Embossing Polyester Film

GODO POLY INDUSTRY CO.,LTD

https://goudoujushi.co.jp/

Table of Contents

Company name	GODO POLY INDUSTRY CO.,LTD
Address	〒578-0921 4-1-11 Mizuhai, Higasiosaka city, Osaka, Japan
President	Shogo Nagaki
Establishment date	November 27, 1969
Capital	15 million yen
Number of employees	7 (As of September 2024)
E-mail address	info@goudoujushi.co.jp

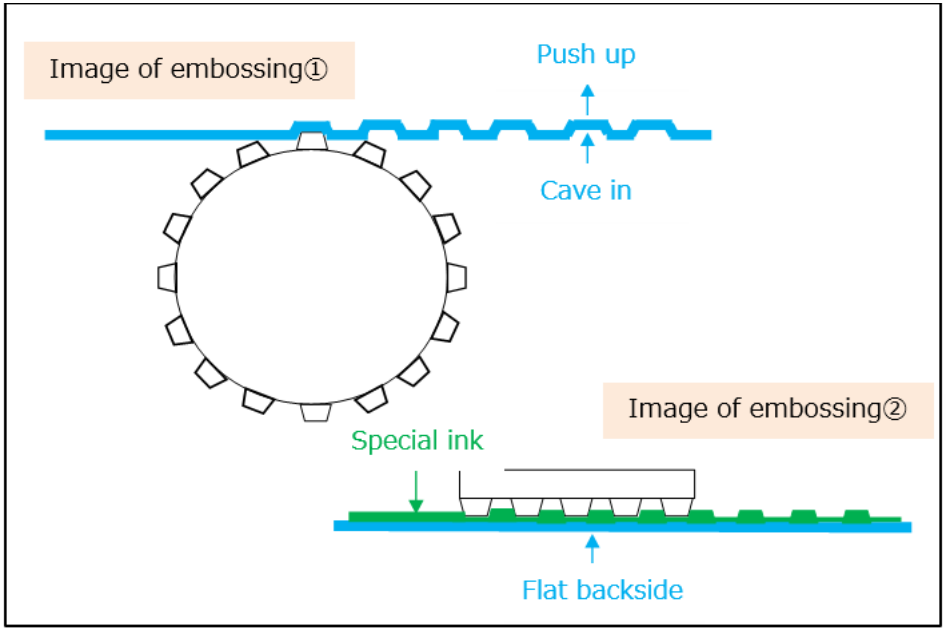
- What is emboss?

Embossing is a processing technique that raises a three-dimensional pattern or design on the surface of a material.

Embossing is used especially on materials such as paper, plastic and metal to create distinctive visual and tactile effects.

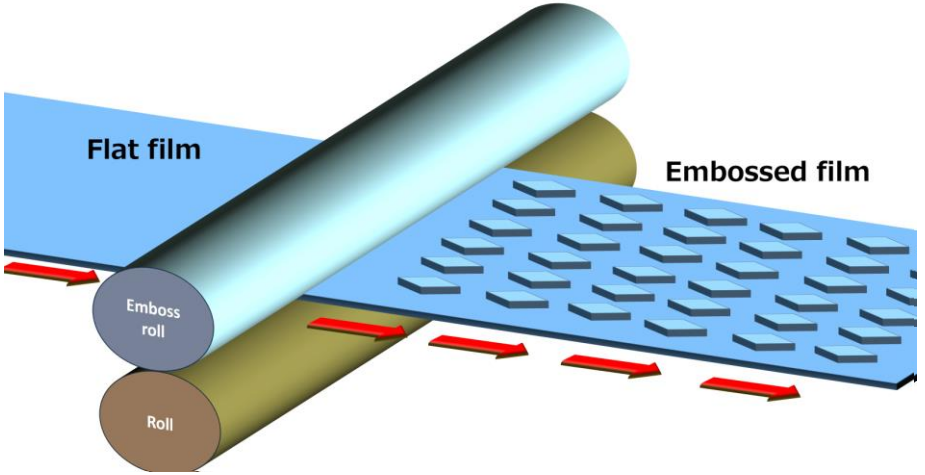
Embossing can be done in two ways: by pushing up the back side to make it float (thus the back side is concave), or by applying special ink to the surface to form a convex area (the back side is not concave).

Embossing the surface of a product with unevenness enables it to have functional aspects such as mold-releasing and cushioning properties that are not possible with flat surfaces, as well as to have a tactile and design quality.



- Roll to roll embossing

Our embossing process enables continuous roll-to-roll forming using an embossing roll. Continuous molding” is a method in which materials are processed continuously to produce a product. This process is especially suitable for mass production, etc.



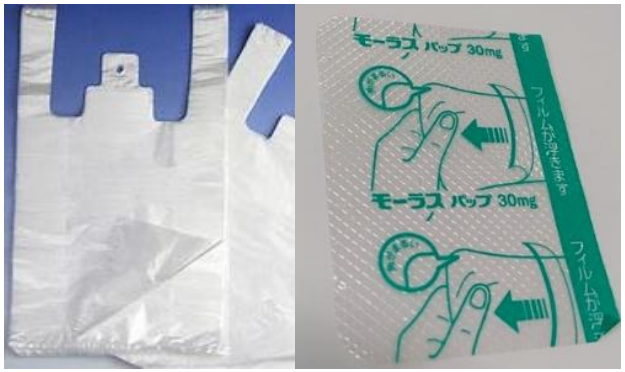
- Embossing roll dies

These rolls (rollers) are used to apply a specific pattern or texture to the surface of a material. We have about 80 types of embossing rolls. A variety of surface embossing patterns can add functionality such as design, over-adhesion prevention, and light diffusion.

*Image on right is a photo of embossed roll.

• Embossing on film

Polyethylene(PE)

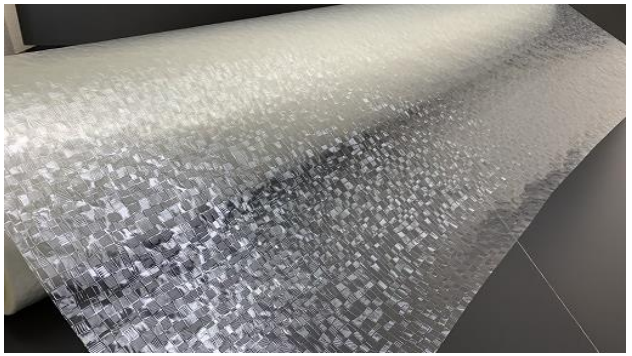


Embossing is used to aid in the opening of plastic and to improve the peel-off force of separators for compresses.

Polypropylene(PP)

PP is a hard material with a higher melting point, heat deformation temperature than PE. It is laminated to paper and used for textbook cover designs.

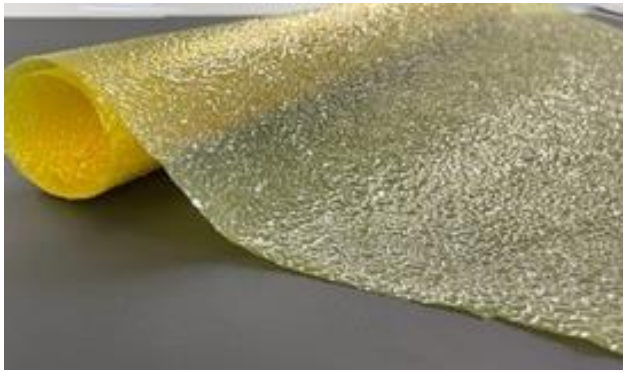
polyester(PET)



PET is used for transfer to resin, decorative applications, and a variety of process paper applications utilizing the characteristics like rigidity, gas barrier properties, and heat resistance of PET.

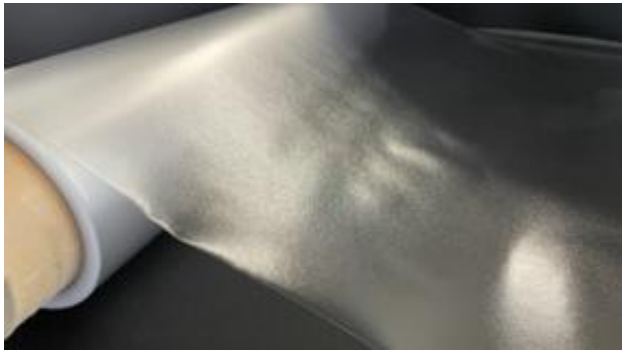
• Embossing on special films

Polyimide(PI)



PI film has excellent heat resistance, chemical resistance, electrical insulation, mechanical strength, and can typically withstand temperatures above 300°F.We can emboss on this film.

Polycarbonate(PC)



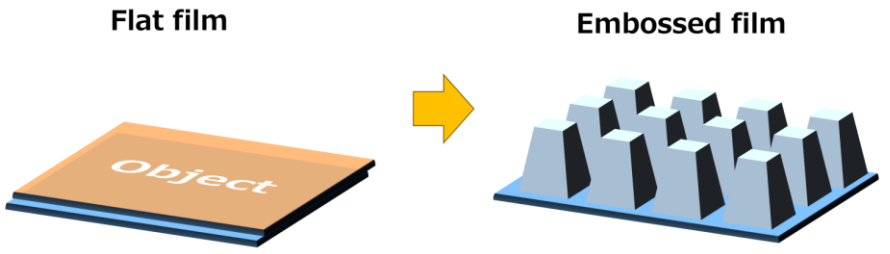
Polycarbonate film is a thin film based on polycarbonate resin. Polycarbonate (PC) is a strong and transparent plastic with excellent weather resistance.

Vapor deposited film

Vapor deposited films are thin films coated by evaporating metal or other materials on their surface. After-embossing can also be performed on the above base materials.

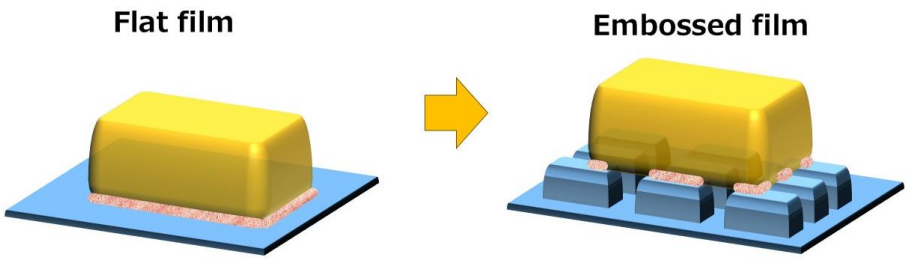
- Embossing has a variety of effects on products. Here are some cases.

Surface area increase



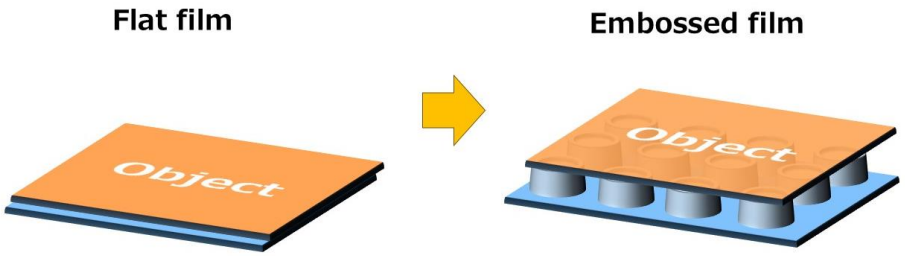
Embossing improves the surface area due toa the unevenness of the film surface. The greater the depth of the pattern, the greater the surface area.

Improvement of mold release



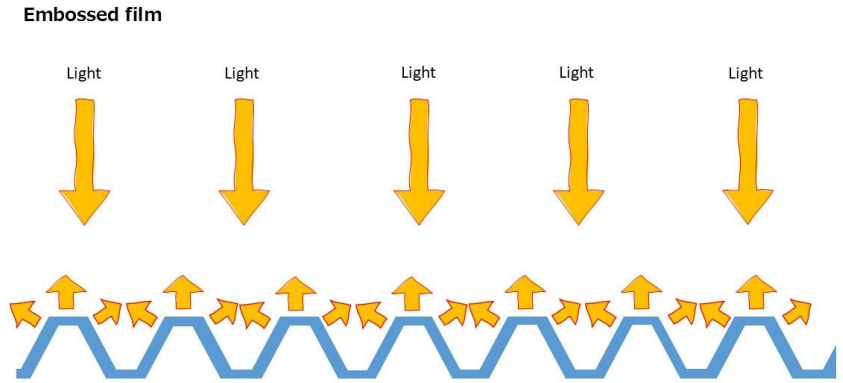
Embossing reduces the ground contact area with the object due to surface irregularities. This effect improves the peeling performance.

Improvement of cushioning



The space created by the unevenness gives cushioning properties to the film itself, which can be used for cushioning materials. Our embossing process can add a depth of 300 μm or more to 12 μm film.

Light diffusion effect



The embossed surface can diffuse and diffusely reflect light due to its unevenness. The embossed shape of the surface can visually hide or block objects and prevent the reflection of light sources such as fluorescent lamps.

Matting effect

Embossing a matte or pear-shaped pattern eliminates flatness and can impart a matte effect due to diffuse reflection and refraction of light.

Light diffusion effect

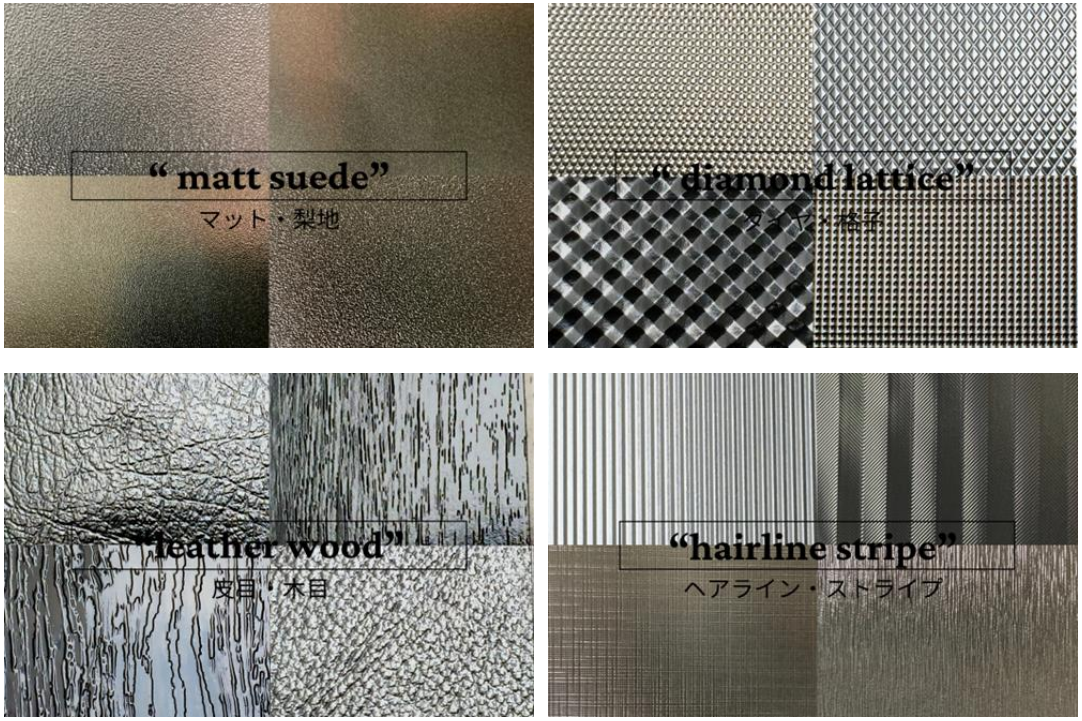
The unevenness made by embossing can promote diffuse reflection of light. In particular, deep patterns have a high ability to diffusely reflect light.

- Embossing can make film functional

We have about 80 types of embossing rolls to achieve the performance and application desired by our customers. The embossed shape can improve the performance of the film with functionalities such as design, over-adhesion prevention, and light diffusion effect by the surface emboss pattern.

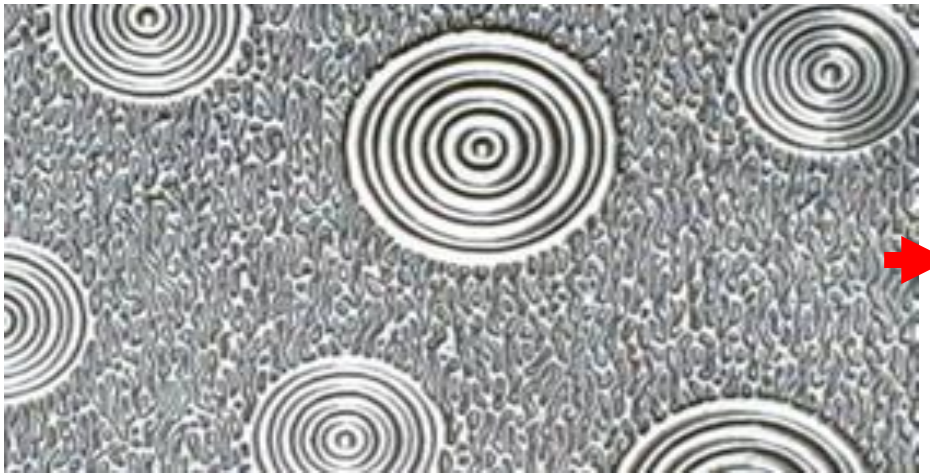
We can propose the best pattern to solve problems and achieve desired performance.

For more information, click here. ↓



・Design transfer film

(Before transfer)	(After transfer)



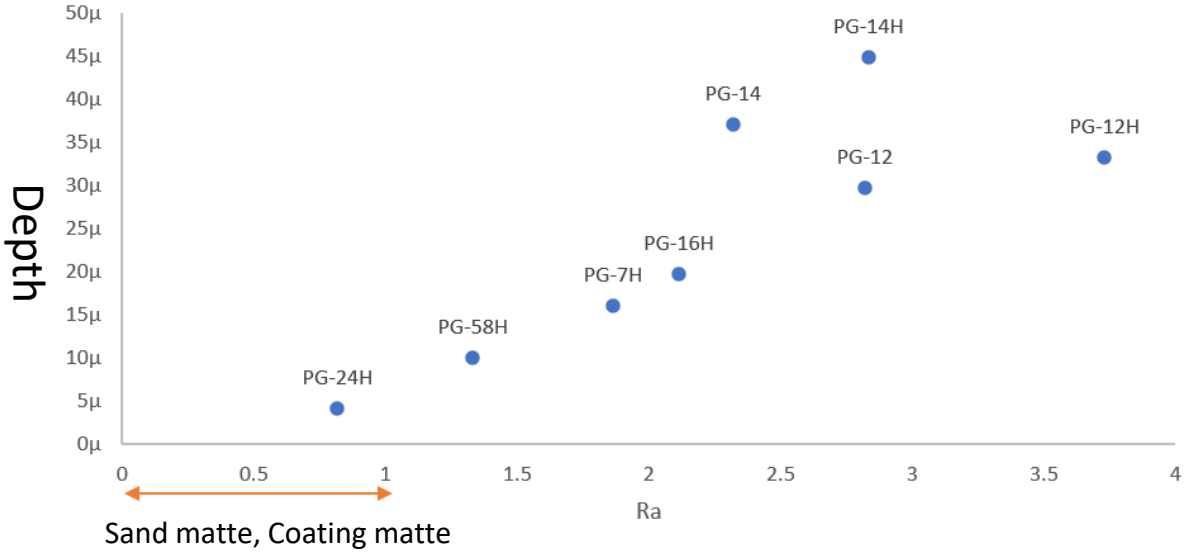
Embossed film is used for the purpose of transferring resin and imparting design.

By combining embossed film with resin during curing, it is possible to transfer design to the surface.

Embossed film is used as a transfer film for handmade resins (see photo above right), and can be combined with various resins to impart shape.

Matte film

Surface roughness of our embossed film and other matte films (reference data)



Matte or pear-shaped patterns can give the film a matte effect.

*We have more than 10 patterns.

Embossing can produce a surface roughness of Ra1.0 or higher. We can respond to requests for rough surface.

This effect can be used to create window films that hide or block vision.

It is also used as a light diffusion film to control the reflection of light such as fluorescent lamps.

Matte/Pearl finish

#24 80 mesh

#58 60 mesh

#7 40 mesh

#16 Matt

#12 Matt

#14 Pear-textured

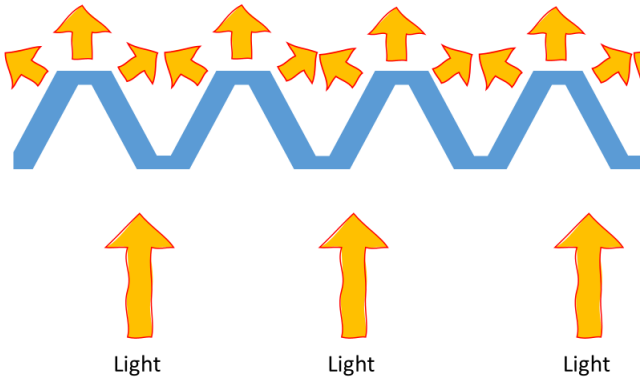
#18 Pear-textured

#68 Sand grain

#27 CM

#6 Juraku

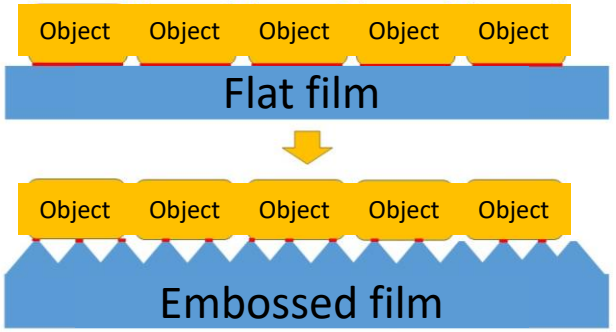
Light diffusion film

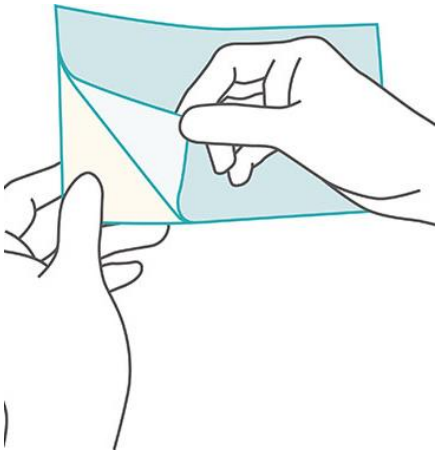


By embossing the film surface with unevenness, it is possible to create a diffuse and diffuse reflection effect. The surface shape can visually hide or block objects and prevent the reflection of light sources such as fluorescent lamps. The photo above shows our embossed film used for the Christmas illumination of Tokyo Midtown in 2023.The light-reflecting performance of the embossed film can give a special light image to the light source. The diffuse reflection of light also makes the product visually appealing and can be used for surface design of products that are intended to be eye-catching.

・Separator

Separator film





Embossing improves surface area of the material and reduces the ground contact area with the object. This can prevent over-adhesion and add slipperiness to the film.

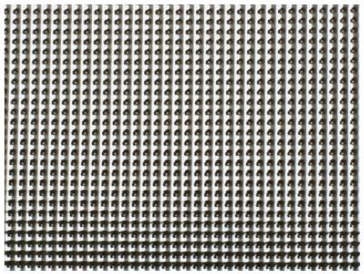
Therefore, the film can be used as a separator to improve detachability.

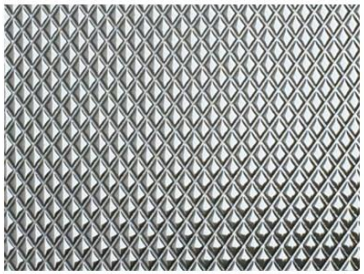
・When resin is placed on a film, it sticks to the film and does not peel off…

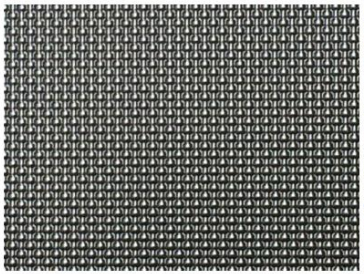
・Using silicon separators, the peeling force is not enough…

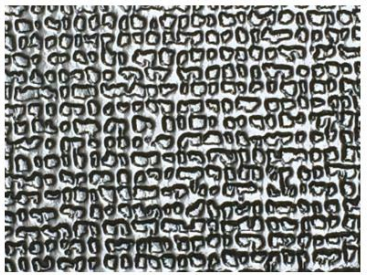
The above issues can be approached.

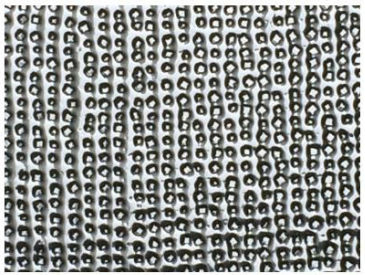
Lattice/Diamond

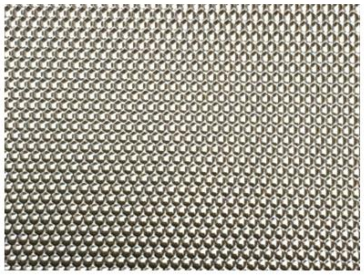

#28 Silk

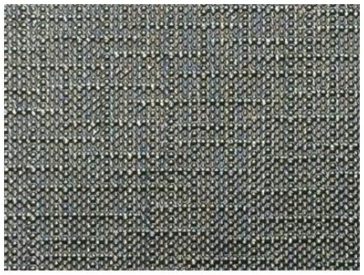

#47 Diamond

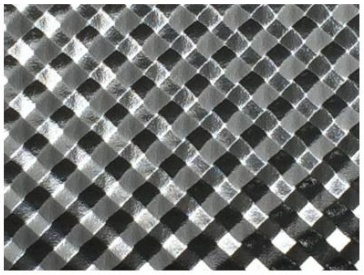

#1 Fabric


#62 Large Lattice 2

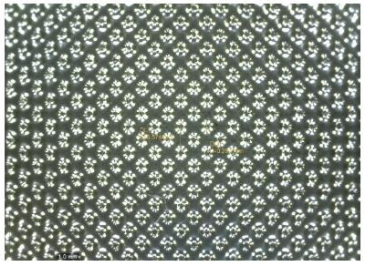

#63 Large Lattice


#74 Tortoiseshell dots

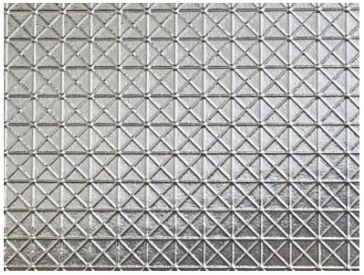

Embossed #2 Linen


#26 Pyramid

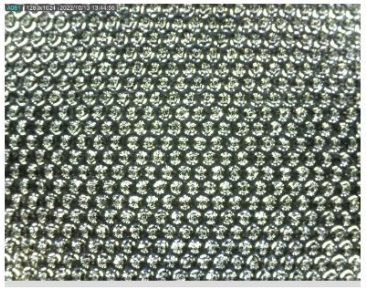

#80 110 lines diagonal grid

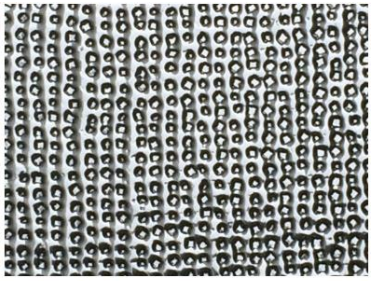

#81 63.7 line diagonal grid


#20 Cross


#82 Triangle lattice pattern

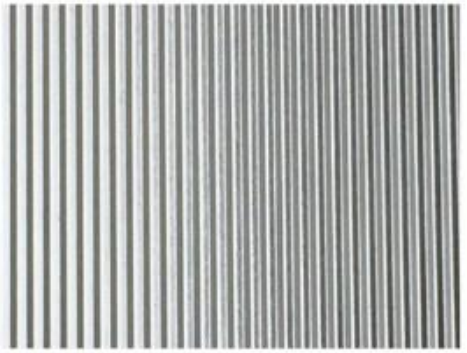

#22 Cross 3


NEW! #84 60° Houndstooth Dot


#63 大格子

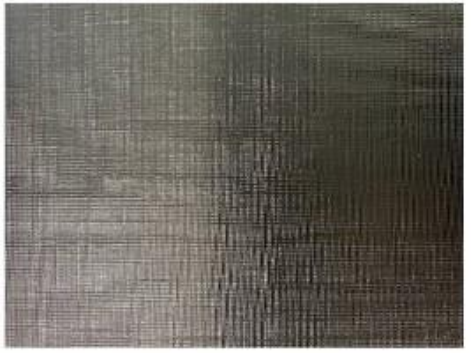
Stripe Hairline

#15 Yokosu



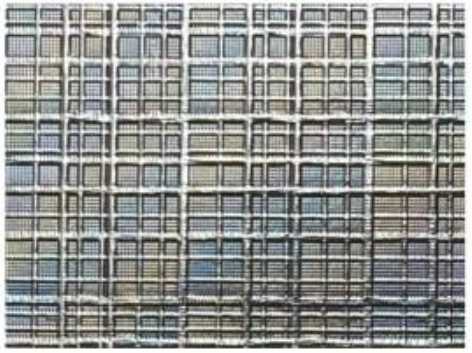
#55 Tatest

#29 Hairline

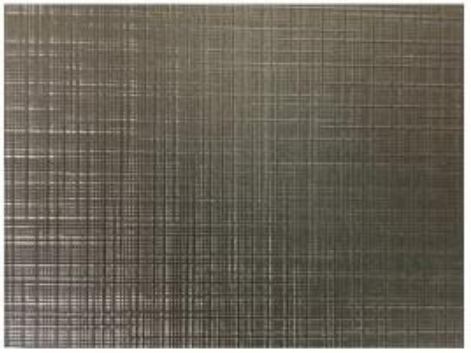


#67 Silk Lattice (Large)

#65 Knurled Stripe



#3 Check

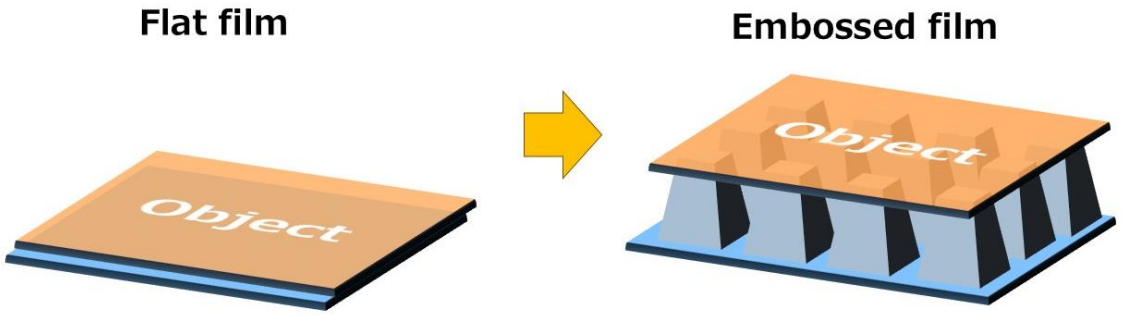


#57 Silk lattice

#76 Carbon

Providing cushioning and air layers

Spacer film



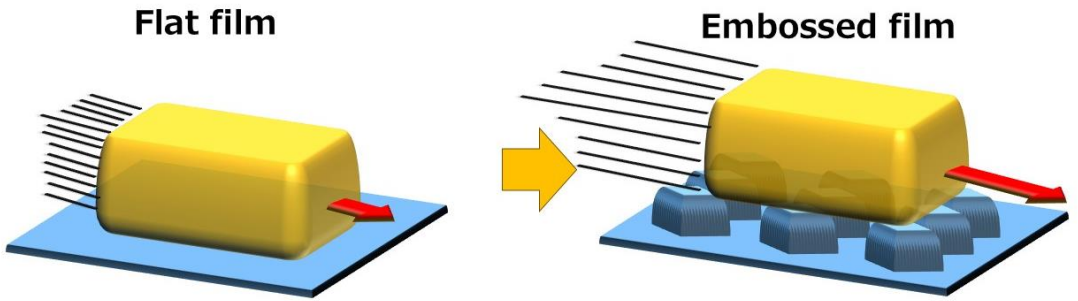
Our embossing process uses biaxially oriented PET film, which has strong rigidity and firmness. This enables us to create films with dynamic shapes that are difficult to achieve with soft materials.

The space created by the stiffness and unevenness of the film functions as a spacer (liner) and cushioning material.

The air layer created by embossing can act as an insulation pocket, which reduces the flow of temperature in the space, thereby providing thermal insulation and heat retention effects.

Adding slipperiness

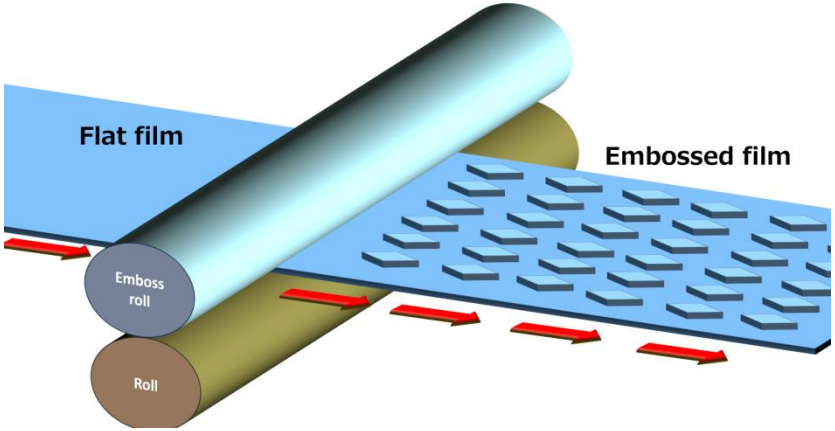
Friction Reduction Film



The unevenness of the embossed film reduces the ground contact area, thereby reducing friction with the object and improving slipperiness with the object.

By improving slipperiness, it improves fluidity, reduces sliding wear, reduces the burden on the object surface, and increases durability. This can reduce the burden on the surface of the object and increase durability.

Chemical-free film



1. Material recycling by chemical-free method

Our embossing process uses only heat and force (pressure) to form the surface shape. Since no additives are used, the film itself can be recycled as a material. This advantage is liked especially for precision equipment use and other applications use where chemical-free processing is preferred.

2.Reduce waste with roll-to-roll molding

Our embossing process involves continuous roll-to-roll molding. Compared to flat plate molding and other methods, it is possible to reduce base material loss. We conduct trial and error on processing conditions before mass production and reduce adjustment loss by finding stable conditions. This reduces waste and is an environmentally friendly and cost-effective design.

3. No white space with full surface processing

Our processing machines can process substrates up to 1700mm wide. In addition, it is possible to form an embossed shape up to the edge of the base material. No white areas are generated on either side of the embossing.

Q **Is it possible to mold continuously?**

A The processing method for our embossed products is a roll-to-roll continuous molding process, which allows continuous molding onto film.

Q **What materials do you emboss?**

A We emboss plastic films,
primarily biaxially oriented PET. We
also have experience embossing PP, PE, PBT, polyimide and acrylic.
Please feel free to contact us for more details.

Q **Are there samples available for evaluation?**

A We have a limited number of cut samples available. Please **contact us** for more information .

Q **Is it possible to emboss wide substrates?**

A Our line can process widths up to 1700mm.
*There are restrictions depending on the embossed pattern.

Q **Is original embossing possible?**

A We handle everything from creating the mold (embossed plate).

Embossing machine: 2 units

Wide width possible (MAX 1700mm)	Thickness of 12μ~250μ available	Maximum winding diameter: 700ϕ
Long length winding possible	Continuous molding possible	Equipped with static elimination equipment
Supports 3-inch and 6-inch cores	Full-width embossing on substrate	Dealing with crane patterns

Embossing rolls: over 80 types

We have over 80 types of ready-to-use embossing rolls.

Satin/Matte	Lattice/Diamond	Strive Hairline
Wood grain/bark grain	Large design pattern	And many more

Q **What is the maximum thickness of the substrate that can be processed?**

A We have experience in forming PET base materials into 250μ sheets, and PP, PU, etc. into 4mm sheets.

Q **Can you process substrates that have been printed or released?**

A We can also handle treated substrates. We can handle a wide range of substrates, including printed substrates, substrates with release treatments such as silicone coats and fluorine coats, and substrates with hard coat treatments.
*We may not be able to handle some substrates depending on the treatment method.

Q **Can you handle small lots?**

A We also handle small lot orders.

Q **Do you have samples of embossed film?**

A

We have about 80 different types of embossed film samples.
Please contact us if you are interested.
*Stock is limited.

Q **Do you sell ready-made products?**

A

Basically, we mainly produce OEM products and do not sell ready-made products.
We will create and propose products according to your needs.

Q **Can you take on projects that other companies have turned down?**

A

We will try as much as we can.
Even if a project seems difficult to process at present, we will think together with the customer about how to improve it.
First of all, please let us know the details.