



Domestic sales office (Yongin)

42, Oegaeil-ro 135beon-gil,
Mohyeon-eup, Cheoin-gu, Yongin-si,
Gyeonggi-do, Republic of Korea
T. +82-31-339-5380
F. +82-31-339-4596

Overseas sales office (Seoul)

#1134, C dong, Queensparknine,
247, Gonghang-daero, Gangseo-gu,
Seoul, Republic of Korea
T. +82-2-6421-9941~4
F. +82-2-6421-9940

KyungHyang Cell Headquarters

56, Eco-gil, Damyang-eup,
Damyang-gun, Jeollanam-do,
Republic of Korea

Major Product
Rubber foam insulation
T. +82-61-382-2500
F. +82-61-383-0007

KyungHyang Industry Headquarters

63, Geumseonggongdan-gil,
Geumseong-myeon, Damyang-gun,
Jeollanam-do, Republic of Korea

Major Product
Cross-linked PE insulation
T. +82-61-383-1855
F. +82-61-383-1868

Domestic sales office (Gwangju)

14F, 103, Sangmusimin-ro, Seo-gu,
Gwangju, Republic of Korea
T. +82-62-716-1855
F. +82-62-716-1868

KyungHyang

Eco Insulation Global Company



KYUNG HYANG

ECO INSULATION GLOBAL COMPANY

Since its establishment in 1994, KyungHyang has grown into a leader in the Korean thermal insulation industry, the only manufacturer of both Cross-linked polyethylene thermal insulation and Rubber foam insulation materials in Korea under the banner of challenge and innovation. The manufacture of safer and more eco-friendly products is the most important value that KyungHyang pursues, and we will continue to do our best to become a top company in the world through continuous research and development.



Company Major History

1994

Establishment of KyungHyang Industry



2004

Opening of second plant



2009

Opening of Domestic sales office (Yongin)



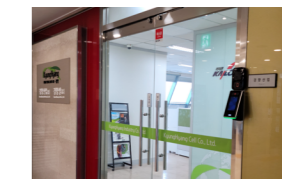
2012

Establishment of KyungHyang Cell



2020

- Opening of Domestic sales office (Gwangju)
- Designation of World-class Product of Korea by Korean Government
- Obtain UL GREENGUARD GOLD & ECV 2282·2283 Certificates



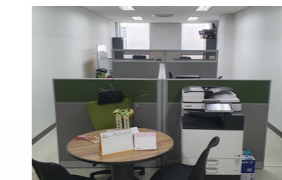
2019

Gold Prize at the National Quality Management Conference



2018

Opening of Overseas sales office (Seoul)

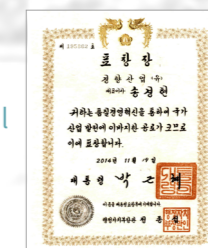


2016

Obtain UL Certification/FM Approvals

2014

Receive a Presidential Citation



Characteristics of KAILON



1 | Excellent insulation and non-moisture absorbability

KAILON, which is a polyethylene foam with a separate air bubble structure, has excellent thermal conductivity and is a non-absorbent material, so its insulation performance does not decrease even after a long time.

■ Comparison of Various Insulation Materials

Item	Thermal conductivity [W/(m·K)]	Moisture absorption volume [g/100cm ³]	Water resistance	Proof against climate
KAILON	0.035	0.01	◎	◎
Foaming polystyrene	0.036	1.0	△	△
Hard Urethane	0.037	3.0	X	X
Glass wool	0.035	-	X	○
Felt	0.035	-	X	X

2 | Prevention of freezing and condensation

KAILON with independent air bubbles is semi-material and has excellent adhesion and insulation effect, which is excellent for prevention of freezing and condensation.

3 | Flame retardant performance

KAILON is a product that meets HF-1 rating in accordance with KS M ISO 9772, which is Korea's flame retardant certification, and is excellent for fire safety.

4 | Semi-permanency use

KAILON is semi-permanent because it has excellent chemical/heat/freezing resistance.

■ Test results for outdoor exposure of various thermal insulation materials for one year

Item	KAILON	Foaming polystyrene	Hard Urethane
Discoloration	No discoloration	No discoloration	Turning dark brown
Shape	No discoloration	Weathering, Scattering	Weathering, Scattering
Surface	No discoloration	Erosion, Unevenness	Hardening, Erosion
Contraction	Almost no contraction	Indeterminate due to scattering	Contraction a lot
Tensile Strength rate	90 %	50%	49%
Elongation rate	90 %	0%	64%

■ Results of KAILON's chemical resistance test

Testing method	Ingredient of chemicals	Test result
KS M ISO 175 [Korean Standard Test Method] 24hr 20°C Soakage	Hydrochloric acid 10%	Clear
	Hydrogen peroxide 3%	Clear
	Nitric acid 10%	Clear
	Hydrofluoric acid 1%	Clear
	Sulfuric acid 5%	Clear

5 | Handling and construction convenience

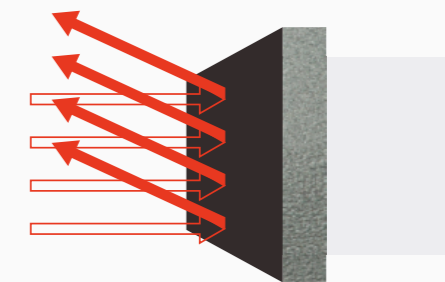
KAILON has obtained Korea's highest grade of Healthy Building Material and Eco-Label certification, which is harmless to the human body, is easy to handle, transport, load, etc. due to non-moisture absorption materials, and is easy to construct with standardized products.

Characteristics of KAIFLEX



1 | Heat insulation property

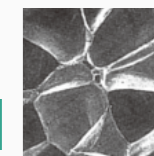
Heat insulation property of foamed product is closely related to its density and cell structure. (Refer to below picture) KyungHyang Cell is continuously managing density and cell structure so as to maintain best insulation property through accumulated manufacturing technology, continuous R&D and quality control.



Characteristic of Surface

Optimal rate of Foaming

Cell structure



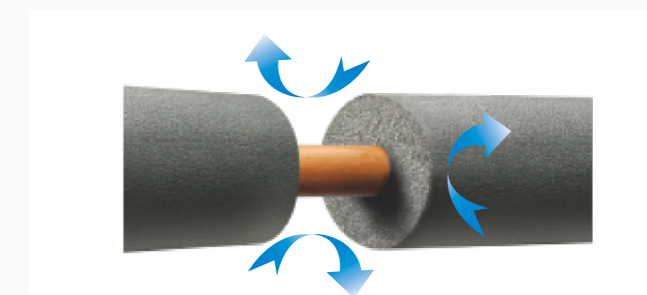
2 | Eco-friendly flame-retarding

Ensuring Eco-friendly flame-retarding is very important to keep the environmental preservation and human beings. KyungHyang Cell manufactures eco-friendly flame retardant products, KAIFLEX, with a Limit Oxygen Index (LOI) of 32% or more according to the international test standard ISO 4589-2.



3 | Anti-Condensation and Water Vapor resistance

Increase of steam, being an important factor for insulating material, causes decrease in insulation property, and insulation property of insulating material decreases as time goes by. KAIFLEX, having a cell structure of independent foam, has a strong resistance to steam permeation, and it lasts long along with lifespan of building thanks to low moisture permeance. (KS M 6962)



Performance of KAILON



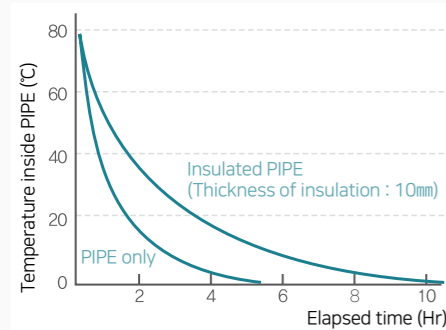
Performance of KAIFLEX



Function

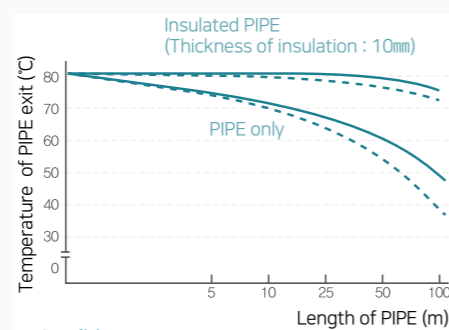
- PIPE : KAILON can be used for all piping insulation except steam lines, easy to construct and neat finishing.
- DUCT : KAILON is flexible and adhering based on insulation and anti-condensation functionality, so it is good for use in square and round ducts.

Decrease in temperature inside PIPE

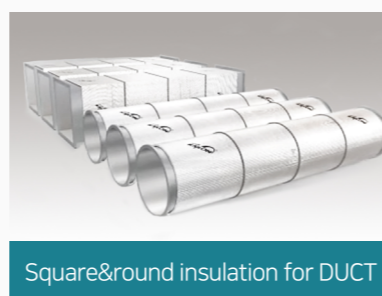


Condition
 1. Used PIPE : Copper PIPE (3/4")
 2. Water flow : Stand still
 3. Initial temperature inside PIPE : 80°C
 4. Ambient temperature : 0°C

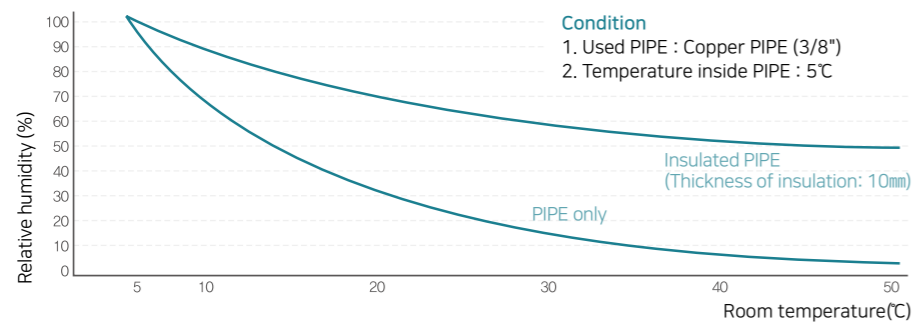
Correlation of the exit temperature of a PIPE according to the length of the PIPE



Condition
 1. Used PIPE : Copper PIPE (3/4")
 2. Start temperature on water injection : 80°C
 3. Flow rate inside PIPE : 500L/Hr
 4. Ambient temperature : ——— 20°C ——— 0°C

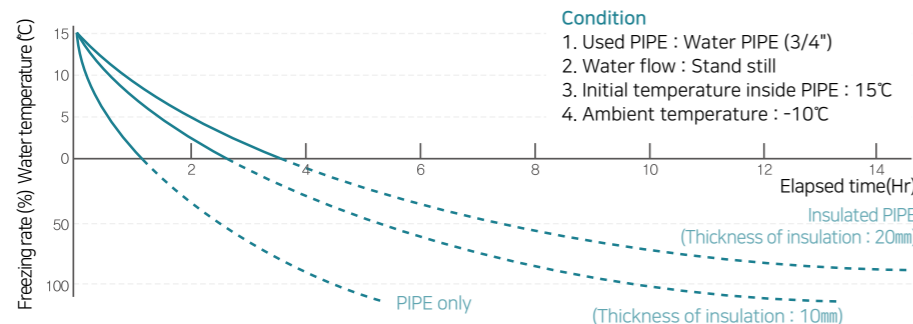


Performance of Prevention of Condensation (Condensation curve)



Condition
 1. Used PIPE : Copper PIPE (3/8")
 2. Temperature inside PIPE : 5°C

Performance of Freeze Prevention



Condition
 1. Used PIPE : Water PIPE (3/4")
 2. Water flow : Stand still
 3. Initial temperature inside PIPE : 15°C
 4. Ambient temperature : -10°C

Korean Industrial standard for Rubber Foam Insulation (KS M 6962)

Classification	Unit	Grade 1	Grade 2	Remark
Apparent density	g/cm ³	0.040 Above		-
Heat Thermal Conductivity [Average temperature 20±5°C]	W/m·K	0.035 Below	0.040 Below	-
Moisture permeance	ng/m ² · s · Pa	6 Below	10 Below	-
Formaldehyde emission	HCHO(mg/L)	0.3 Below		-
Stability of dimension (Rate of length change)	%	Width/Length direction 7 Below		-
Amount of absorption	g/100cm ²	1.0 Below		a
Compression strain	%(Compression 50%, 22h, 23°C)	30 Below		a
Oxygen index(L.O.I)	%	28 Above		a

• a : It may be decided by mutual agreement between the party who delivers and accepts.

CLASS 0 (National Class) - BS 476 (Part 6&7)

Class 0 material is one which :

- has a Class 1 surface spread of flame rating in accordance with BS 476-7 and has a fire propagation index(I) of not more than 12.0 and a sub-index(i₁) of not more than 6.0 in accordance with BS 476-6; or
- is of limited combustibility in accordance with E.2; or
- is non-combustible in accordance with E.1.

BS 476 Part6 Test result

$$\text{Fire Propagation index } I = i_1 + i_2 + i_3$$

Where, i₁, i₂ and i₃ are given by the expressions:

$$i_1 = \frac{1}{3}(S_{1A} + S_{1B} + S_{1C}), i_2 = \frac{1}{3}(S_{2A} + S_{2B} + S_{2C}), i_3 = \frac{1}{3}(S_{3A} + S_{3B} + S_{3C})$$

Specimen No.	Sub-indices			Index of performance	Number of Specimens tested	Sub-index i ₁	Sub-index i ₂	Sub-index i ₃	Fire Propagation index I
	S ₁	S ₂	S ₃	S					
A	5.27	2.00	0.69	7.96	3	4.93	2.12	0.76	7.81
B	4.72	2.22	0.76	7.70					
C	4.81	2.14	0.82	7.77					

BS 476 Part7 Test result

Specimen No.	1	2	3	4	5	6
Distance(mm)	75 / 165 / 190 / 215 / 240 / 265 / 290 / 375 / 455 / 500 / 520 / 600 / 675 / 710 / 750 / 785 / 825					
Maximum distance traveled at 1.5minutes (mm)	<50	<50	<50	<50	<50	<50
Maximum distance traveled during the whole test (mm)	<50	<50	<50	<50	<50	<50
Time to reach maximum distance traveled	1min	1min	1min	1min	1min	1min

Classification : In accordance with the class definitions given in BS 476 Part 7:1997 *Incorporating Corrigendum No. 1:2014*, the tested sample is classified as **Class 1**.

- BS 476 Part6&7 Test result was obtained by requesting SGS.

Packing unit table of KAILON



Packing unit table (PIPE)

The product for PIPE is packed in two types : Aluminum foil and plain pattern, in the form of a tube. (1EA : 2m, T=mm)

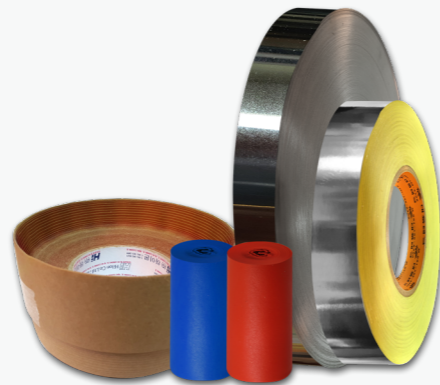
Copper PIPE	Steel PIPE	5T	10T	15T	20T	25T	30T	40T	50T
15A		400	200	100	75	75	50	30	20
20A	15A	300	150	100	75	50	40	30	20
25A	20A	250	150	75	75	50	40	30	20
32A	25A	200	125	75	50	40	35	25	15
40A	32A	125	100	50	50	40	30	20	15
	40A	125	90	50	40	35	30	20	15
50A			70	40	40	35	25	20	15
	50A	75	60	40	35	30	25	20	15
65A			50	35	30	25	20	15	15
	65A	50	45	30	25	25	20	15	10
80A			40	30	25	25	20	15	10
	80A		35	25	20	20	15	10	10
100A			Whole 25 Incision 40	20	15	15	Steel 10 Copper 15	10	8
125A			Whole 25 Incision 40	Whole 15 Incision 20	Whole 15 Incision 20	10	10	8	7
150A			Whole 20 Incision 30	Whole 12 Incision 15	Whole 10 Incision 15	15	10	7	6
200A			Whole 20 Incision 30	Whole 10 Incision 15	Whole 6 Incision 10	10	8	5	4
250A			Whole 15 Incision 20	Whole 10 Incision 15	Whole 8 Incision 10	8	6	6	4
300A			Whole 10 Incision 15	Whole 10 Incision 15	Whole 6 Incision 8	6	4	4	4

- Vinyl packing
- Can be ordered as whole and incision form

Packing unit table (DUCT)

The product for DUCT is packed in two types : Aluminum foil and plain pattern, in the form of a roll-sheet.

- Thickness(mm) : 5 / 10 / 15 / 20 / 25 / 30 / 40 / 50
- Vinyl packing
- Can be ordered as adhesive and non-adhesive products



Packing unit table of KAIFLEX



Specification & Packing unit table (PIPE)

TUBE Internal diameter (mm)	Standard application for PIPE				Insulation Thickness(T) & Packaging Unit(m)					
	Copper PIPE		Steel PIPE		9T	13T	19T	25T	32T	40T
16	5/8	15	3/8	10	220m	120m	80m	52m	36m	26m
23	7/8	20	1/2	15	140m	100m	64m	42m	30m	20m
29	1.1/8	25	3/4	20	120m	80m	52m	36m	28m	20m
35	1.3/8	32	1	25	100m	70m	42m	34m	20m	18m
43	1.5/8	40	1.1/4	32	80m	56m	40m	28m	20m	16m
49	1.7/8		1.1/2	40	70m	50m	34m	24m	18m	16m
54	2.1/8	50			70m	46m	28m	24m	16m	16m
61	2.3/8		2	50	70m	42m	28m	20m	14m	14m
67	2.5/8	65			70m	42m	26m	20m	18m	14m
77	3		2.1/2	65	60m	40m	26m	16m	12m	12m
80	3.1/8	80			60m	40m	24m	16m	16m	12m
89	3.1/2		3	80	Flat sheet 60EA	30m	20m	16m	12m	10m
105	4.1/8	100			Flat sheet 34EA	30m	20m	14m	12m	10m
115	4.1/2		4	100	Flat sheet 34EA	24m	20m	12m	12m	8m

- Box packing, 2m per unit.
- Can be ordered as whole and incision form
- 「Flat sheet」 is 1m in width and length respectively
- Can be ordered as black, red, gray depending on purpose
- Packing quantity may fluctuate depending on the seasonal characteristics of rubber shrinkage and expansion.

Packing unit table (DUCT)

• Vinyl packing

Thickness (mm)	6T	9T	13T	19T	25T	32T	40T	50T	Remark
Packing unit (m/roll)	20	20	20	10	10	-	-	-	Width 1,400mm / 1,000mm
	-	-	-	-	-	8	7	6	Width 1,000mm

Subsidiary materials

(W : Width, L : Length, T : Thickness)

Item	Standard
Insulation for flange	W 200mm X L 20m X T 6mm
	W 200mm X L 20m X T 9mm
Adhesive (KAI-900)	1kg / Can
Flame retardant tape	W 30mm X L 50m
	W 50mm X L 50m
	W 75mm X L 50m



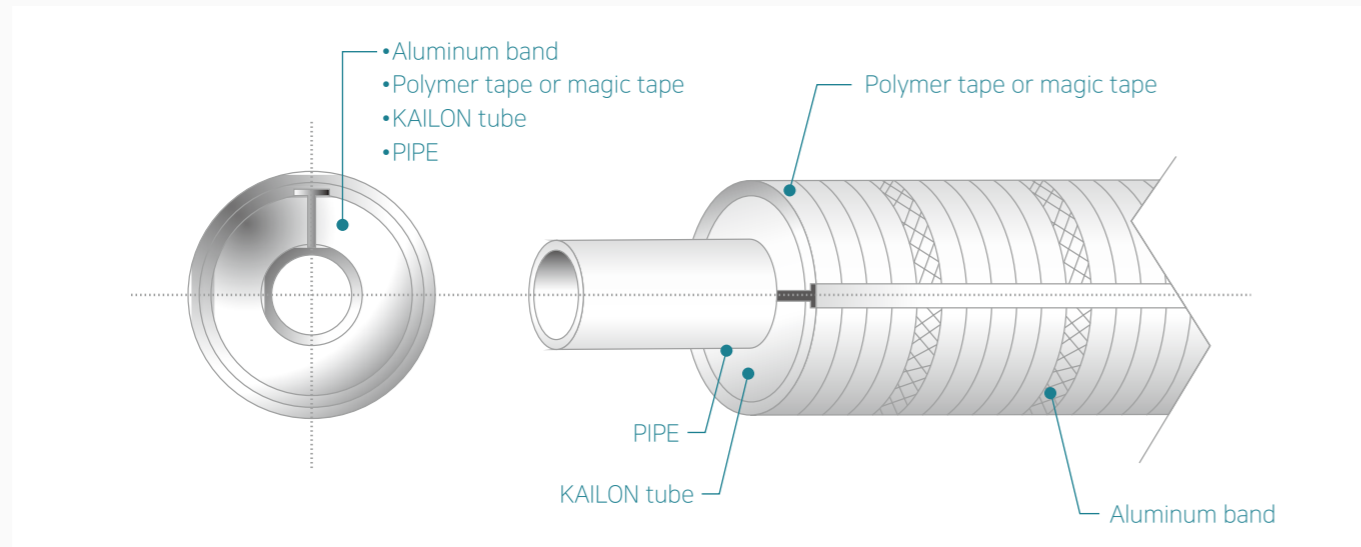
Installation Method of KAILON



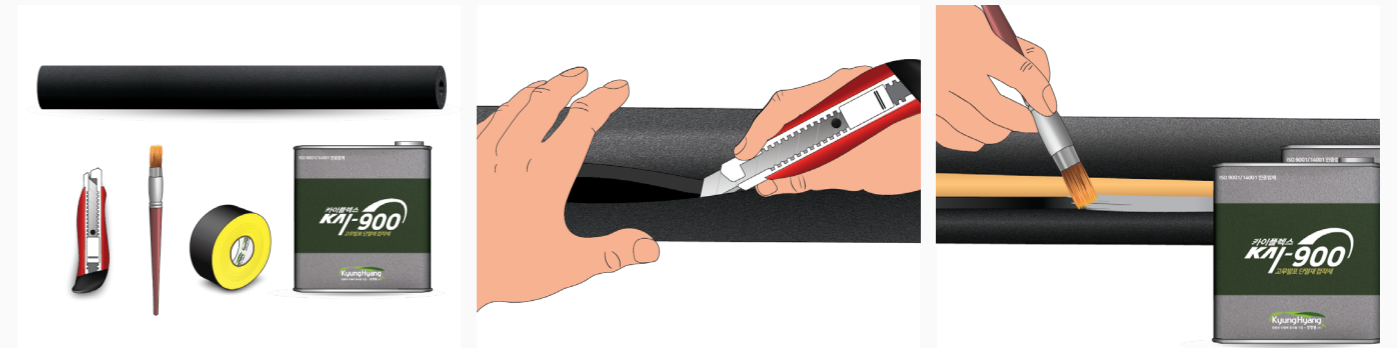
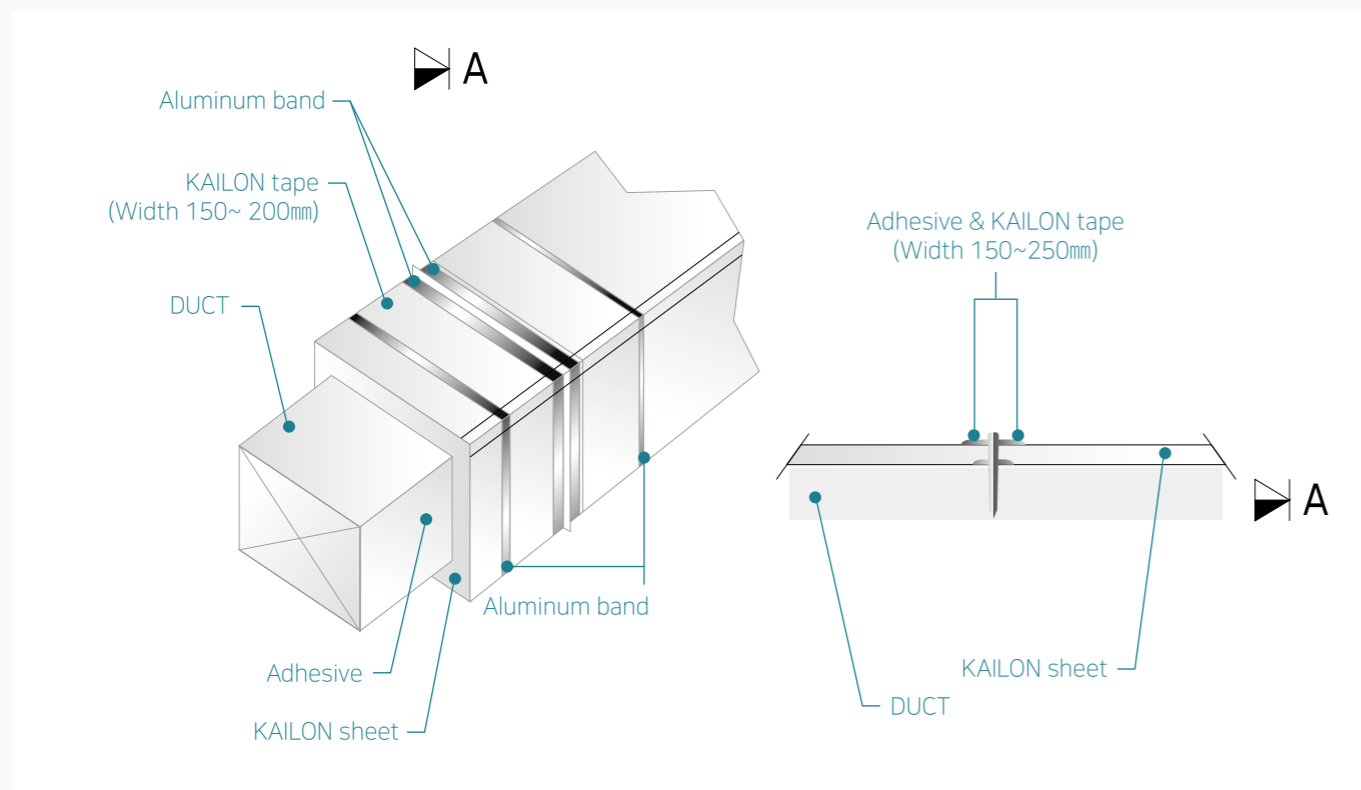
Installation Method of KAIFLEX



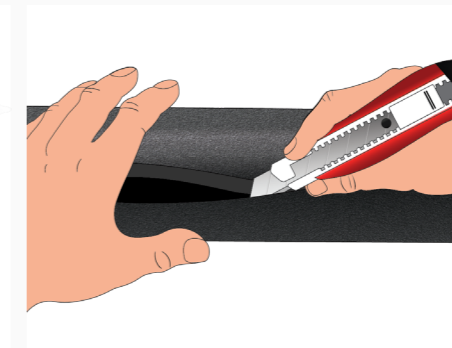
Example of installation of KAILON for PIPE



Example of installation of KAILON for DUCT



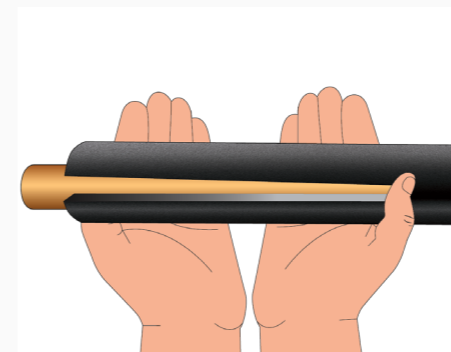
① Prepare tools for installation



② Cut rubber tube along its length



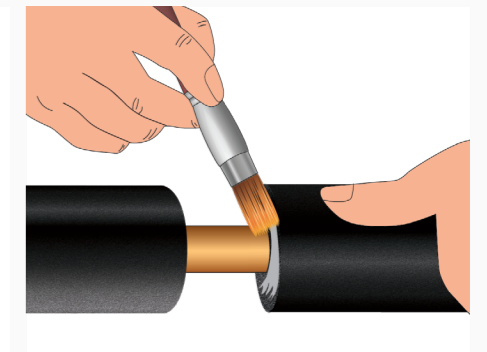
③ Apply even layer of KAI-900 adhesive on both cutting surface using the brush



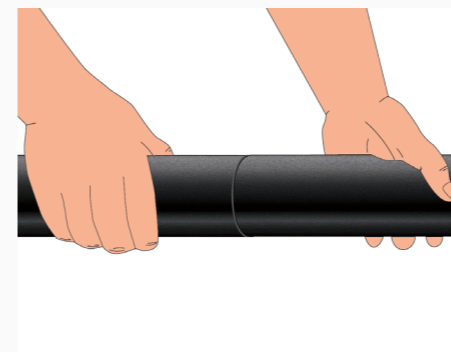
④ Allow adhesive to become tack-dry*



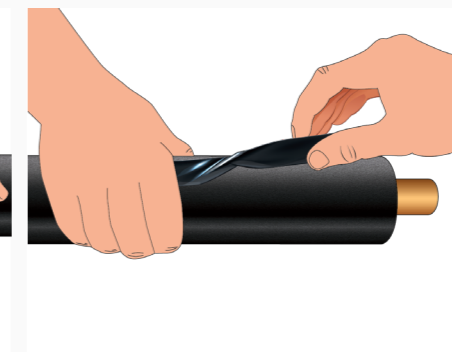
⑤ Reseal the tube around the pipe



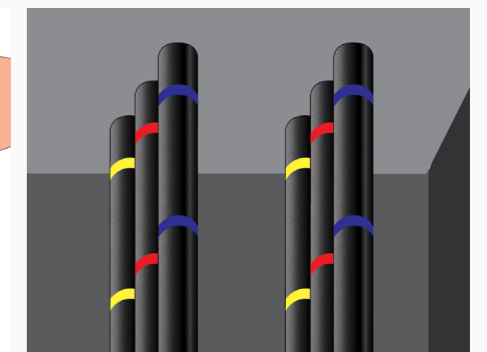
⑥ Apply KAI-900 adhesive on both edges and allow it to become tack-dry*



⑦ Bond the edges together



⑧ Secure seams using fire-retardant tape



⑨ Installation complete

* tack-dry : Adhesive is sufficiently dry that it will not stick to the finger.

INSTALLED SCENE

Application case of KAILON



INSTALLED SCENE

Application case of KAIFLEX



Aluminum foil insulation for PIPE



Mechanical facility PIPE construction



Insulation constructed with magic tape for PIPE



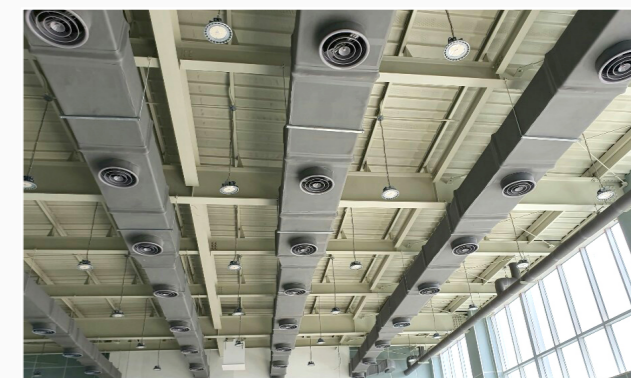
Fire-fighting facility PIPE construction



Aluminum foil insulation for DUCT



Air conditioning & ventilation facility DUCT construction



CERTIFICATE

Certificates of KAILON



CERTIFICATE

Certificates of KAIFLEX



Korean Industrial Standard Certificate



ISO 9001 / 14001



Korean Industrial Standard Certificate



ISO 9001 / 14001



FM APPROVED Certificate



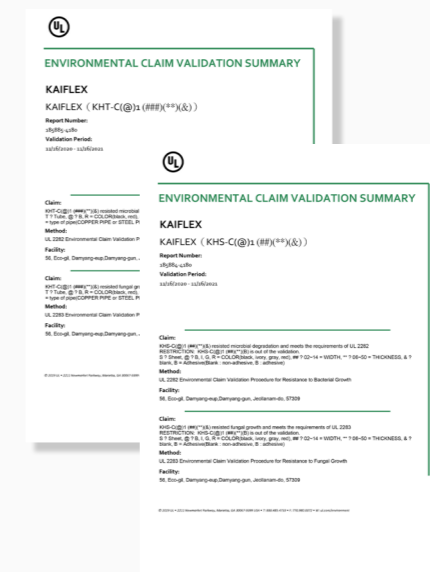
Korean Eco-Label Certificate



Korean Healthy Building Material Certificate



UL Certificate



UL ECV 2282/2283



UL GREENGUARD GOLD

REFERENCE

Buildings constructed with KAILON



REFERENCE

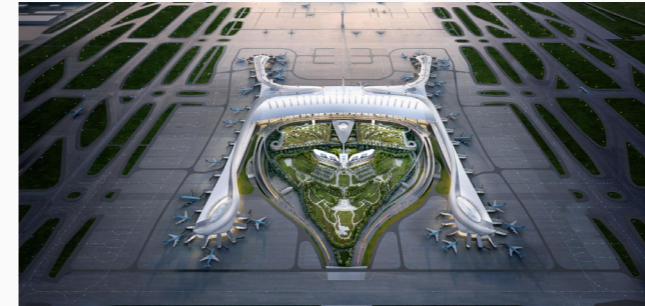
Buildings constructed with KAIFLEX



Starfield Shopping Complex in Hanam, Korea



Starfield Shopping Complex in Anseong, Korea



Incheon International Airport Terminal 2 in Incheon, Korea



Samsung Electronics EUV (extreme ultraviolet) - line in Hwaseong, Korea



Starfield Shopping Complex in Goyang, Korea



Helio-city Apartment Complex in Seoul, Korea



Haeundae LCT The Sharp Landmark in Busan, Korea



Parc1 Tower, Yeouido in Seoul, Korea



Dongdaegu Station Complex transit center in Daegu, Korea



Convention Center in Suwon, Korea



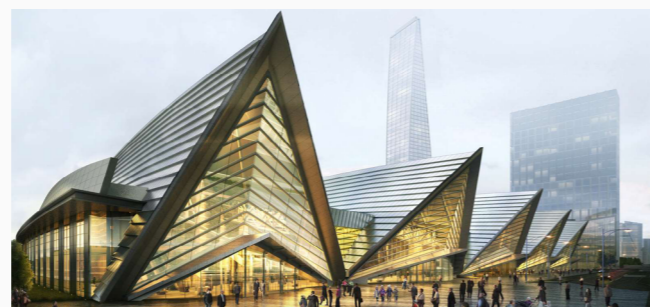
Health Insurance Review and Assessment Service Office Building 2 In Wonju, Korea



Korea Energy Agency New Office Building in Ulsan, Korea



Hoban Construction Company New Office Building in Seoul, Korea



Songdo Convensia in Incheon, Korea



Alphadom City (Advanced Urban Complex Center) in Seongnam, Korea




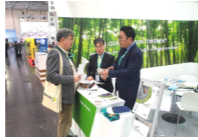

Hyundai Premium Outlet in Namyangju, Korea



- Exhibition
- Trade Delegation
- Consortium
- Distributor





Exhibition

<p>Moscow Russia</p> <p>2019 INTERPLASTICA</p> 	<p>Düsseldorf Germany</p> <p>2019 K-The world's No.1 Trade Fair for Plastics & Rubber K</p> 	<p>New Delhi India</p> <p>2019 INDIA International Trade Fair</p> 
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Consortium

<p>Santiago Chile</p> <p>Government Procurement Export Consortium</p> 	<p>Lima Peru</p> <p>Government Procurement Export Consortium</p> 
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Distributor

<p>Vladivostok Russia</p> <p>EASTEC Co., Ltd.</p> 	<p>Mongolia Ulaanbaatar</p> <p>Amirbayar Co., Ltd.</p> 
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Trade Delegation

<p>Vientiane Laos</p> <p>Korea Jeollanamdo Trade Delegation</p> 	<p>Yangon Myanmar</p> <p>Korea Jeollanamdo Trade Delegation</p> 	<p>Jakarta Indonesia</p> <p>Korea Jeollanamdo Trade Delegation</p> 
<p>Kuala Lumpur Malaysia</p> <p>Korea Jeollanamdo Trade Delegation</p> 	<p>Hanoi Vietnam</p> <p>Korea Jeollanamdo Trade Delegation</p> 	<p>Singapore</p> <p>Korea Jeollanamdo Trade Delegation</p> 
<p>Kolkata India</p> <p>Korea Jeollanamdo Trade Delegation</p> 	<p>Chennai India</p> <p>Korea Jeollanamdo Trade Delegation</p> 	<p>Bangkok Thailand</p> <p>Korea Jeollanamdo Trade Delegation</p> 