Radiate heat into space and

Block the sunlight.

Contact us

202505

SPACECOOL

Radiative cooling materials catalog.

Bringing the coolness of tree shade to the world.

With "zero energy" cooling,
delivering safe and comfortable cooling to the World.

SPACECOOL

We strive to improve the heat environment with zero energy.

We can make a change in our environment.

Our radiative cooling technology will help eliminate fundamental causes of global warming.

COMPANY PROFILE

Company Name	SPACECOOL INC.
Date Founded	Apr 1, 2021
Head Office	Floor 4, Toranomon Hills Business Tower 1-17-1 Toranomon, Minato-ku, Tokyo, 105-6404 Japan
laboratory	KRP Building No.6 93, Chudoji Awata-cho, Shimogyo-ku, Kyoto 600-8815, Japan
Activity base	Japan (Tokyo, Osaka, Nagoya)

https://spacecool.jp/en/

VISION

Bringing the coolness of tree shade to the world.

Zero Energy cooling is brought to you, the environment, and everyone worldwide.
It brings truly safe and comfortable coolness.

MISSION

Reversing global warming with a radiative cooling technology.

Our mission is to deliver durable, radiative cooling materials that can be used for various applications.
Our technology will not only provide safty and comfort for us,
but it reduces energy costs and is extremely environmentally friendly.

VALUE

For People

Comfort & Safty

Heat stroke prevention. Keeping perishable food cool.

For Business

Stability & Efficiency

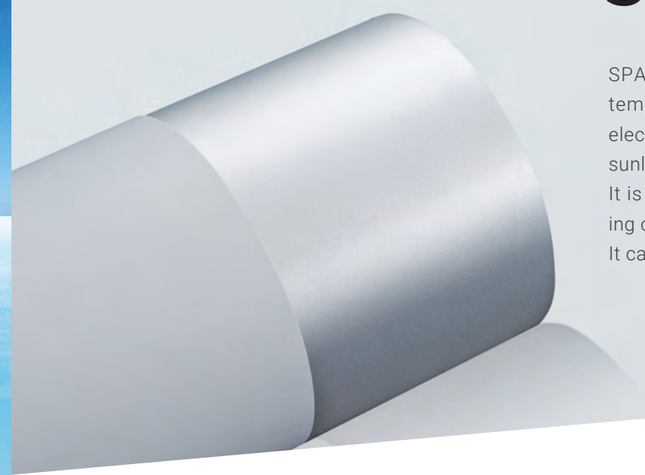
Overheating prevention for outdoor devices and equipment.
Improving space efficiency. Reducing electricity consumption.

For the Environment

No Electricity & No CO2

Cooling without use of electricity.
Reducing planet-warming emissions.

About SPACECOOL



SPACECOOL

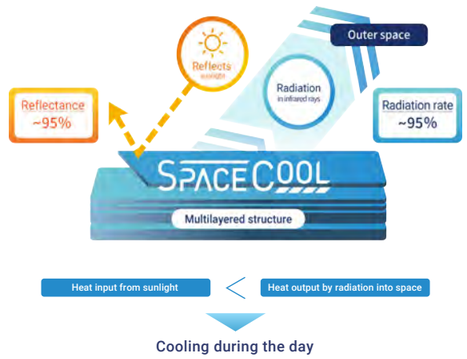
SPACECOOL is a new material. It manages to achieve a lower temperature than the ambient temperature without consuming electricity by limiting heat absorption through blocking heat from sunlight , as well as radiating heat into space.
It is a product which can mitigate global warming while increasing comfort and safety.
It can be used in various applications.

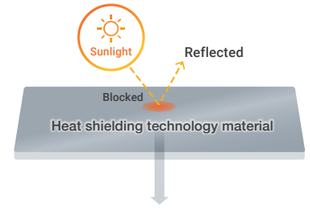
A new material that uses zero energy to lower the temperature compared to the outside temperature without using conventional thermal barriers and insulating materials.

SPACECOOL

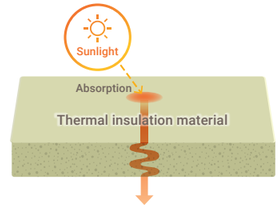
Heat Shielding Technology Materials

Thermal Insulation Materials





A material that reflects heat from sunlight and reduces the amount of heat it absorbs, thereby reducing the amount of heat that makes its way indoors.

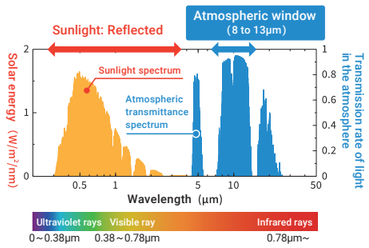


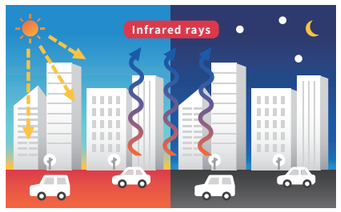
A material that reduces the amount of heat that makes its way indoors by reducing the amount of heat it transfers.

Only heat transferred into indoors environment is reduced ▶ Temperature rises above the outside temperature

About Radiative Cooling

When heat from the ground surface is released into space and cools down, we call it “radiative cooling”.
To generate radiative cooling, it is effective to radiate heat in a certain wavelength region that passes into space, known as the “atmospheric window.”
Clear nights are cool because heat continues to be emitted from the earth into space with no solar radiation.
Conversely, the ground warms up because the heat input from solar radiation is greater than the heat that is emitted from the earth during the day.

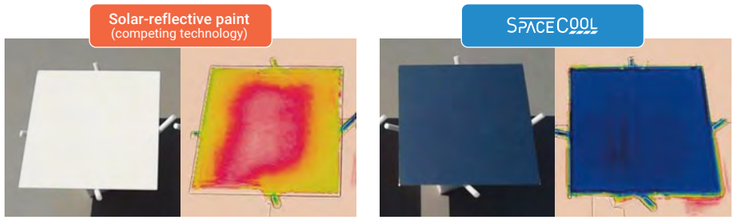


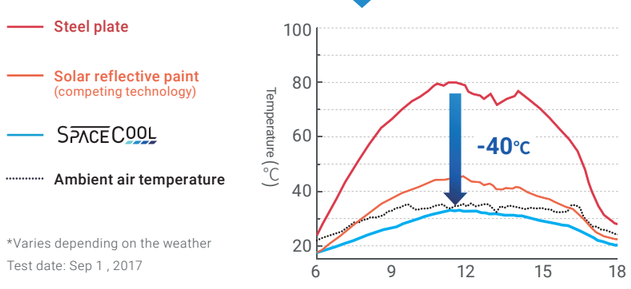


Results of Demonstration Tests

FILM **Solution** | Applying SPACECOOL film to a steel plate.

Surface temperature was approximately -2~6℃ lower than ambient air.





*Varies depending on the weather
Test date: Sep 1 , 2017

Test condition

- Measurement point:
  Reverse side of the plate.*

Effect

Compared to a steel plate under the blazing sun in midsummer,temperature reduction of approximately 40 ° C in comparison with a steel plate under the blazing sun in midsummer.
The world's highest level of cooling performance The world's highest level of cooling performance, making it applicable to a wide range of applications.

FILM **Solution** | Applying SPACECOOL film to a portable house.

By cooling the outer surface of portable container houses with SPACECOOL film, the power consumption for cooling can be lowered by 40% in avarage. (28% at occupiedhouses, 47% at unoccupied houses)

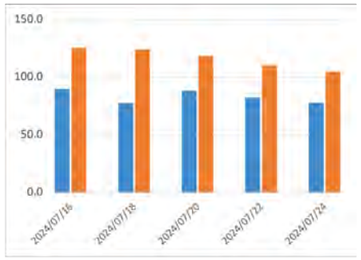
OSP
Red Sea Global
Zamil Trade & Services

Supported by Oil Sustainability Program, Ministry of Energy

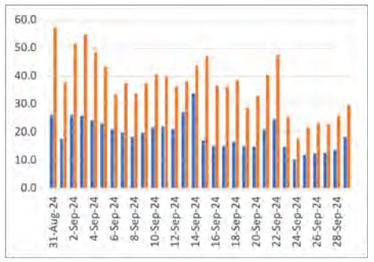
Test condition

- Location: Saudi Arabia
- Size: 12m×3.6m

Occupied



Unoccupied



SPACECOOL Uninstalled

Effect

Occupied Houses
Reduced 28% of power consumption after installation

Unoccupied Houses
Reduced 47% of power consumption after installation

ROI ≒ 3.0 years (Lifetime of SPACECOOL = 15 years)

Product List

FILM Film

Product	SPACECOOL Film _ White (HD)
Serial number	White : SCF - 2BXX - XNW
Non-combustible / Flameproof	Non-combustible
Recommended usages	Outdoor equipment Containers Buildings
Size (width × length)	1250 mm × 25 m
Material properties	Polyvinyl chloride, etc.
Thickness (typical value)	230 μm (Included ahesive)
Weight (typical value)	255 g/㎡ (Not including release paper)
Adhesive	Made of pressure-sensitive re-peelable acrylic
Adhesive strength (stainless steel plates)	More than 18N /25 mm (Measured 24 hours after installation)
Weather resistance (vertical surfaces)	15 years
Certified	MLIT-certified non-combustible material Certification: NM-5897, NM-5898

MAGNET SHEET Magnet Sheet

Product	SPACECOOL Magnet Sheet_White
Serial number	White : SCG-040I-KXW
Non-combustible / Flameproof	—
Recommended usages	Temporary Facilities Outdoor equipment
Size (width × length)	1020 mm × 10 m
Material properties	Base Material: Bond magnet Surface: PVC, etc.
Thickness (typical value)	0.58 ± 0.02 mm
Weight (typical value)	1490 ± 50 g/㎡
Magnetized pitch	2.2 mm
Surface inductive flux	27 mT 270 G
Adsorption power	1.77 kPa 18 gf/㎠
Maximum energy product (BHmax)	4.0 kJ/㎥ 0.5 MG・Oe
Remanence	150 mT 1500 G
Coercivity (bHc)	103 kA/m 1300 Oe
Coercivity (iHc)	219 kA/m 2750 Oe
Weather resistance (vertical surfaces)	15 years

MEMBRANE Architectural membrane materials

Product	SPACECOOL Membrane-300G(Class B)_White
Serial number	White : SCM-300G-XNW
Non-combustible / Flameproof	Non-combustible
Recommended usages	Membrane-installed buildings Warehouses, factories Tent Warehouse
Size (width × length)	104 cm × 50 m (Random length)
Material properties	Base Material: Glass fiber Surface : PVC, etc.
Thickness (typical value)	0.56 ± 0.05 mm
Weight (typical value)	820 ± 50 g/㎡
Tensile strength (vert × lat)	3300 N/3cm × 3000 N/3cm
Elasticity (vert × lat)	5 % × 7 %
Weather resistance (vertical surfaces)	10 years
Certified	• MLIT-certified non-combustible material Certification: NM-5553 • Membrane Structures Association of Japan Class B Membrane Materials Certification: MMEM-0100

*In order to improve product design and specifications,changes will be made without any prior notice. We kindly ask for your understanding.
*The above physical properties are initial measured values, not guaranteed values. High frequency welding must not be used. It may result in electrical accident.

FILM

Film

Flexible optical film may be used
and applied for a variety of purposes.

GOOD DESIGN AWARD 2024
GOLD AWARD

Product	SPACECOOL Film _ White (HD)
Serial number	White : SCF - 2BXX - XNW
Non-combustible / Flameproof	Non-combustible
Size (width × length)	1250 mm × 25 m
Material properties	Polyvinyl chloride, etc.
Thickness (typical value)	230 μm (Included adhesive)
Weight (typical value)	255 g/m² (Not including release paper)
Adhesive	Made of pressure-sensitive re-peelable acrylic
Adhesive strength (stainless steel plates)	About 18N/25 mm (Measured 24 hours after installation)
Weather resistance (vertical surfaces)	15 years

[Test methods]
Thickness: ISO 4593 as standard.
The values for the product attributes are based on the results of tests conducted at a temperature of 20°C and a humidity of 65%.

Examples of Applications

Outdoor equipment

Outdoor equipment, Storage battery, Base station

Expected effects
- Reduce incidence of heat-associated failures and malfunctions.

Containers and storage tanks

Shipping containers, Gas tanks

Expected effects
- Control temperature rise during transportation and storage.
- Eliminate heat-related issues with contents.

Buildings

Large facilities such as factories, warehouses, airports, etc.

Expected effects
- Control the rise of indoor temperature
- Prevent heat stroke

MLIT-certified non-combustible material - Certification: NM-5897, NM-5898

Non-combustibility: This product has passed the performance evaluation for non-combustible materials (metal plates, excluding metal plates, aluminum plates) based on Article, Item 9, of the Building Standards Act (Act No. 201 of 1950). *1

- NM-5897 (synthetic resin film clad/non-combustible material (Aluminum Alloy Sheet))
- NM-5898 (synthetic resin film clad/non-combustible material (metal plates))

*1 To be recognized as a non-combustible product, this film must be installed on construction materials listed in "Stipulations for Non-combustible Materials" in the Ministry of Construction Public Notice No. 1400 issued on May 30th, 2000, or base materials listed in the appendix o tfhe certificate.

It does not constitute a certified non-combustible product when installed on constructoin materials listed in the Ministry of Construction Public Notcies No.1401 (Quasi-non-combustible Materials) and No.1402 (Flame-retardant Materials), other quasi-non-combustible and flame-retardant materials, or base materials whose surfaces have been processed with decorative coatings.

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MAGNET SHEET

Magnet Sheet

It reduces wear on worksites
by easily attaching and detaching.

GOOD DESIGN AWARD 2024
GOLD AWARD

Product	SPACECOOL Magnet Sheet_White
Serial number	White : SCG-040I-KXW
Non-combustible / Flameproof	—
Size (width × length)	1020 mm × 10 m
Material properties	Base Material : Bond magnet Surface : PVC, etc.
Thickness (typical value)	0.58 ± 0.02 mm
Weight (typical value)	1490 ± 50 g/m²
Magnetized pitch	2.2 mm
Surface inductive flux	27 mT 270 G
Adsorption power	1.77 kPa 18 gf/cm²
Maximum energy product (BHmax)	4.0 kJ/m³ 0.5 MG・Oe
Remanence	150 mT 1500 G
Coercivity (bHc)	103 kA/m 1300 Oe
Coercivity (iHc)	219 kA/m 2750 Oe
Weather resistance (vertical surfaces)	15 years

Examples of Applications

Temporary Facilities

Power conditioners, Containers

Expected effects
- Reduces the temperature rise during transportation and storage.
- Solves the head problems of the content.

Outdoor equipment

Outdoor equipment, Storage battery, Base station

Expected effects
- Reduce incidence of heat-associated failures and malfunctions.

*In order to improve product design and specifications,changes will be made without any prior notice. We kindly ask for your understanding.
*The above physical properties are initial measured values, not guaranteed values.

MEMBRANE

Architectural membrane materials

It is possible to apply it to membrane structures as it has obtained both B-type and non-combustible certification.

GOOD DESIGN AWARD 2024
GOLD AWARD

Product	SPACECOOL Membrane -300G(Class B)_White
Serial number	White : SCM-300G-XNW
Non-combustible / Flameproof	Non-combustible
Size (width × length)	104 cm × 50 m (Random length)
Material properties	Base Material : Glass fiber Surface : PVC, etc.
Thickness (typical value)	0.56 ± 0.05 mm
Weight (typical value)	820 ± 50 g/m²
Tensile strength (vert × lat)	3300 N/3cm × 3000 N/3cm
Elasticity (vert × lat)	5 % × 7 %

[Test methods]

Size : JIS L 1096 8.2.1 as standard. Thickness : JIS L 1096 8.4 as standard.
Weight : JIS L 1096 8.3.2 as standard. Tensile strength : JIS L 1096 8.17.3 as standard.

MLIT-certified non-combustible materia - Certification: NM-5553

Membrane Structures Association of Japan Class B Membrane Materials - Certification: MMEM-0100

Non-flammability certification：Conforms to the provisions of Article 2, Item 9 of the Building Standard Law, and Article 108-2, Items 1 through 3 (nonflammable materials) of the enforcement ordinance of the same law.

Examples of Applications

Membrane structures

Membrane structures,
(Warehouses, shopping facilities)
Membrane roofs,etc
(Parks, train stations, sports facilities)

Expected effects

- Prevention of heat stroke.
- UV protection, prevention of burns.

Warehouse / Factory

Simple warehouses,
cargo handling areas

Expected effects

- Prevention of heat stroke.
- Prevention of heat damage to stored goods.

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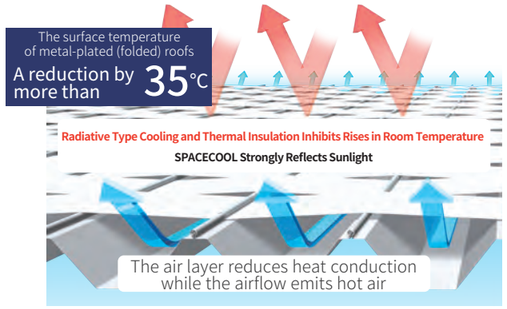
Manufacturer-exclusive Product Utilizing SPACECOOL

Installation Method for Standing Seam Roofs

ROOF SHADE (Nihon Widecloth Co.,Ltd.)

The top surface of the folded-plate roof is covered with a SPACECOOL radiative type cooling sheet to reduce the surface temperature of the roof. Compared to other construction methods, it is low cost, quick to construct, and has excellent durability.

Features



① Improved Thermal Insulation
The "air layer between the roof and the SPACECOOL" improves thermal insulation.

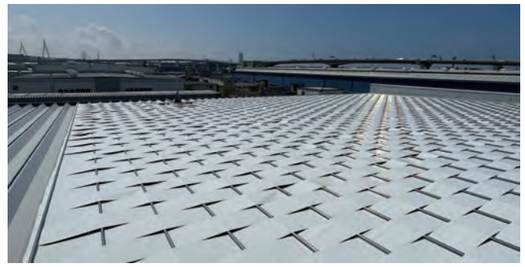
② Few parts are required.
The only parts required are SPACECOOL and securing fixtures.
We simplified our estimates and construction.

③ No electric tool is used.
The construction needs no power because a special caulking machine is used.
There is almost no noise during the construction.

④ It is walkable after the construction.
It has an endurance that can withstand a meter of snow tolerance.
The maintenance after the construction is also easy.

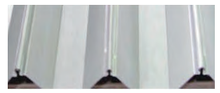
Case Studies

Factories,offices,refrigerated warehouses,recycling facilities,etc.



Attention

The roof shade can only be installed on seam-jointed folded-plate roofs.



Tarpaulin used

Product	SPACECOOL TARPAULIN
Material properties	Base Material :Polyester fiber Surface :PVC, etc.
Thickness (typical value)	0.87 ± 0.05 mm
Weight (typical value)	1020 ± 50 g/㎡
Tensile strength (vert × lat)	2100 N/3cm × 1800 N/3cm

[Test methods]

Thickness : JIS L 1096 as standard.
Weight : JIS L 1096 as standard. Tensile strength : JIS L 1096 as standard.

Contact us

日本ワイドクロス株式会社
Nihon Widecloth Co., Ltd.
Hongo 3-784, Kashiwara Osaka 582-0001, Japan
TEL 072-971-5144 / FAX 072-971-5561

有限会社 石川テント
Ishikawa Tent Co., Ltd.
2935-4 Tsumatori-cho, Shikokuchuo-shi, Ehime 799-0113
TEL 0896-56-5042 / FAX 0896-58- 7991

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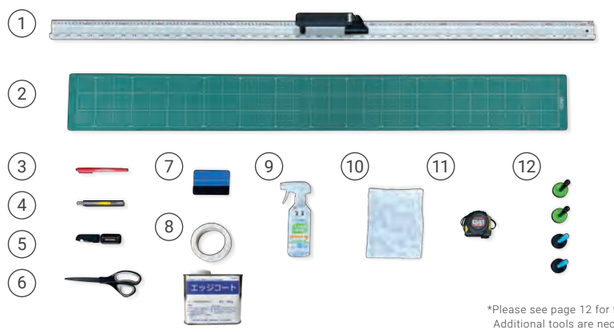
FILM

Installation manual for SPACECOOL Film

Edge treatment is mandatory to ensure the long life of SPACECOOL products.

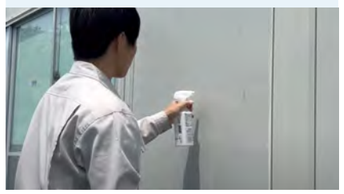
Tools required



1. Ruler
2. Cutter mat
3. Pen
4. Cutter
5. Release paper cutter
6. Scissors
7. Squeegee
8. Scotchcal film or Edgecoat
9. Water (Electrolyzed alkaline water used for cleaning, etc.)
10. Rags
11. Measure
12. Magnet

*Please see page 12 for finishing agents such as edge treatment or stain-resistant coating.
Additional tools are necessary to apply the stain-resistant coating. Please see the application video for more details.

1 Cleaning

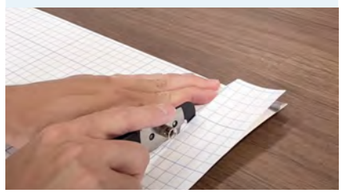


Clean the base material using water or a cloth to remove any stains, dirt, dust, moisture, oil, or detergent.

2 Measurement, cutting

Decide on the size and cut first. Finally, cut about 10 mm above and below (5 mm in the case of edge coating) shorter than the target to be affixed in order to perform edge treatment with Scotchcal film.

3 Prepare to apply the film

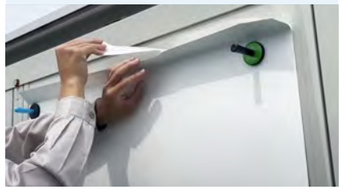


Use a release liner knife to cut the release liner about 50 mm from the edge of the film. Do not peel off the release paper at this time.

4 Set the position for installation

Without peeling off the release paper, place the film so that there is a gap of about 10 mm (5 mm in the case of edge coating) from the object to be applied, vertically and horizontally, and fix it with magnets.

5 Apply the starting edge



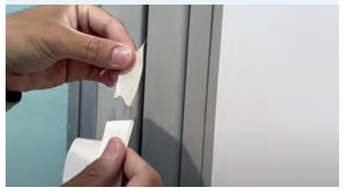
Once the installation position has been determined, peel off the release liner that was cut in step three and firmly apply the film to the surface.

6 Apply the film

Gradually peel away the rest of the release liner from the starting position and use the squeegee to remove any trapped air, starting from the center and moving to the left and right edges.
*When applying the film, be careful not to apply tension to the film.

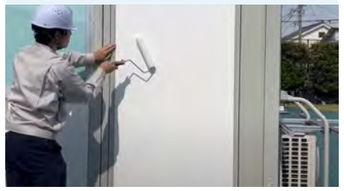
7 Edge treatment

*For longer product life



Lightly press down the Scotchcal film(or edge coat) so that it goes over both the edge of the film and the base material and fix it in place. Finally, use the squeegee to firmly apply it. Other recommended materials are listed on page 12.

8 Stain-resistant coating



In environments where stains are concerned, we recommend applying stain-resistant coating agent. Please see the installation video for more details on how to apply. Our recommended stain-resistant coating is listed on page 12.

Installation Manual for SPACECOOL Film

The QR code is to a video demonstrating how to cut a size slightly larger than the object the film will be applied to, and then cut off any excess film after application.

Cautions for product use

Film

- For installation and maintenance, please refer to our manual Installation and Maintenance Methods for SPACECOOL Film SCF Series.
- In order to protect the film, please treat the film's edges with sealing tape or a coating agent. We recommend the below materials as sealing tape and coating.In order to maintain adhesion, we recommend using primer along with the coating.

Sealing tape	3M Japan Limited Scotchcal film J Series SC900 (Transparent)
Coating agent	SPACECOOL INC. Edgecoat Primer : Auto Chemical Industry Co., Ltd. AUTONPRIMER OP-2020

- When applying the film, please use firm pressure while being careful not to apply tension to the film.
- Since the film does not extend, please note that it will wrinkle when attached to curved surfaces other than flat or cylindrical surfaces (such as spherical or elliptical surfaces).
- Applying to a wet surface can result in the deterioration of the adhesive, poor application, peeling, and bulging.Please thoroughly remove any moisture before applying.When using water-activated tape, please be sure not to leave any moisture between the base material and the film.
- Strong adhesion may not be possible on materials with very uneven surfaces.
  In particular, please tap the edges with a rubber hammer or similar tool to ensure the film is completely attached and the edges will not come loose.
- When using certain base materials, the material' s condition impacts durability, so be sure to exercise caution with how you use the product.

Magnet Sheet

- Please tape the edges, etc., if constructed in very windy areas or if there is a risk of the sheet peeling off.
- Please do not use the product where there is magnetic interference or close to devices that can be damaged.
- When storing cut products and stacking them, please be ensure to put paper between the sheets.
- Please refer to the IATA/packing standard 953 when transporting the product by air.
  Packing needs to be improvised to prevent the leakage of magnetic lines.
- Before the application, please wipe off any moisture or stains well on the surface you want to apply the sheet.
  Also, fully wipe moisture/stains from the magnet sheet surface before usage if any is found.
- Please ensure that the surface (to be applied to) is a flat surface when applying the magnet sheet.
- Gaps can be created between the magnet sheet and the application surface for the following situations: curves (that create gaps), bumpy surfaces, and edge/corner sections popping up. These conditions may result in the peeling off/falling off of the product.
  Please be very careful about how to use this product, where to use it, and the application design.
- Rain, dust, metallic powder, etc. that get in between the magnet sheet and the application surface can alter the surface applied to(such as the paint).
  If this occurs, remove the product once and wipe off any moisture/stain well from the application surface and the magnet sheet surface before reapplication.
  Also, if you notice any abnormality on the application surface, we recommend stopping the usage.
  If you are worried about altering the application surface, we recomend processing the edges.
- The magnet sheet is magnetic. Please do not bring it close to pacemakers, magnetic cards, magnetic tapes, watches, and other forces affected by magnets.
- Please do not bring the magnet sheet close to highly magnetic objects(electromagnets, rare earth magnetic, high-voltage electric cables, etc.).
  The magnetic force may be disturbed, and the magnetic force can be reduced/demagnetized.

Architectural membrane materials

- Do not use high frequency welding. May result in electrocution.
- When working with this product, please be sure to coat the edges and sewn portions.We recommend using the following products for treating the edges and sewn portions.In order to maintain adhesion, please use Edge Coat along with a primer.

Coating agent	SPACECOOL INC. Edgecoat Primer : Auto Chemical Industry Co., Ltd. AUTONPRIMER OP-2020

Disposal

- When working with this product, please be sure to coat the edges and sewn portions.We recommend using the following products for treating the edges and sewn portions. In order to maintain adhesion, please use Edge Coat along with a primer.

Fabric Storage

- Store the product in a dry location away from direct sunlight between 5 to 38°C. It can be stored for up to a year.
- Avoid hot and humid locations for storage, as a high temperature can deform the sheet shape.

Other

- The values used in this document are averages and are not guaranteed values. They cannot be used to create specifications.
- Strongly bending the product may create wrinkles.Please use the product carefully to avoid wrinkles.
- The product surface may contain scratches and holes up to a few millimeters. However, this does not affect the product performance.
- This company bears no responsibility for any loss or damage resulting from the use or misuse of this material or instruction manual.
- When using this product, please use it after fully checking the content of this instruction manual. Please determine the usage location and usage method at your own responsibility. We do not guarantee our product's usefulness under all usage conditions.
  We bear no responsibility for damages caused by using this product unless it is due to the product's defect.