	7.40	8.24	8.74	9.02	9.31
3	9.83	10.55	11.10	12.36	13.11	13.52	13.52
4	13.11	14.07	14.79	16.48	17.48	18.03	18.03

These are typical values subject to normal manufacturing and testing variances

Standard Dimension*

Thickness (mm)	Width (m)	lenght (m)
25	1.2	10 to 30 according to thickness and density
40		
50		
75		
100		

*Non-standard sizes may be available on request

Sound Absorption Coefficients (ASTM C423- Mounting Type A as per ASTM E795)

Density (kg/m³)	Thickness (mm)	Absorption Coefficient of one-third octave Band center Frequency Hz						
		125	250	500	1,000	2,000	4,000	NRC
12	25	0.10	0.27	0.46	0.61	0.82	0.60	0.55
	50	0.20	0.54	0.71	0.88	0.88	0.80	0.75
	100	0.60	0.95	1.05	1.08	1.08	1.06	1.05
16	25	0.06	0.20	0.39	0.70	0.81	0.64	0.55
	50	0.19	0.51	0.74	0.89	0.88	0.88	0.80
	75	0.30	0.80	0.98	0.95	0.92	0.95	0.90
24	25	0.09	0.30	0.59	0.80	0.90	0.91	0.65
	50	0.25	0.58	0.97	1.00	0.98	1.00	0.90

These are typical values subject to normal manufacturing and testing variances

K-FLEX K-WOOL WITH ECOSE® TECHNOLOGY

Technical Data for K-FLEX K-WOOL FSK FACED INSULATION

Stretch-Outs

Labeled Thickness	Installed Compressed Thickness	Round	Square	Rectangular
11/2" (38 mm)	11/8" (29 mm)	P+91/2" (241 mm)	P+8" (203 mm)	P+7" (178 mm)
2" (51 mm)	1 1/2" (38 mm)	P+12" (305 mm)	P+10" (254 mm)	P+8" (203 mm)
2 3/16" (56 mm)	1 5/8" (42 mm)	P+13" (330 mm)	P+11" (279 mm)	P+8 1/2" (216 mm)
2 1/2" (64 mm)	1 7/8" (48 mm)	P+14 1/2" (368 mm)	P+12 1/2" (318 mm)	P+9 1/2" (241 mm)
3" (76 mm)	2 1/4" (57 mm)	P+17" (432 mm)	P+14 1/2" (368 mm)	P+11 1/2" (292 mm)

P = Perimeter of duct to be installed.

Stretch-Outs

Thickness mm	Width m	Facing	Length m
25 40 50 75	1.2	FSK	10 to 30 according to thickness and density

* Non-standard sizes may be available on request

Thermal Resistance (m^2.K/W) at 25°C mean Temperature

Thickness mm	Density (kg/m^3)				
	12	16	24	32	36
25	0.61	0.64	0.71	0.79	0.78
40	0.98	1.03	1.14	1.21	1.25
50	1.22	1.28	1.43	1.52	1.56
75	1.83	1.92	2.14	2.27	2.34

Thermal Resistance (ft^2.h.F/Btu) at 77°F mean Temperature

Thickness inch	Density (lb/ft^3)				
	0.75	1	1.5	2	2.25
1	3.52	3.70	4.12	4.37	4.51
1.5	5.28	5.55	6.18	6.56	6.76
2	7.04	7.40	8.24	8.74	9.02
3	10.55	11.10	12.36	13.11	13.52

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	50	0.20	0.54	0.71	0.88	0.88	0.80	0.75
16	25	0.06	0.20	0.39	0.70	0.81	0.64	0.55
	50	0.19	0.51	0.74	0.89	0.88	0.88	0.80
	75	0.30	0.80	0.98	0.95	0.92	0.95	0.90
24	25	0.09	0.30	0.59	0.80	0.90	0.91	0.65
	50	0.25	0.58	0.97	1.00	0.98	1.00	0.90

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