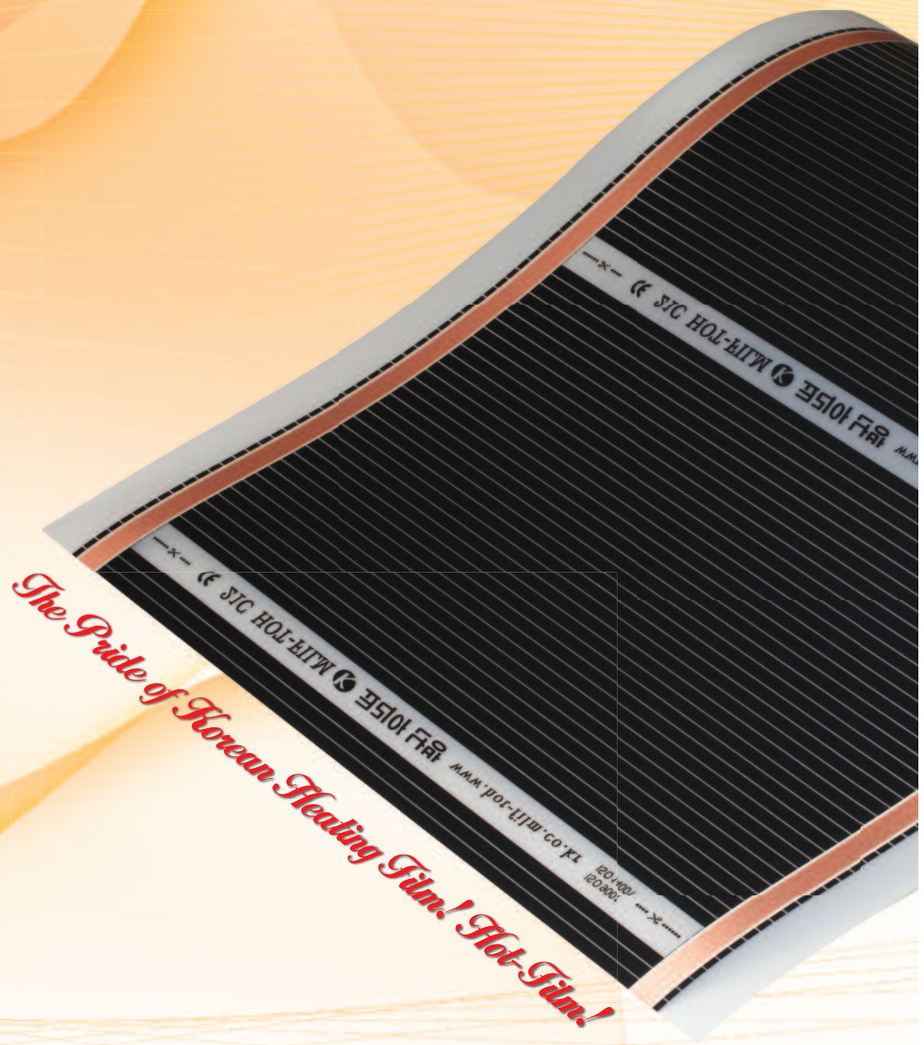
The Best Heating Film in the World!
Hot-Film of Korea Heating Co., Ltd.

The innovation of Construction
Heating in 21th Century



Korea Heating Co., Ltd.

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Korea HEATING

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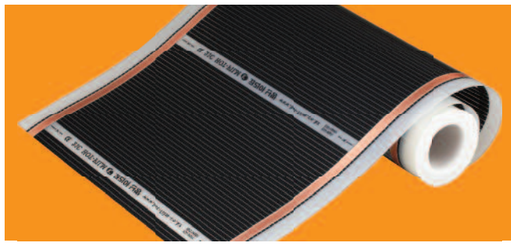


The Pride of Korean Heating Film! Hot-Film!

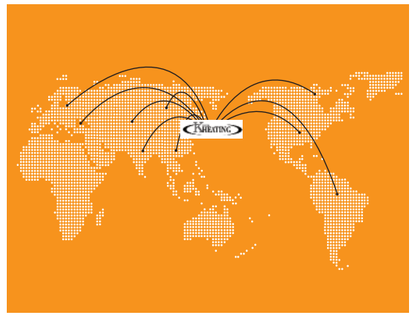
Company Introduction

How are you?
Korea Heating Co., Ltd. is a specialized in far-infrared ray heating film, leading a new innovation in of architectural heating systems.
We have done our best to development and supply of better heating film and been well received by customers.

In addition to our high quality heating film, we have invested heavily in development of other high-tech heating material to tackle world's economic and environmental problems, such as economic instability due to worldwide oil prices and the global warming crisis. Furthermore, it has been our mission from the beginning, to export our heating film to the world to further enhance the recognition of the Korean traditional heating system of `ONDOL.

Korea Heating Co., Ltd. is dedicated to providing world class service and the best quality products for Korea and the world! We would like to do a favor to our customers for unchanged love and interest.

All members of Korea Heating Co., Ltd.



A Messenger to Spread Korean's Own Culture `Ondol` In The World, Korea Heating Co., Ltd.!

With advanced factories that produce world-class quality heating film, we have exported our products to over twenty countries, including U.S.A., Canada, Germany, and U.K. etc.
In so doing, Korea Heating has the spread the benefits of the Korean traditional heating system (ONDOL) to the world markets, letting the world know the unparalleled efficiency and health merits of ONDOL.

Exporting Countries : U.S.A, Canada, U.K., Germany, Russia, Finland, Hungary, Poland, Romania, Ukraine, Turkey, China, Japan, Mongolia, Chile, Peru, Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, and North Korea.

Company History

- 2010. 06 ▸ Purchased land of factory and building for relocation.
- ▸ Built the second factory and the second production line for heating film
- ▸ Applied for a patent on a heater.
- ▸ Applied for a corporate trademark.
- 2010. 03 ▸ Acquired Test result on far-infrared ray
- 2010. 01 ▸ Export to Canada
- 2009. 12 ▸ Acquired certification of 'The Best Promising Export
- ▸ Business' (By the Small and Medium Business Administration)
- ▸ Acquired the certification of 'Venture Enterprise' (By Small Business Corporation)
- ▸ Export to Tajikistan and Israel
- 2009. 09 ▸ Export to Hong Kong
- 2009. 06 ▸ Acquired certification of UL (Underwriters Laboratories Inc.)
- 2009. 05 ▸ Export to Chile
- 2009. 04 ▸ Export to Russia and Uzbekistan
- 2009. 03 ▸ Export to China and Japan
- 2009. 02 ▸ Export to U.S.A
- 2009. 01 ▸ Received factory registration
- ▸ Acquired certification of GOST (Russian Electricity Safety Certificate)
- ▸ Export to Kazakhstan
- 2008. 09 ▸ Acquired certification of ISO 14001/9001
- ▸ Acquired CE certification
- ▸ Performed CE electronic wave test
- 2008.08 ▸ Incorporated Korea Heating Co.
- ▸ Installed the 1st product line for heating film
- 2003. ▸ Established Korea Heating specializing in installation of heating film

Certification


UL Certification


CE Certification


GOST Certification


Corporate Business Registration


Factory Resistration


Venture Business Certificate


ISO9001


ISO14001


Far-infrared Radiation Test Report


The Promising Export Business Certificate


Procurements & Supply Contract


Product Liability Insurance

The Pride of Korean Heating Film! Hot-Film!

The Best Heating Film in the World!
Hot-Film of Korea Heating Co., Ltd

The Pride of Korean Heating Film! Hot-Film!

What is HOT-Film?

HOT-Film is a superior and advanced heating material for floors, ceilings and walls. Carbon heating element (Electric conductor) and silver paste are printed on PET film of insulation and flame-retardant material, which is to be combined with Laminex Film after making an electrode of copper foil.
Carbon emits heat, far-infrared ray and anion by using an electric resistance. HOT-Film, based on far-infrared radiant heat, gives a longer heating effect than other heating systems. Far-infrared ray and anion are known to effectively suppress odors and growth of germs and boost the metabolism of the human body, not to mention providing a healthier environment.

Superiority of Hot-Film Heating System

Easy-to-install and economical heating system.

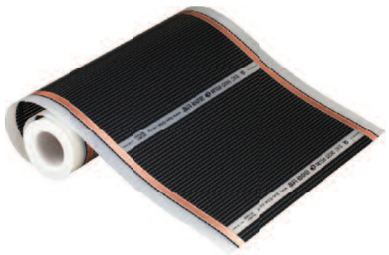
- Capable of reducing installation expenses due to an easy-to-construction/installation process meaning reducing construction times.
- Capable of having a fast heating effect due to a parallel structure of heating element and use of electricity.
- Capable of heating partially and saving unnecessary heating expenses (Possible to adopt a central control system)
- Capable of having a more capacious living space by not needing to have a separate boiler space.

Eco-friendly and Healthy Heating System

- Heating element is made of carbon, such as charcoal (activated carbon), emitting less electronic waves.
- Far-infrared ray and anion suppresses Sick House Syndrome, odor, and growth of germs.
- It does not use flames, so it generates less noise, dust, and carbon monoxide.
- It is perfect for areas with children, senior citizens and patients.

Maintenance Cost-Saving Heating System

- 30% cost efficient than electric heating and over 50% cost efficient than oil boiler heating.
- Simple structure and design meaning fewer product failures and maintenance costs.
- For house remodeling, it is easy to remove and relocate the system.

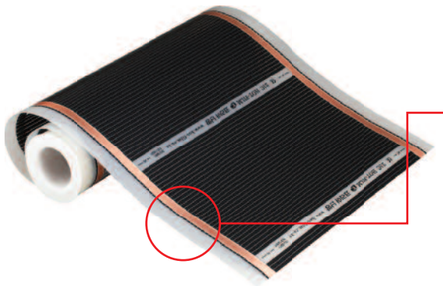


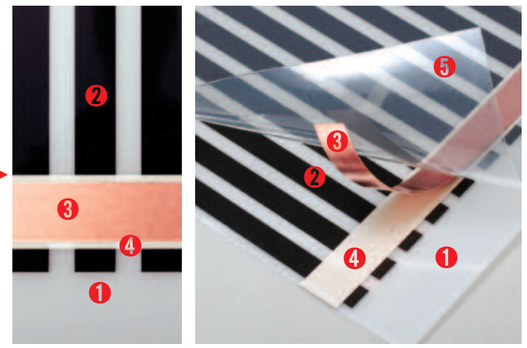
Specification Of Hot-Film

Model No.	Product Width(cm)	Thickness (mm)	Packing (m/roll)	Gross Weight (Kg)	Electricity Cunsumption (watt/m)	(watt/m²)	Using Temperature	Highest Temperature	Remarks
KH 205	50cm	0.275mm	150m/roll	32kg	110w/m	220w/m²	50~60℃	70~80℃	For A General Under-floor Heating (EVA to be used)
KH 206	60cm		100m/roll	26kg	130w/m				
KH 208	80cm		100m/roll	32kg	180w/m				
KH 210	100cm		100m/roll	40kg	220w/m				
KH 305	50cm	0.338mm	150m/roll	39kg	110w/m				
KH 308	80cm		100m/roll	39kg	180w/m				
KH 310	100cm		100m/roll	48kg	220w/m				
KH 205e	50cm	0.275mm	150m/roll	32kg	170w/m	340w/m²	70~80℃	90~100℃	For Saunas (EEA to be used)
KH 305e	50cm	0.338mm	150m/roll	39kg	170w/m				
KH 203	30cm	0.275mm	150m/roll	21kg	66w/m	220w/m²	50~60℃	70~80℃	OEM (Custom-made product)
KH 205T	50cm		150m/roll	32kg	110w/m				
KH 208T	80cm		100m/roll	32kg	180w/m				
KH 210T	100cm		100m/roll	40kg	220w/m				

※ OEM product manufacturing is possible.
It is possible for us to print the Buyers Brand, change the Film Thickness, Width, Shape of Carbon Heating Element, Electricity Consumption, the position of Silver Booth Bar, For special Electric Voltage and For D.C. (Direct Current),etc. Buyers who want to order OEM specification of heating film, Please, consult the changing of product specification with our engineers.

The Structure Of Hot-Film





❶ Base PET Film ❷ Carbon Paste ❸ Copper Foil Booth Bar
❹ Silver Booth Bar ❺ Laminex Film

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First Class Heating Film!
Hot-Film of Korea Heating Co., Ltd.

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Raw Material of Hot-Film

Insulation / Flame-Retardant PET Film

PET is abbreviation for polyethylene terephthalate, part of the thermoplastics. It is light, has no taste or smell and it is widely used in household items, toys, electric insulators, radio and TV case, and packing materials. For Hot-Film, PET meets the VTM-2 standard requirement of insulating/flame-retardant UL. It has a color of milk and is used for electronic/electric materials.

Carbon Paste

Is a fine black powder with carbon being the main element. It has a particle size is 1~500㎖ and is used to make a black paint(pigment) and rubber and printing ink. For printing ink, its particle size is finer than that of rubber. A good carbon paste should be able to disperse easily and be capable of absorbing oil moderately.

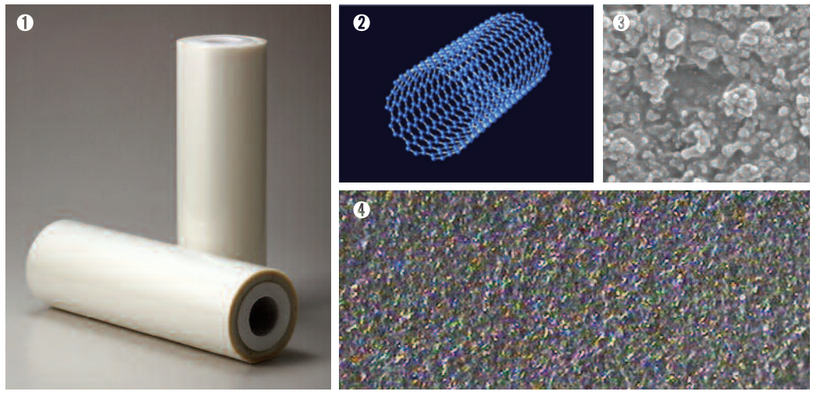
※ For the heating element of carbon (heating section of film), the quantity of heating is controllable by adjusting its resistance value based on the mixture ratio of carbon and graphite.

Silver Paste

Silver booth bar is used for increased conductivity and minimize electric sparks caused by a direct contact between copper foil and carbon heating section. An ideal resistance value should be 1Ω or less.

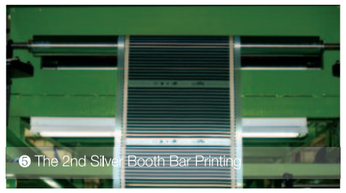
Laminex Film

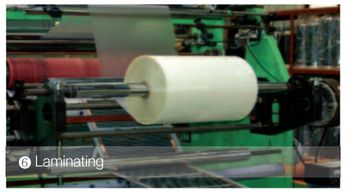
Laminex film which is used in heating film manufacturing has high adhesive strength, high heat-resisting and easily processing property. Especially, its adhesive substance is using EVA(for under-floor) or EEA(for sauna).

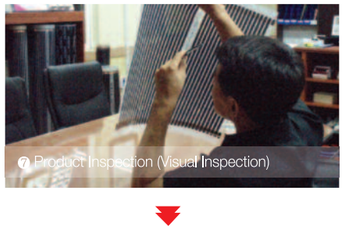


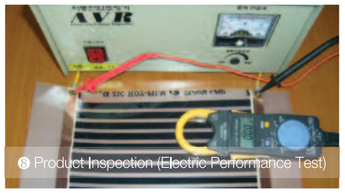
❶ PET & Laminex Film
❷ Carbon Nano Structure
❸ Carbon Paste (Magnifying 5 Million Times)
❹ Silver Paste(Magnifying 100 Times)

Hot-Film Production Process









Hot-Film Technical Features

- Capable of keeping an electric resistance value stable due to printing technology using carbon particle of regularity and high density.
- Technology and development of high-tech printing equipment that enables a uniform printing side.
- Development of special laminating equipment for heating film production.
- Use of the world-class insulting and flame-retardant film. Technology of preventing sparks from carbon printing side due to design of special silver booth bar.
- Technology of preventing sparks from carbon printing side due to design of special silver booth bar.
- Design of preventing the occurrence of sparks by adjusting sectional area of carbon printing side.

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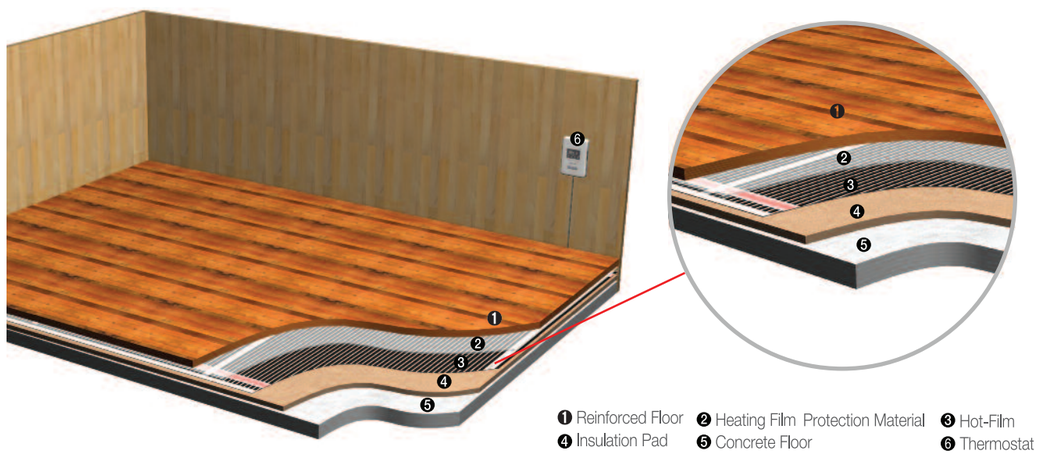
An Incomparable Quality! Hot-Film of Korea Heating Co., Ltd.

The Pride of Korean Heating Film! Hot-Film!

Comparison Of Installation And Maintenance As To Heating Methods

Classification		Oil/Gas boiler	Electric ONDOL Panel	Hot-Film
Installation Method	Installation Method	Capable of wet installation	Capable of dry installation	Capable of dry installation
	Boiler Room	A separate boiler Room needed	Not needed	Not needed
	Heating Pipe	External exposure	None	None
	Installation Period	4~5 days	1~2days	1 day
	Thickness	110~220m	15~20m	1Within 10mm
Heating Method	Fuel to Use	Fossil fuel	Electricity	Electricity
	Heating system	Conduction & Convection	Conduction	Radiant heat
	Generation of Far-Infrared Ray	None	None	More than 90%
	Heating speed	30~60 minutes	15~30 minutes	4~10 minutes
	Noise & dust	Generated	None	None
	Electronic Wave	None	High	Harmless to human body
Maintenance	Frozen to rupture	Frozen to rupture	None	None
	Remodelling	Overhauling and repairing (Concrete dismantling work needed)	Easy	Easy
	Relocation & reinstallation	Thin pipes cannot be used for boiler.	Easy	Easy
	Demerit	High oil expenses	Cannot be used in case of broken wires	Water heater to be needed separately.
	Durability	Within 10 years	2~3 year	Semi-permanent

Cross-Sectional View of Hot-Film Installation



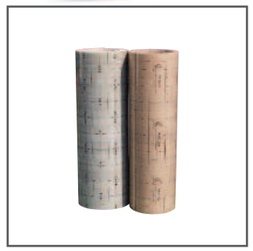
Precautions For Hot-Film Installation

- It is advisable to keep the place of installation clean and its floor flat in order to prevent scratch, bending, or other damages of Hot-Film.
- The place to install Hot-Film needs be free of wetness/moisture, and precautions needed not to have Hot-Film directly exposed to wetness/moisture.
- Insulation coated with conductive material, such as rough insulation or silver foil, not to be used as it may damage the surface of Hot-Film during installation.
- Caution should be taken not to damage the surface of Hot-Film or step on it during installation. In case of surface damaged, it has to be insulated with a thin insulating tape.
- Finishing material not to be used with paint, coloring agent, or hardening adhesive that can cause transformation, discoloration, or cracks while heat transmits to finishing material.
- It is advisable to decide insulating/finishing materials in consultation with installation company or experts in order to maximize the effect of heating to different installation places.
- When cutting Hot-Film and connecting it to thermostat, energy consumption not to be above 75~80% of allowed capacity of the thermostat.
- The cut part of Hot-Film has to be insulated with insulation tape.
- After finishing installation of Hot-Film, make sure to measure an electric current and voltage with a tester and conduct a trial run to check the surface temperature of Hot-Film.
- At the time of installation, make sure to calculate energy consumption and check installation capacity in order to choose wire and electric capacity that are appropriate for installation.

※ Calculation Of Electric Consumption :
Electric Consumption (Watt) = V² /R

※ Max. Length For Hot-Film Installation
50cm : 12~13m 80cm : 7~8m 100cm : 5~6m

Subsidiary Materials For Hot-Film Installation


Insulation Pad

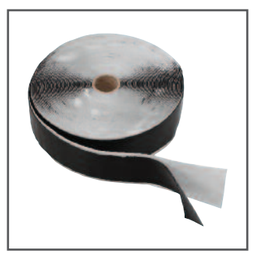

Thermostat


Punching Equipment


Terminal Presser


Electric Wire Connection Terminal


Eyelet Terminal


Special Insulation Tape


Electric Wire

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For your warm home environment! Enriching life quality with Korea Heating

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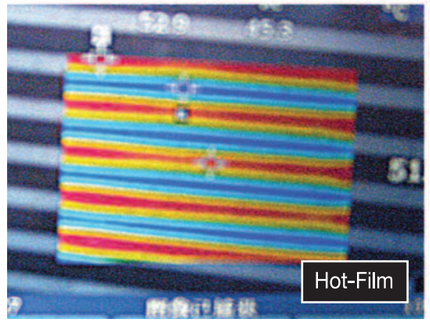
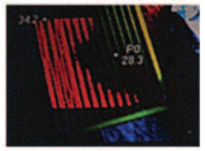
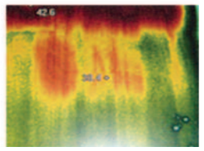
Thermal Imaging Camera Comparison





A Company



B Company

Comparing the result of Hot-Film thermal imaging with that of other products, carbon heating element gives off heat evenly.
(Photographed by Korea Institute of Construction Materials for far-infrared ray generation test)

Check Points Of High Quality Heating Film

Heating Film Component	Comparison Explanation	Check Points
Film (P. E. T. and Laminex)	The extent of shrinkage by heat	Check the width difference between base film and laminex film
	Adhesive Strength between PET and Laminex Film	Check of adhesive strength after separating base film and laminex film
	Insulating/Flame-Retardant film	Check if insulating/flame-retardant PET film is to be used. Transparent film - For general use or display Milky White film - For electric & electronic use. / Contained insulating & flame-retardant chips
	Heat Durability Of Adhesive Substance	Check the durability of adhesive to be used in laminex film EVA - Used a film for general heating / Heat durability of 80° C EEA - Used a film for sauna / Heat durability of 100° C
	Film Surface Condition	Check if there is any scratch of film surface or insulation damage Check if laminating surface is rough or uneven.
Copper Foil Booth Bar	Width	Copper foil booth bar has to be fitted to the width of the product so that electric current can be supplied to silver booth bar and carbon heating element. (If copper foil booth bar is too wide, air layer can be formed and leading electrical sparks)
	Thickness	The thinner copper foil, the better supply of electric current between copper foil and silver booth bar and the risk of electrical spark can be prevented.
	Type of Copper Foil	A rough surface can damage the insulation of film or silver printing side, which can prevent electric conductivity that is transmitted to carbon. Copper foil has to be a pure copper color. If there is a black line formed in copper foil booth bar, it indicates that the copper foil is a inferior product containing iron.
Carbon Heating Part & Sliver Booth Bar	Carbon printing side	The more uniformly carbon printing side are printed, the more safe and evenly it emits heat.
	Silver booth bar width & content	The wider silver booth bar, a better supply of electric current is produced. The higher silver contents, a better electric current is supplied to carbon heating element, and increased heating efficiency.
	Resistance value of silver booth bar	An ideal resistance value is 1Ω or less

※ The service life of heating film is dependent on adhesiveness of the film, the condition of copper booth bar, silver booth bar, and carbon printing, etc.

Electric Consumption Comparison By Heating Methods

Classification	Oil Boiler	Residential Gas (LNG)	Heating Panel	Heating film
Daily Consumption	5,83L	4,3M³	64.0kw	34.8kw
Monthly Consumption	175L	130M³	1,920kw	1,044kw

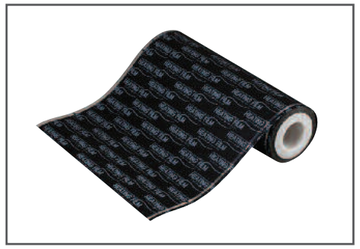
1. Based on 30 days operation in 33㎡ space (8 hours a day)
2. When outside temperature is 0℃, Maintaining indoors temperature at 22℃
3. The above values may vary according to testing environment (e.g. location of installation), installation condition and daily operation, etc.

Other Product Items

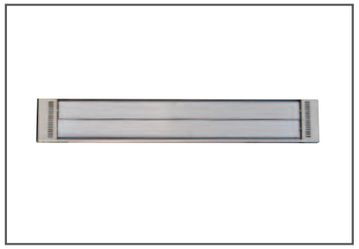
Air Conditioner Purification Filter

Heating Cable

Flat Electric Wire



Overall Covering-Type Heating Film



Ceiling-Type Heater