

# KIMMCO CLEAN LINER (KCL)



[www.kimmcoinsulation.com](http://www.kimmcoinsulation.com)

# KIMMCO

means insulation!

MANUFACTURED  
UNDER LICENSE TO  
**ISOVER**  
SAINT-GOBAIN

A subsidiary of  
**Alghanim**  
INDUSTRIES



# Company Profile

KIMMCO (Kuwait Insulating Material Manufacturing Co.), a subsidiary of Alghanim Industries was established in Kuwait in 1977. It has become leading insulation solution provider in the Middle East, Africa, the Far East and other Asian countries.

As a licensee of Saint Gobain, Isover, the world leader in fiberglass insulation, KIMMCO provides insulation solutions for HVAC, building (roofs, walls, floors, metallic buildings) and technical/industrial applications. With an annual production capacity of 35,000 MT, KIMMCO is certified to ISO 9001, ISO 14001 and OHSAS 18001, and is compliant with ISO, ASTM, DIN, BS and other international standards.

KIMMCO products are used in private, commercial, government and industrial projects for floors, walls, roofs, air-conditioning and piping as well as process and petrochemical industries. KIMMCO also provides Stonewool insulation products manufactured by its subsidiary Rockwool India Ltd. ALGHANIM INSULATION GROUP announced the opening in 2014 of a 'state of the art' stonewool plant in Yanbu Al-Sinaiyah, Saudi Arabia. A joint venture with Saint Gobain international. The plant will have an annual capacity of 64000 MT.

KIMMCO insulation products contribute to green building and sustainability requirements of projects to achieve points for

LEED and ESTIDAMA Certification. KIMMCO has supplied to the prestigious projects in the region such as Dubai Metro, Burj Khalifa, Princess Nora University, Kuwait Al Hamra tower etc. KIMMCO also boasts as being one of the approved vendors to the prestigious Masdar city, Abu Dhabi.

With a strong commitment to the environment, health and safety of the people and surrounding communities, KIMMCO actively collaborates with international organizations and is compliant with best-in-class international environmental standards.

## KIMMCO's COMMITMENT

KIMMCO's commitment to achieve Green Building & Sustainability goes well beyond certifications, standards and testing. KIMMCO believes it is uniquely positioned, as an insulation manufacturer, to offer products that help protect and preserve the environment.

On-going efforts to provide innovative, eco-friendly and energy-efficient insulation solutions, KIMMCO achieve its goal of becoming the regional leader in developing environmentally-friendly building solutions.

KIMMCO's firm commitment to environmentally- friendly building standards and its low carbon «footprint» were recognized when the company was selected as an insulation supplier and collaborator for Masdar City in Abu Dhabi, the world's first green, zero-carbon city.



# KIMMCO Clean Liner (KCL)

## APPLICATIONS

KIMMCO Clean Liner is used to line air conditioning ducts, walls and/or ceilings of acoustically sensitive areas to provide efficient sound insulation for any variety of structure, and/or sensitive facilities as home theaters or studios, curtain walls.



## DESCRIPTION

KIMMCO Clean Liner is a highly efficient acoustic material, produced from strong resilient glass fibers firmly bounded together with a thermosetting resin.

### Standard Dimensions

Thickness (mm)	Width (m)	Length (m)	
		Roll	Board
15	1.2	20	1
25	1.2	20	1
40	1.2	20	1
50	1.2	20	1

Other dimensions available.

## Nominal Density

KCL	kg/m <sup>3</sup>	Lbs/ft <sup>3</sup>
24	24	1.5
32	32	2.0
48	48	3.0
60	60	3.75
72	72	4.5

Other densities available

## Facings

KIMMCO Clean Liner is faced with a black, strong, durable, dimensionally stable woven glass fabric.

## FIBER MIGRATION

KIMMCO Clean Liner achieves zero fiber migration.



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## Thermal Performance

Tested in accordance with ASTM C518.

Mean Temperature	Thermal Conductivity in W/m.K for the following densities in kg/m <sup>3</sup>					Mean Temperature	Thermal Conductivity in BTU.in/ft <sup>2</sup> h.F for the densities in lbs/ft <sup>3</sup>				
°C	KCL 24	KCL 32	KCL 48	KCL 60	KCL 72	°F	KCL 24	KCL 32	KCL 48	KCL 60	KCL 72
0	0.031	0.030	0.029	0.030	0.031	32	0.21	0.20	0.20	0.21	0.21
10	0.032	0.031	0.030	0.031	0.033	50	0.22	0.21	0.21	0.22	0.23
25	0.035	0.033	0.031	0.032	0.035	77	0.24	0.23	0.22	0.23	0.24
50	0.039	0.037	0.035	0.036	0.037	122	0.27	0.25	0.24	0.25	0.26
75	0.043	0.040	0.037	0.038	0.040	167	0.30	0.27	0.26	0.26	0.28
100	0.047	0.044	0.041	0.042	0.043	212	0.33	0.30	0.29	0.29	0.30

## Acoustical Performances

KIMMCO Clean Liner is especially designed to provide exceptional sound absorption to acoustically sensitive environments and/or equipments as air-conditioning equipments, auditoriums, theatres, studios, acoustical building assemblies, curtain walls.

Product Type	Thickness (mm)	Absorption Coefficient of one-third octave band center frequencies (Hz)						
		125	250	500	1,000	2,000	4,000	NRC
KCL 24	25	0.25	0.39	0.76	1.00	0.98	0.68	0.80
	50	0.34	0.93	1.09	1.05	1.01	1.01	1.00
KCL 32	25	0.16	0.58	0.99	1.07	0.97	0.80	0.90
	50	0.37	0.92	1.04	1.14	1.03	1.01	1.05
	75	0.57	1.07	1.16	1.07	1.01	0.94	1.10
KCL 48	25	0.08	0.34	0.83	1.04	1.07	0.91	0.80
	50	0.38	0.93	1.16	1.01	0.95	0.89	1.00
	75	0.66	1.05	1.19	1.02	0.95	0.81	1.05
KCL 60	25	0.12	0.39	0.87	1.06	1.08	1.00	0.85
	50	0.25	1.04	1.24	1.05	1.06	1.11	1.10

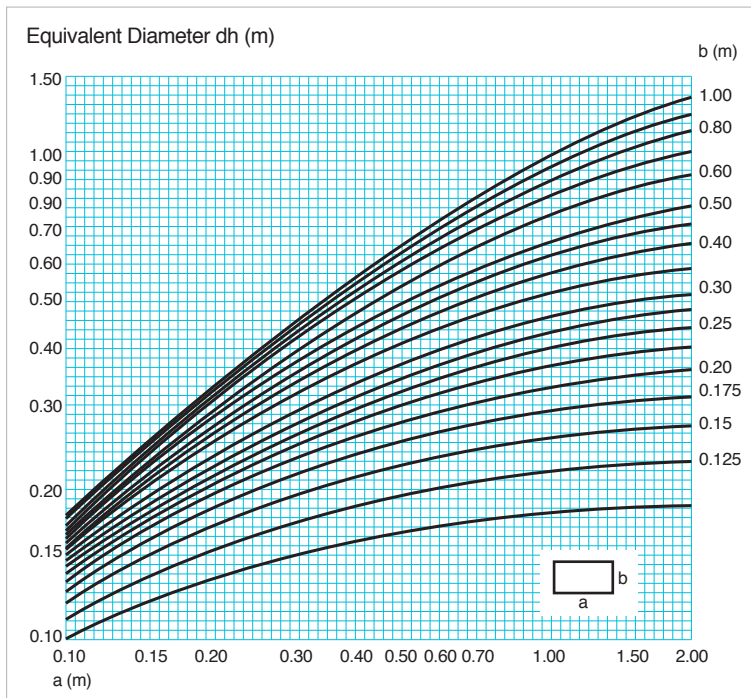
Test in accordance with ASTM C423 using Type A mounting as per ASTM E795. These are typical values subject to normal manufacturing and testing variances.

## Physical Performances

Properties	Performances	Test method
Operating temperature limits	Maximum 230 °C	ASTM C411
Surface burning characteristics (Fire hazard classification )	Flame spread not over 25 Smoke developed not over 50	NFPA 255, UL 723, ASTM E84
Fire classification	Class 1 Class 0	BS 476 parts 7 BS 476 parts 6 and 7
Water vapor absorption	Not greater than 1% by volume	ASTM C1104
Fungi resistance Bacteria resistance	Does not breed or promote growth	ASTM C1071
Air velocity rating Air eroding rating	25.4 m/s (5,000 ft/minute) Nil at 63.5 m/s (12,500 ft/minute)	UL 181

## PRESSURE LOSSES

Equivalent Diameter  $dh = \frac{2(a \times b) \text{ mm}}{a + b}$



## CONFORMITY TO STANDARDS

KIMMCO Clean Liner complies with the following standards:

### American Standards

ASTM C167, 168, 411, 423, 518, 665§ 13.8 & 13.9, 1071, 1101/1101M.1335, 1338; E 84, 336, 477, 795, 1376 UL 181, 723

F.H. HH-1-545B

NFPA 255, NFPA 90A & 90B

NAIMA Standards

SMACNA Standards

### British Standards

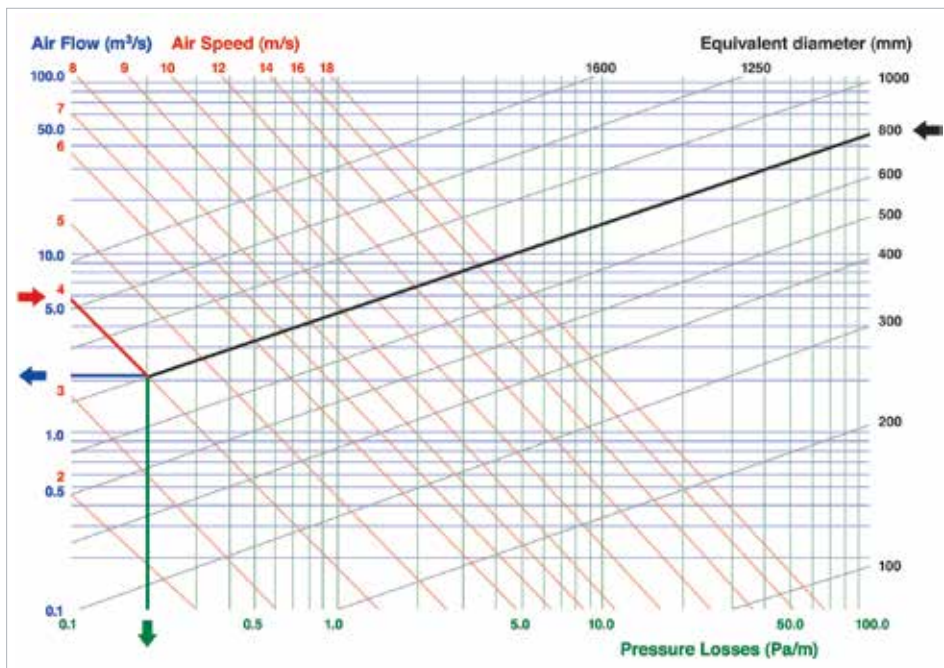
BS 476 (parts 4, 6 & 7), 478, 2972, 3533, 3958 (part 5), 5643, 5720

### German Standards

DIN 18165, 52612

### ISO

354, 8301, 8302, 9229, 9291



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# Conversion Factors

Reference: ASTM E380

Length	1 in	= 25,4 mm				
	1 ft	= 0,3048 m				
Area	1 in²	= 645,16 mm²				
	1 ft²	= 0,0929 m²				
Volume	1 in³	= 16387 mm³				
	1 ft³	= 0,0283 m³				
	1 UK gallon (liquid)	= 4,546 liter				
	1 US gallon (liquid)	= 3,785 liter				
Mass	1 ounce (av)	= 28,3 g				
	1 gr (grain)	= 0,0648 g				
	1 lb	= 0,4536 kg				
Density	1 lb/ft³/pcf	= 16,018 kg/m³				
Force	1 lbf	= 0,4536 kPa				
	1 lbf	= 0,00445 kN				
	1 kPa	= 0,00981 kN				
Temperature	°F = 9/5°C + 32	°C = 5/9 (°F - 32)				
	°F = 9/5 (°K - 273) + 32					
	°C = °K - 273					
Permeability	1 perm (grain/ft²h inHg)	= 0,028 gram mm/m²h mmHg				
	1 perm (grain/ft²h inHg)	= 0,00021 gramNh				
	1 perm in (grain in/ft²h inHg)	= 17 gram mm/m²h mmHg				
	1 perm in (grain in/ft²h inHg)	= 0,0007 gram/m h mmHg				
	1 perm in (grain in/ft²h inHg)	= 0,000005 m/Nh				
	1 gram/m h mmHg	= 0,0075 gram m/Nh				
	1 m²/h mmH₂O	= 0,1 m⁴/Nh				
Energy		Btu	kcal	KJ	kWh	
	1 Btu	1	0,252	1,055	0,000029307	
	1 kcal	3,968	1	4,187	0,001163	
	1 kJ	0,9478	0,2398	1	0,000278	
	1 kWh	3410	860	3600	1	
Heat flow	1 Btu/ft h	= 0,8268 kcal/m				
	1 Btu/ft h	= 0,9615 W/m				
	1 kcal/m h	= 1,163 W/m				
	1 Btu/ft² h	= 2,712 kcal/m² h				
	1 Btu/ft² h	= 3,155 W/m²				
	1 kcal/m h	= 1,163 W/m²				
Thermal Conductivity		Btu/ft.h °F	Btu in/ft².h °F	kcal/m.h.K	W/m.K	
	1 Btu/ft.h °F	1	12	1,4882	1,7307	
	1 Btu in/ft².h °F	0.0833	1	0,124	0,1442	
	1 kcal/m.h.k.	0.672	8,064	1	1,163	
	1 W/m.K	0.578	6,933	0,860	1	
Thermal Conductance		Btu/ft².h °F	kcal/m².h.K	W/m².K		
	1 Btu/ft.h °F	1	4,882	5,678		
	1 kcal/m².h.k.	0,00142	1	1,163		
	1 W/m².K	0,00122	0,860	1		
Pressure		lbf/in²	lbf/ft²	mm of water	kPa = KN/m²	Torr = mm Hg
	1 lbf/in²	1	144	703	6,895	51,71
	1 lbf/ft² (psf)	0,00694	1	4,882	0,04788	0,36
	1 mm of water	0,00142	0,2048	1	0,00981	0,0736
	1 kPa = 1 kN/m²	0,145	20,885	102	1	7,50
	1 Torr = 1 mm Hg	0,0193	2,78	13,59	0,133	1



# Commitment to Quality

## Properties of KIMMCO Glasswool Products

- Excellent thermal performance
- Superior acoustic performance
- Excellent fire safety
- Environmentally friendly: made from abundantly available, non-strategic materials like sand and up to 80% recycled glass.
- Suitable for a wide variety of applications (flexible, semi-rigid, rigid and extra-rigid)
- Address a variety of performance requirements (wide range of facing materials)
- Easy to cut and install, minimum wastage on site
- Comparatively light weight
- Dimensionally stable
- No sagging or settling
- Complies with international standards

## Our Commitment to Quality

Our Glasswool products are manufactured under license of Saint-Gobain ISOVER, a leading insulation provider headquartered in France.

Further, we have a strong commitment to quality, as recognized by our certification by international bodies such as ISO.

## Our Commitment to the Environment

KIMMCO was selected as the sole insulation supplier and official collaborator with MASDAR city, the world's first zero-carbon, zero-waste city, in Abu Dhabi. We have a strong commitment to the environment, health and safety of our people, and surrounding communities, and actively collaborate with local and international environmental agencies.

Further, KIMMCO Glasswool products help developers achieve green building rating certifications such as LEED, Estidama and QSAS.

Further, we are members of the following industry associations:

- Emirates Green Building Council (EGBC)
- Qatar Green Building Council (QGBC)
- MASDAR (The Future Build)
- Middle East Mineral Wool Insulation Manufacturers Association (MEMIMA)

## Our Product Listing & Certification

- CE
- UL
- BV
- ABS
- DCL (Dubai Central Laboratory)



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The KIMMCO logo consists of the word "KIMMCO" in a bold, black, sans-serif font. It is centered between two horizontal yellow bars of equal length.

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