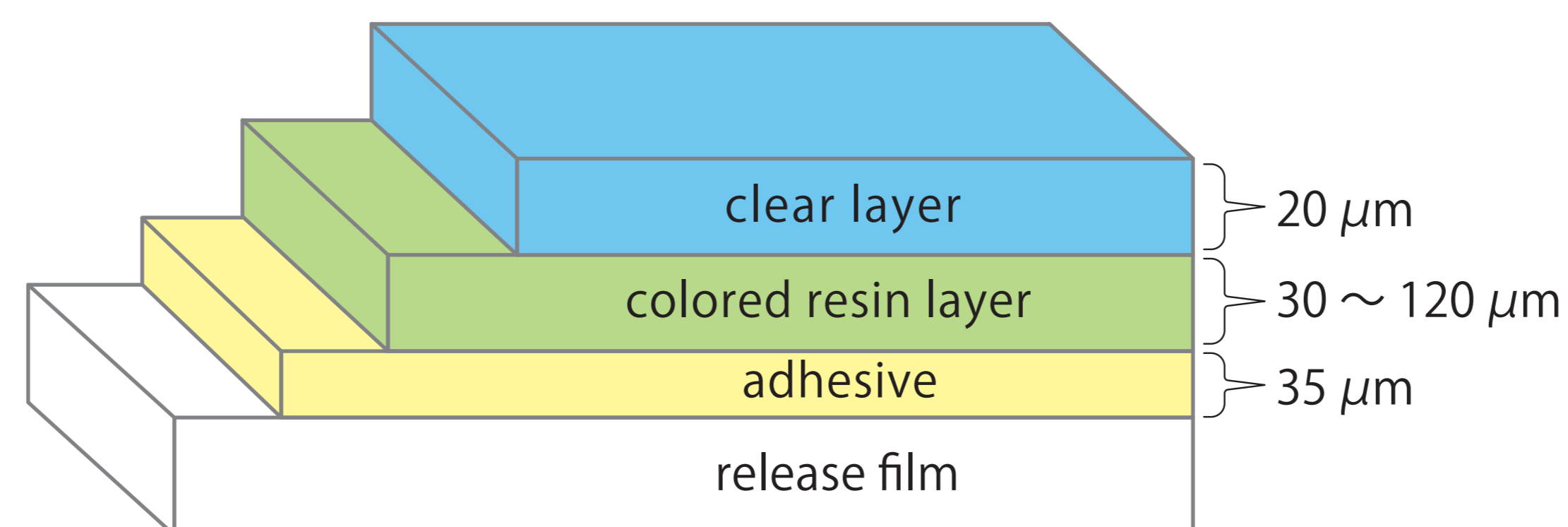


# Painted alternative sheet (Molding type)

A decorative sheet for vacuum forming that can replace painting.

## Structure



## Features

- 1 | A decorative sheet with a deep appearance similar to paint, and also has high surface gloss and surface hardness.
- 2 | It is intended for use in mobility such as automobiles, motorcycles, and small boats, and has high durability performances.
- 3 | By using this product instead of painting, you can reduce CO<sub>2</sub> and VOC generated during the painting process.
- 4 | By pasting with vacuum forming, it is possible to decorate complex shapes, and it is also possible to handle small batch projects.

## Applications

- Decoration mark of interior and exterior parts of mobility
- For decoration of other painted products

## Properties

Weatherability	400h (Continuing exam)	Heat cycle resistance	10 cycle
Pencil hardness	H	Moisture resistance	50h
Gasoline resistance	Good	Acid resistance	Good

Confirmation details : Appearance, Adhesion

※Properties are not guaranteed values.

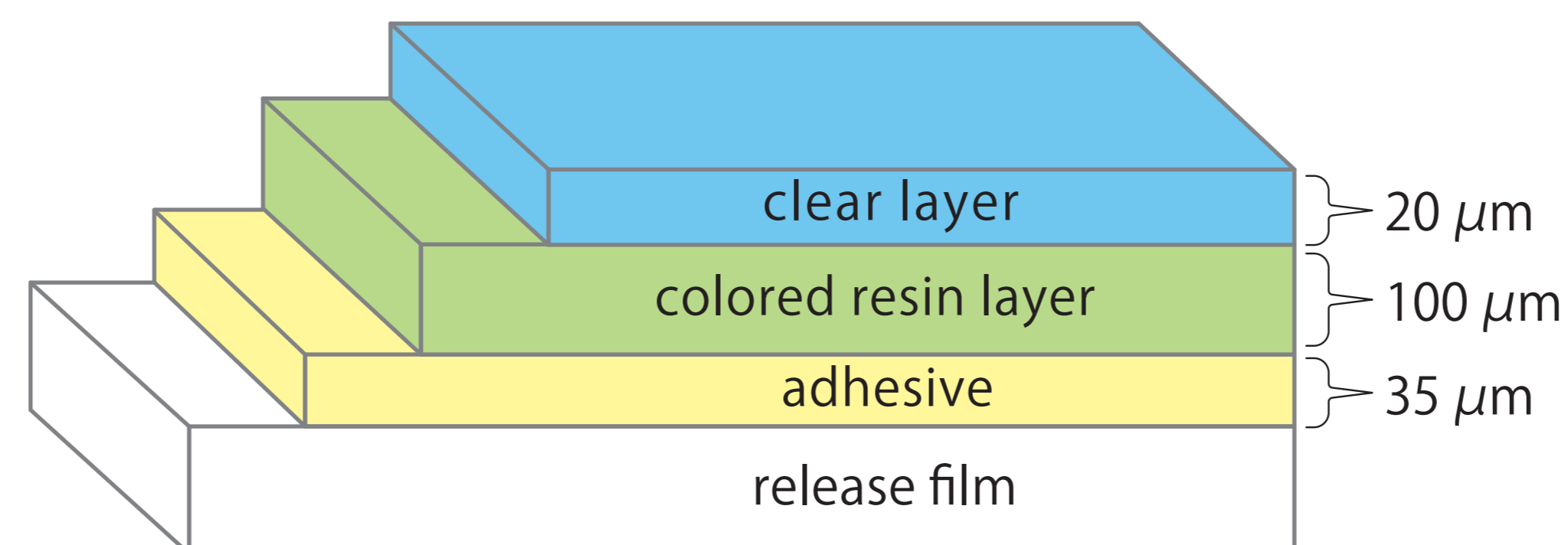
Conditions Weatherability : Sunshine weather, Heat cycle resistance : -30°C ↔ 80°C,

Moisture resistance : 95%RH, Gasoline resistance : 10min immersion, Acid resistance : 30min immersion

# Painted alternative sheet (Hand pasted type)

A hand-pasted adhesive sheet that can replace painting.

## Structure



## Features

- 1 | A decorative sheet with a deep appearance similar to paint, resistant to scratches and dents, and resistant to water stains.
- 2 | It is intended for use in mobility such as automobiles, motorcycles, and small boats, and has high durability performances.
- 3 | By using this product instead of painting, you can reduce CO<sub>2</sub> and VOC generated during the painting process.
- 4 | This is a hand-pasted adhesive sheet, making it easier to decorate than painting.

## Applications

- Decoration mark of interior and exterior parts of mobility
- Architectural components such as walls and floors
- For decoration of other painted products

## Properties

Weatherability	3000h	Heat cycle resistance	10 cycle
Pencil hardness	B	Moisture resistance	50h
Gasoline resistance	Good	Acid resistance	Good

Confirmation details : Appearance, Adhesion

※Properties are not guaranteed values.

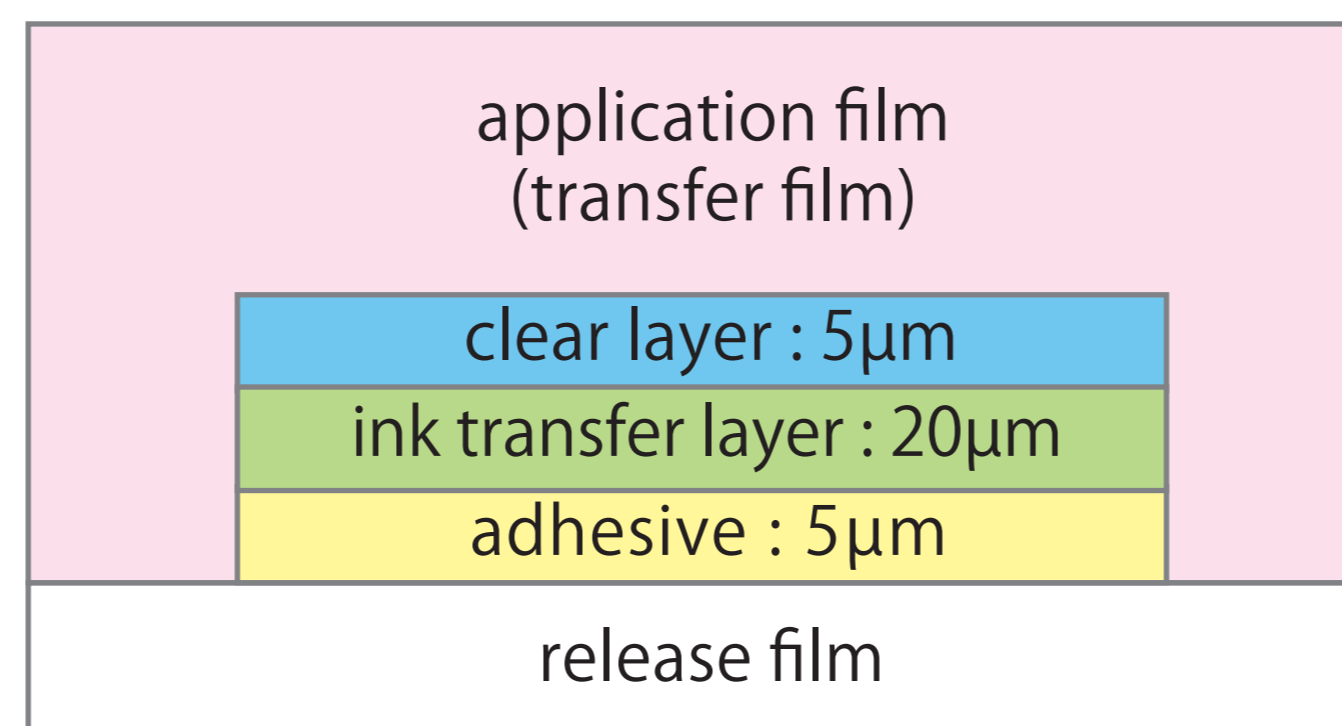
Conditions Weatherability : Sunshine weather, Heat cycle resistance : -30°C ↔ 80°C,

Moisture resistance : 95%RH, Gasoline resistance : 10min immersion, Acid resistance : 30min immersion

# Painted alternative sheet (Ink transfer type)

This is a painting alternative sheet that only transfers ink through vacuum forming.

## Structure



## Features

- 1 | Designs that are difficult to express with painting (patterns, gradations, etc.) can be created in small batches.
- 2 | It is intended for use in mobility such as automobiles, motorcycles, and small boats, and has high durability performances.
- 3 | By using this product instead of painting, you can reduce CO<sub>2</sub> and VOC generated during the painting process.
- 4 | By pasting with vacuum forming, it is possible to decorate parts with complex shapes, and since only ink is transferred, trimming after forming is also easy.

## Applications

- Decoration mark of interior and exterior parts of mobility
- For decoration of other painted products

## Properties

Weatherability	1000h	Heat cycle resistance	10 cycle
Pencil hardness	HB	Moisture resistance	50h
Gasoline resistance	Good	Acid resistance	Good

Confirmation details : Appearance, Adhesion

※Properties are not guaranteed values.

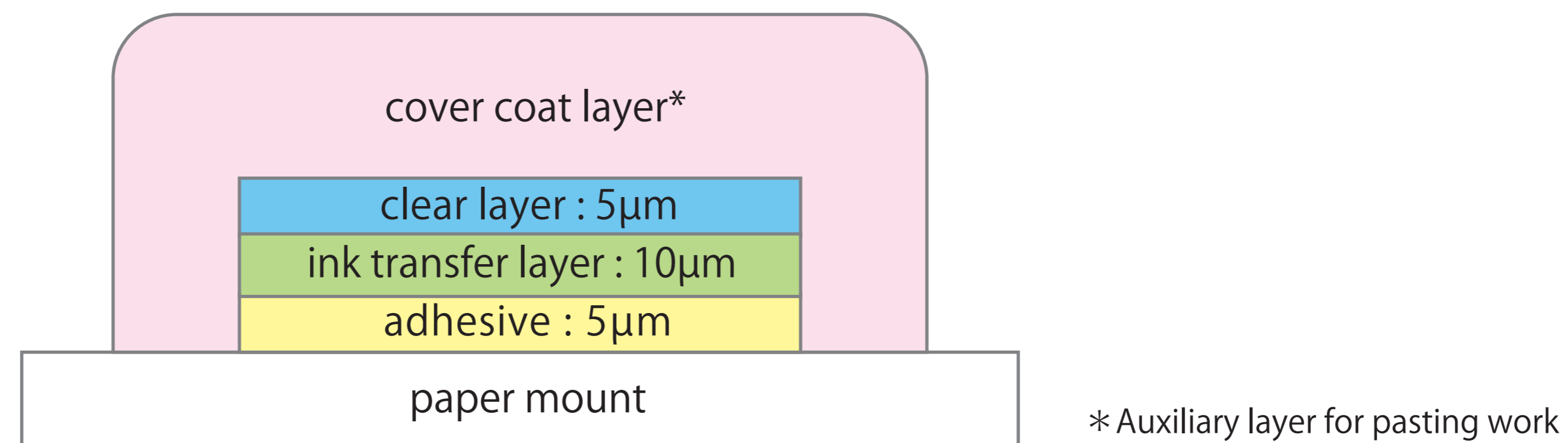
Conditions Weatherability : Sunshine weather, Heat cycle resistance : -30°C ↔ 80°C,

Moisture resistance : 95%RH, Gasoline resistance : 10min immersion, Acid resistance : 30min immersion

# Clearless water transfer mark

This is an environmentally friendly product that does not require an overcoat clear.

## Structure



## Features

- 1 With conventional products, overcoat clear was required for water transfer marks. For this developed product, we are changing the specifications so that it can be used without using overcoat clear. (High temperature baking work is required after pasting)
- 2 Since overcoat clear can be omitted, process reduction and CO<sub>2</sub> / VOC reduction can be realized.
- 3 It has surface hardness and various resistances for mobility such as automobiles, motorcycles, and small boats.
- 4 Since each layer is formed by screen printing, multicolor designs can be created even in small batches.

## Applications

- Decoration mark of interior and exterior parts of mobility
- Decoration of sports and outdoor products
- For decoration of other painted products

## Properties

Weatherability	2000h	Heat cycle resistance	10 cycle
Pencil hardness	HB	Moisture resistance	50h
Gasoline resistance	Good	Acid resistance	Good

Confirmation details : Appearance, Adhesion

※Properties are not guaranteed values.

Conditions Weatherability : Sunshine weather, Heat cycle resistance : -30°C ↔ 80°C,

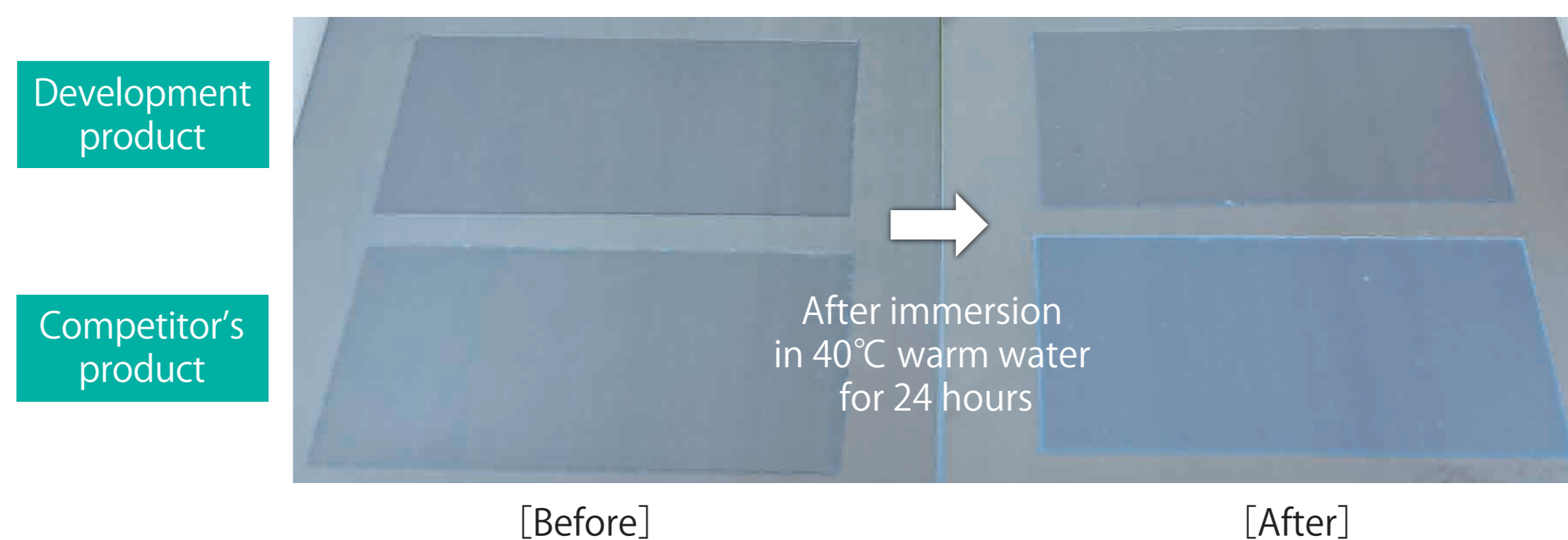
Moisture resistance : 95%RH, Gasoline resistance : 10min immersion, Acid resistance : 30min immersion

# Emulsion adhesive for both screen printing and coating

An environmentally friendly adhesive that does not use VOC.

## Features

- 1 **High leveling ability**  
Generally speaking, emulsion adhesives have a rough adhesive surface and screen printing gauze tends to be noticeable, but this product has a highly smooth adhesive surface and can maintain the beauty of the product.
- 2 **Good handling properties**  
Adhesive removal is easy, so the printing plate is easy to clean after work. Compared to other companies' emulsion adhesives, cleaning time can be reduced by about 30 to 40% and cleaning solvent usage can be reduced by about 30%, which can be expected to improve work efficiency and reduce environmental impact.  
※There are differences depending on the worker
- 3 **High water resistance**  
Appearance whitening caused by water immersion is milder than other companies' products.



## Applications

- As a printing glue for attaching nameplates and panel sheets to mechanical and electrical products
- For coating and printing on substrates with low solvent resistance
- Reducing environmental impact by switching from solvent-based adhesives

## Properties

item	method	General	Removable	Strong adhesive	Competitor's product
adhesive strength [N/10mm]	20min after pasting	3.7	2.2	11.7	7.1
holding power [mm]	9.8N load ,1h 25mm×25mm	0.5	0	0	0.6
ball tuck [No.]	J.Dow method ( $\theta=30^\circ$ )	7	6	less than 2	6

Adherent : SUS (BA) pH=7.0-8.0

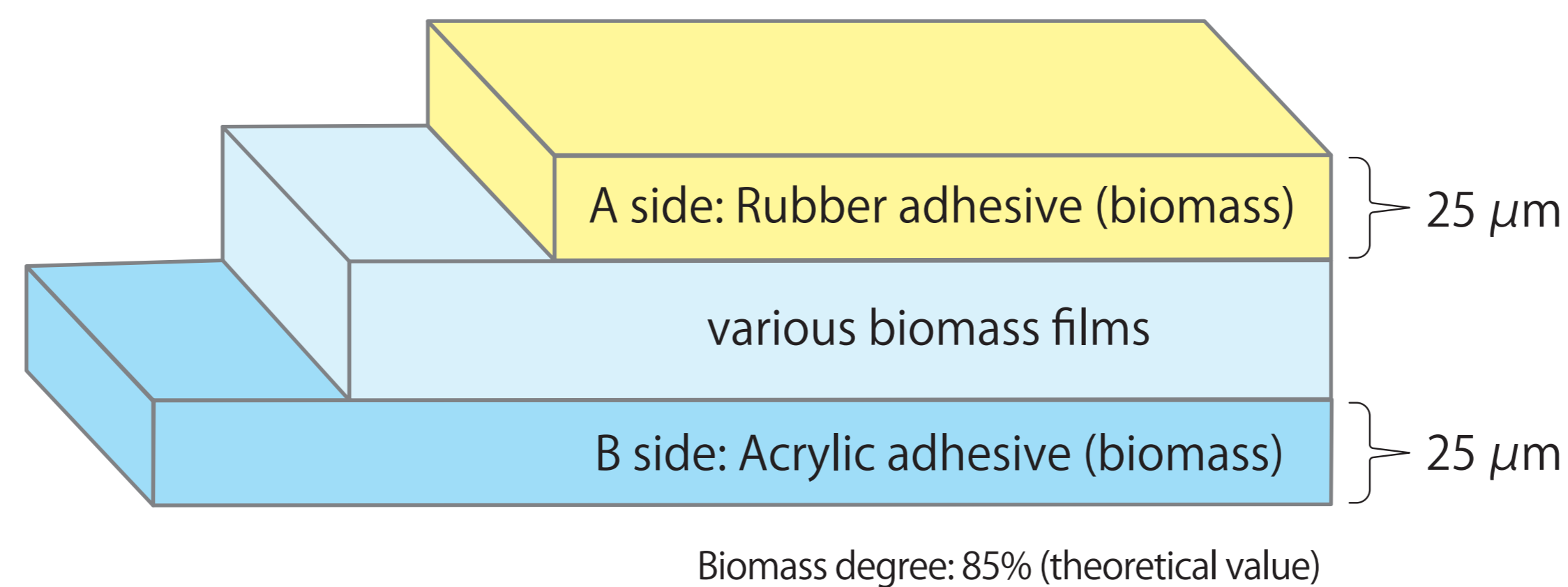
※Properties are not guaranteed values.

# Biomass liner-free double-sided tape

Development product

Double-sided tape without release paper made of biomass material

## Structure



## Features

- 1 | Completely environmentally friendly product made only from biomass materials
- 2 | Since there is no release paper, workability is good and there is no waste during use
- 3 | Different adhesive properties can be applied to side A and B



## Applications

- Fixing nameplates and various parts
- Fixing posters and notices
- Fixed magazine appendix

## Properties

item	method	A side	B side
adhesive strength [N/10mm]	20min after pasting	3.2	2.6
holding power [mm]	9.8N load ,1h 25mm×25mm	0	0.2
ball tuck [No.]	J.Dow method ( $\theta=30^\circ$ )	10	5

Adherent : SUS (BA)

※Carrier : Cellophane

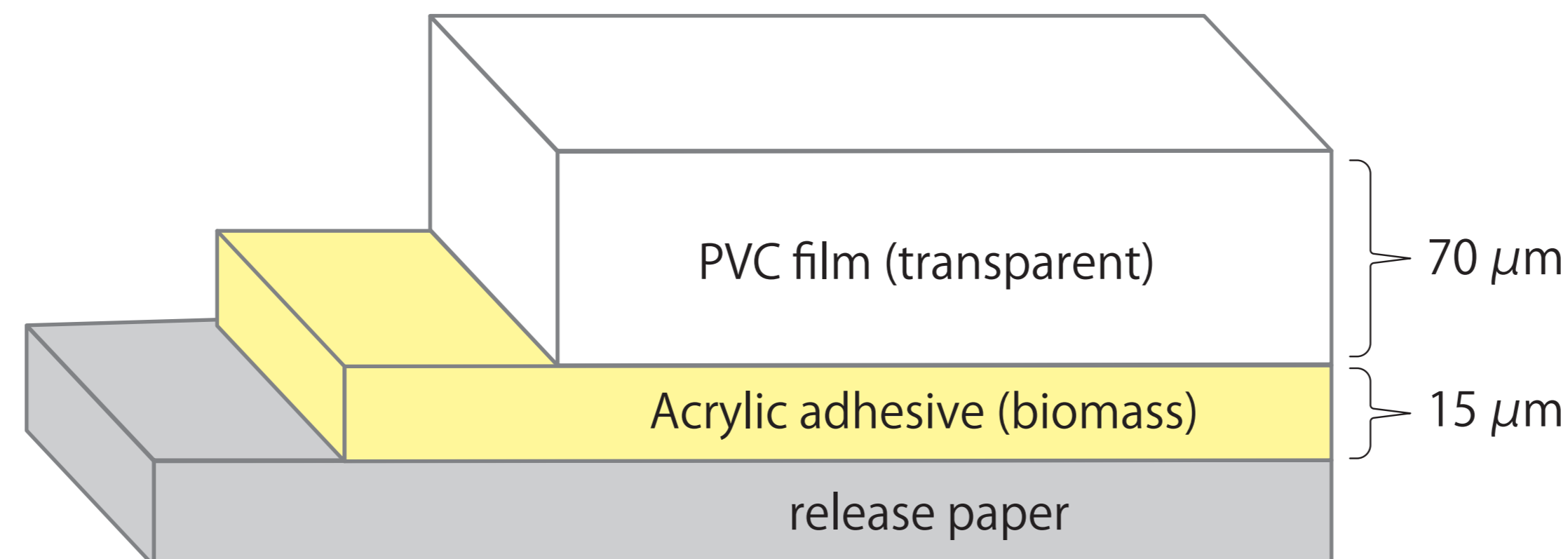
※Properties are not guaranteed values.

# High heat resistant biomass slightly adhesive sheet

Development product

An adhesive sheet made of biomass material with excellent heat resistance and removability.

## Structure



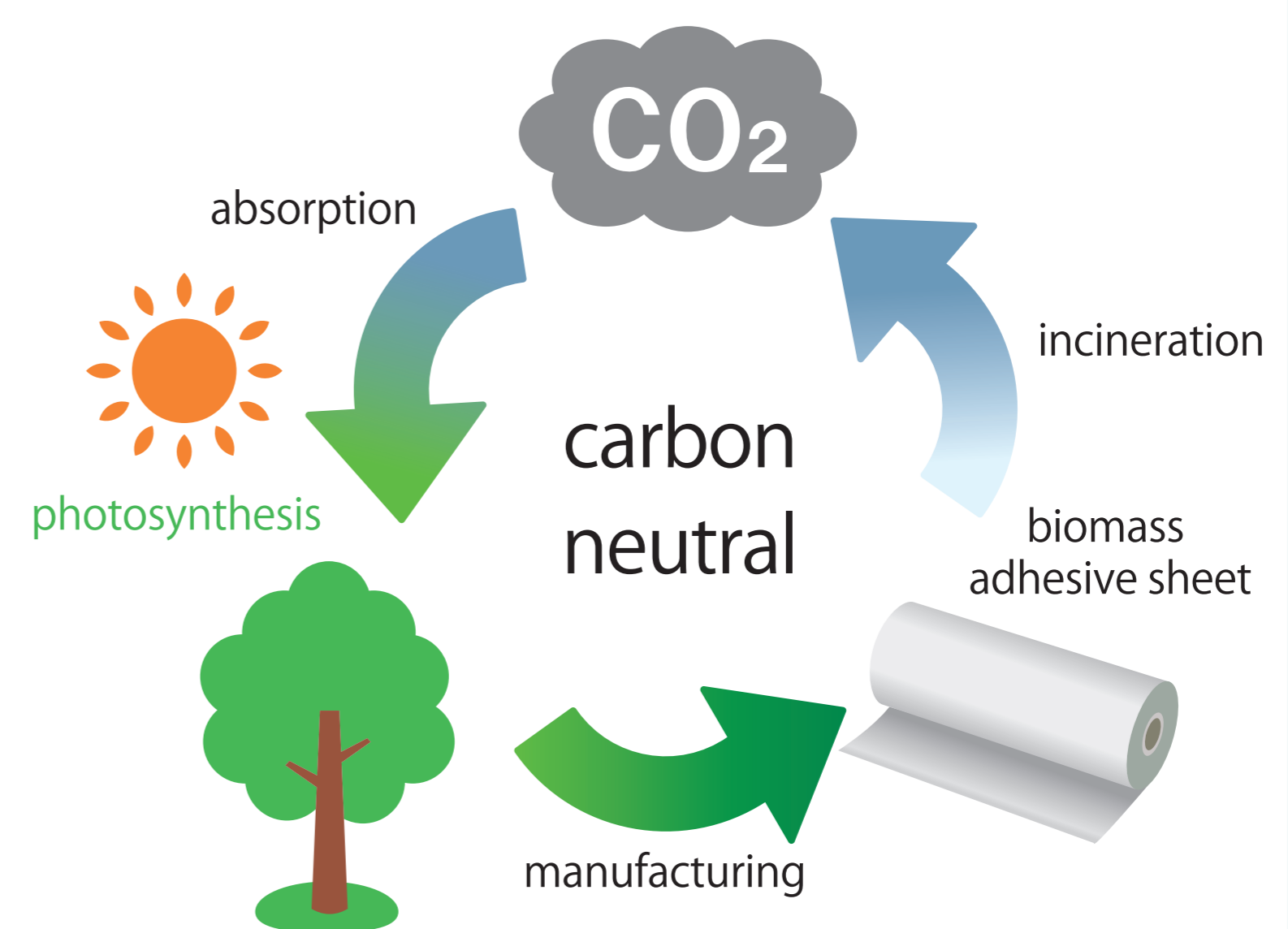
## Features

- 1 Uses environmentally friendly biomass adhesive

Biomass degree: 20% (theoretical value)

- 2 Can also be used for masking during high temperature baking in the painting process of solvent-based paints.

- 3 Although it is an environmentally friendly product, it has the same heat resistance and removability as conventional completely petroleum-based adhesives.



## Applications

- Masking in the painting process
- Application for cutting letters and pasting labels (transfer sheet)

## Properties

item	method	Development product	Competitor's product
adhesive strength [N/10mm]	20min after pasting	0.18	2.6
holding power [mm]	9.8N load ,1h 25mm×25mm	0	0
adhesive strength after heating [N/10mm]	After heating at 150°C × 1h and cooling	1.7	7.8
Appearance and peeling mode after heating	After heating at 150°C × 1h and cooling	no change	glue residue

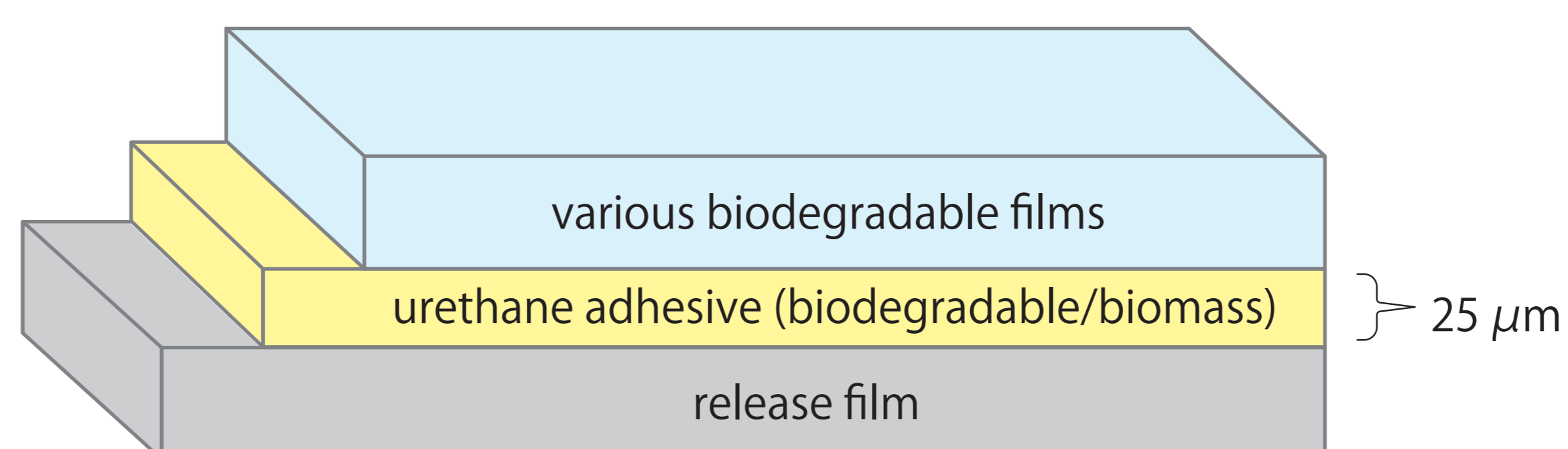
Adherent : SUS (BA)

※Properties are not guaranteed values.

# Biodegradable adhesive sheet

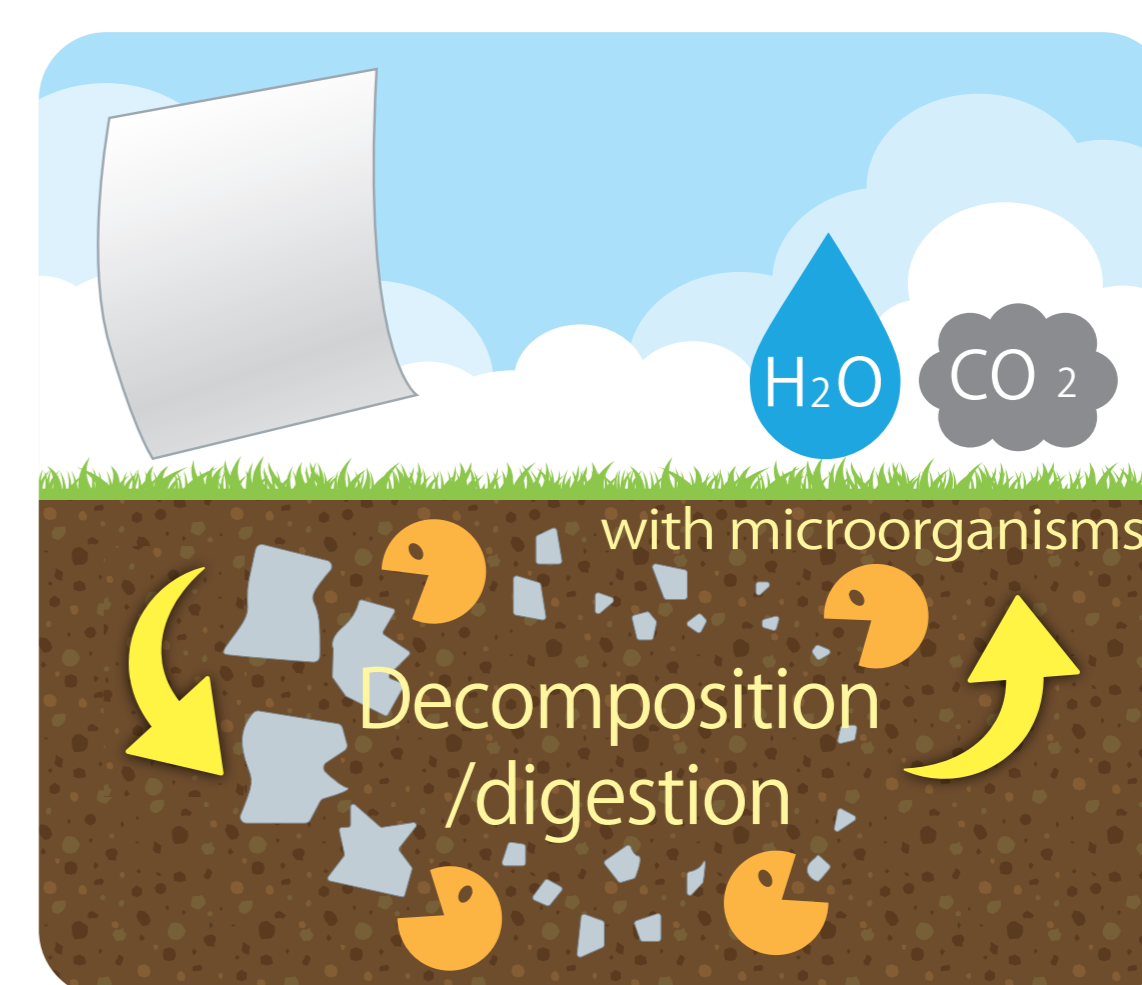
An adhesive sheet with a biodegradable function and low environmental impact.

## Structure



## Features

- 1 | Environmentally friendly adhesive sheet using biodegradable film and adhesive  
Biodegradability: 96% (theoretical value)
- 2 | Also has biomass properties  
Biomass degree: 71% (theoretical value)
- 3 | Biodegradable in approximately 3 months



initial state	In the compost		
	1 month later	2 month later	3 month later

## Applications

- Agriculture and forestry materials (fixing tape, seedling pot labels, binding tape, etc.)
- Food containers and packaging materials
- For promoting brand image, such as packaging for cosmetics

## Properties

item	method	Development product
adhesive strength [N/10mm]	24 hour after pasting	5.3
holding power [mm]	9.8N load ,1h ,25mm×25mm	0
ball tuck [No.]	J.Dow method ( $\theta=30^\circ$ )	7

Adherent : SUS (BA)

※Carrier : Cellophane

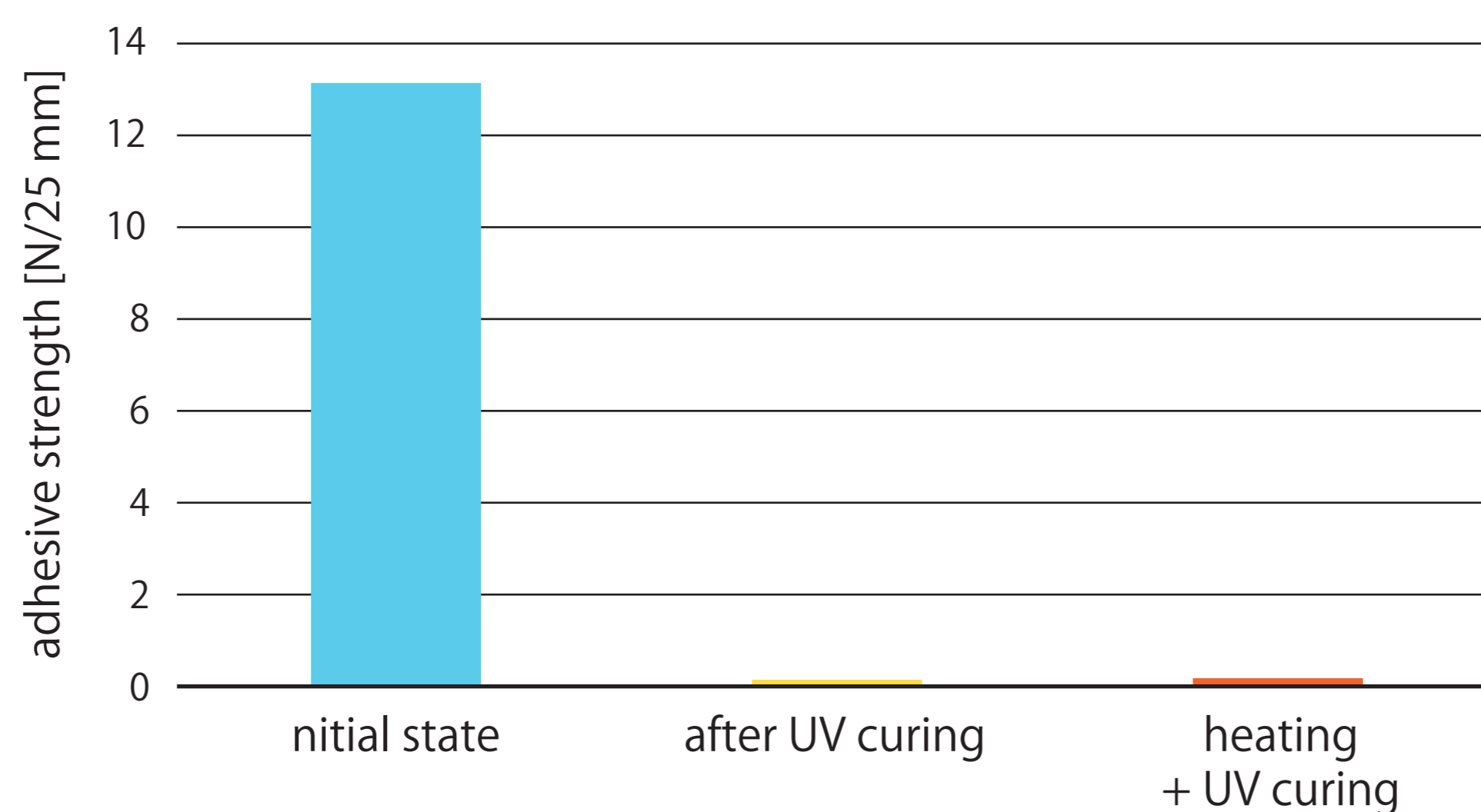
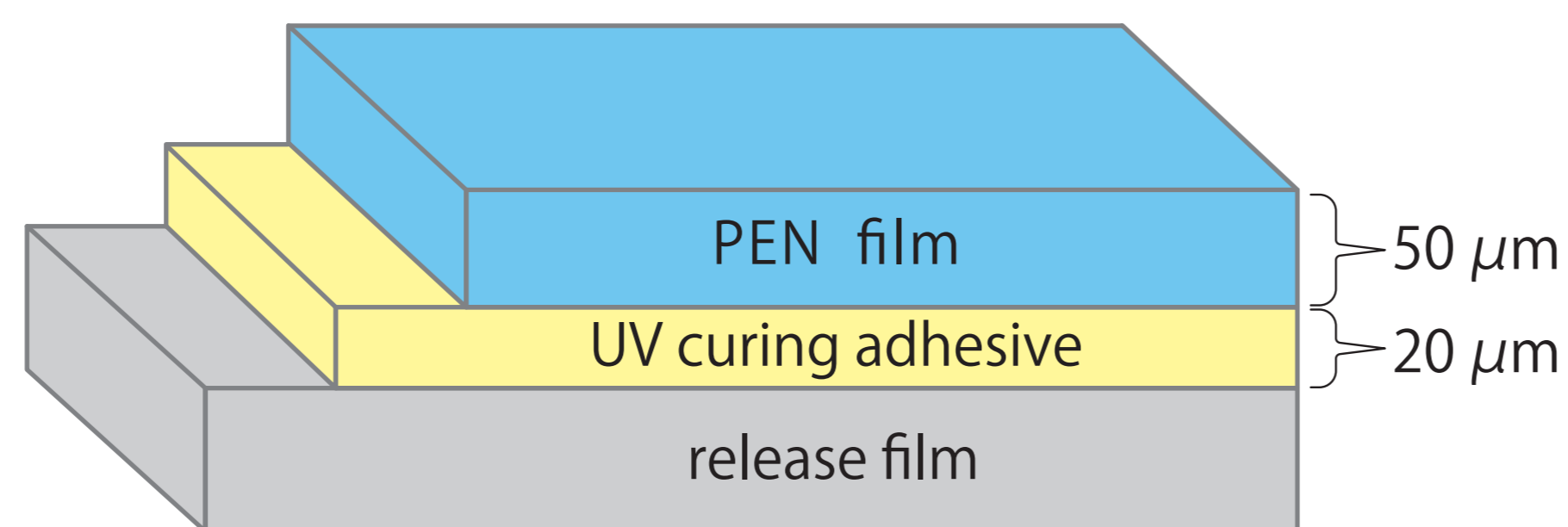
※Properties are not guaranteed values.



# Heat resistant dicing sheet

A UV-curable dicing sheet with excellent heat resistance that can be used in semiconductor manufacturing processes.

## PEN type

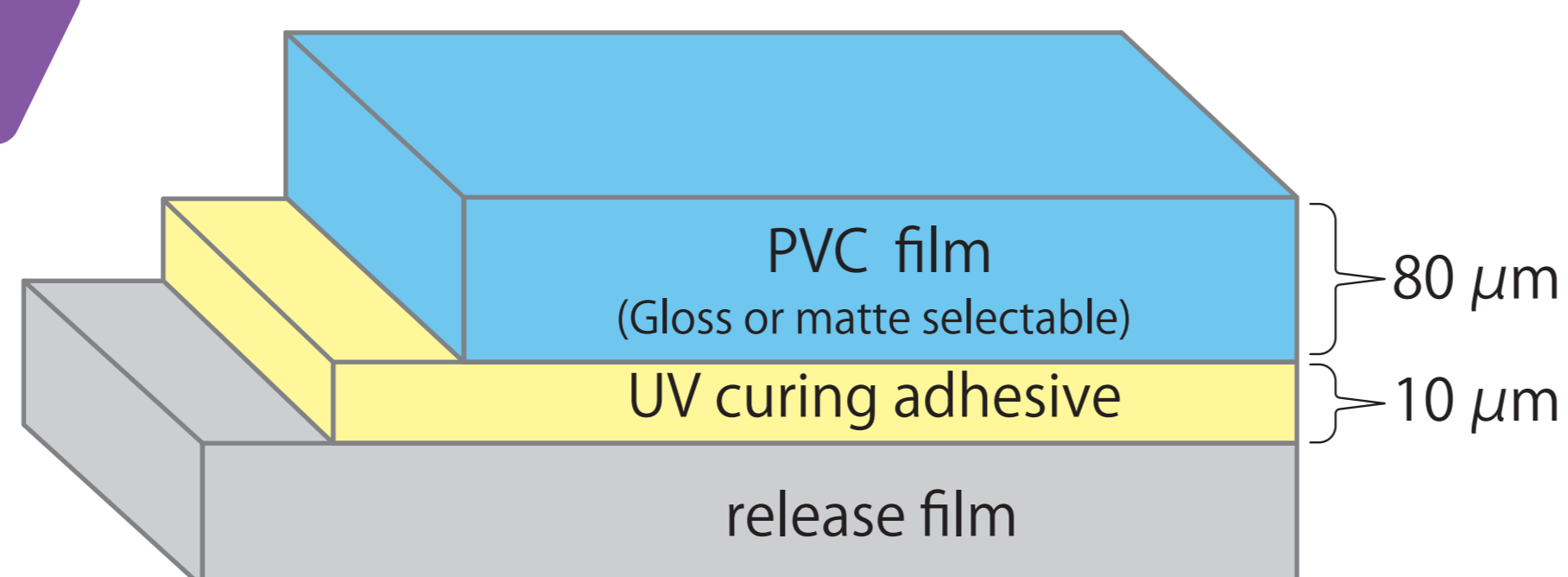


	adhesive strength [N/25 mm]
initial state	13.0
after UV curing	0.06
heating + UV curing	0.10

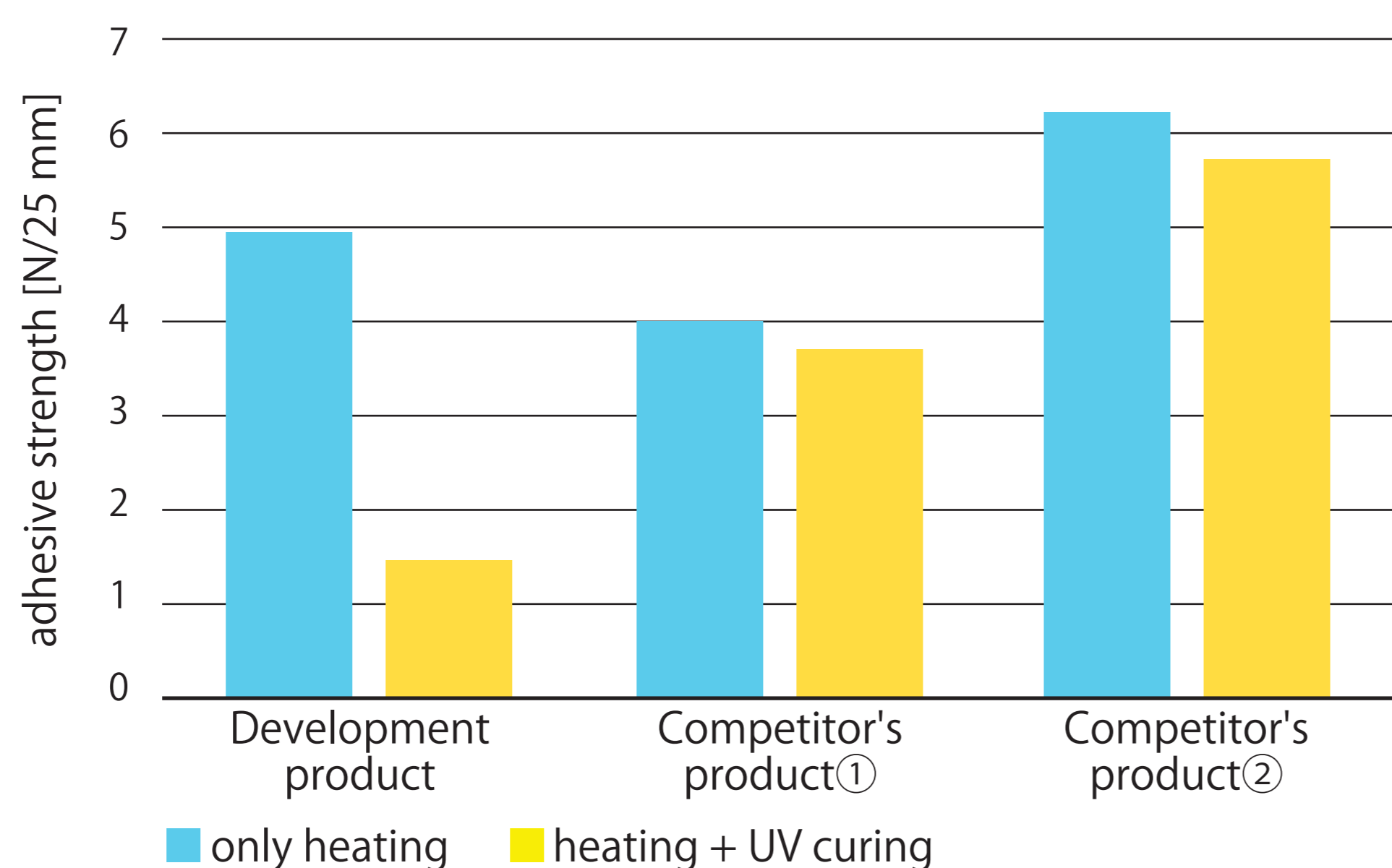
※Properties are not guaranteed values.

Even if heated at 260°C for 1 minute, the adhesive strength after UV will decrease to the same level as without heating.

## PVC type



【 Adhesive strength after 1 hour at 120°C 】



	adhesive strength [N/25 mm]	
	only heating	heating + UV curing
Development product	4.9	1.5
Competitor's product①	4.0	3.8
Competitor's product②	6.1	5.6

※Properties are not guaranteed values.

※Additional properties  
 adhesive strength before heating [N/25mm]  
 initial state : 3.7, after UV curing : 0.2  
 breaking strength [N/10mm]=29.6 elongation rate[%]=340

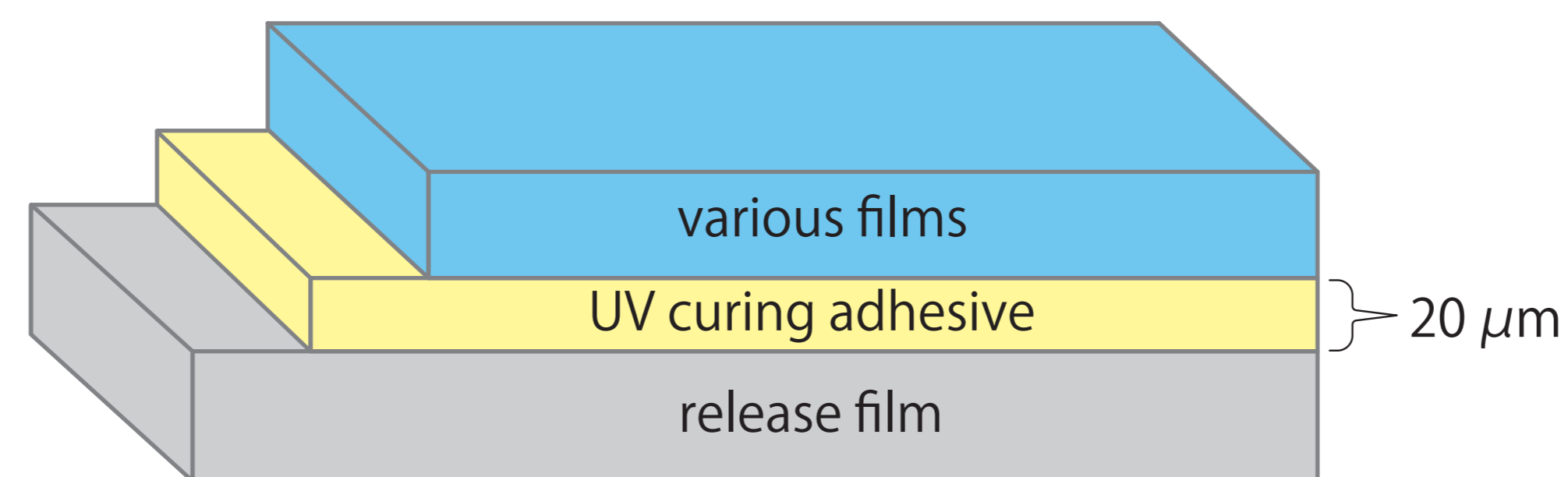
UV curing performance does not deteriorate even when heated at 120°C for 1 hour. And it has higher heat resistance than other companies' products.

# UV-LED compatible dicing sheet

Development product

A sheet for semiconductor processing that is compatible with UV-LED irradiation equipment.

## Structure



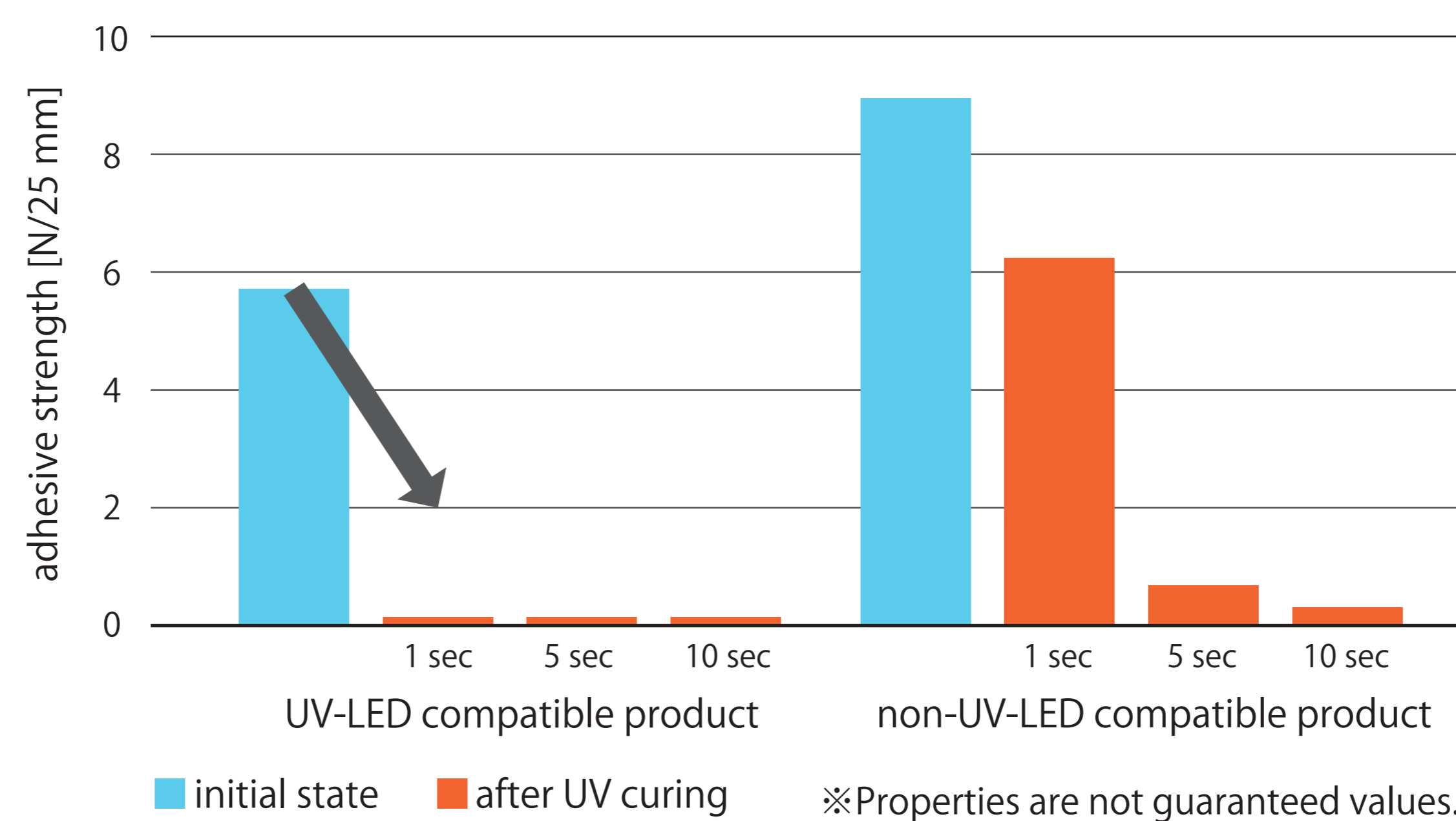
## Features

- 1 Cost**  
Production costs can be reduced by extending the lifespan of LEDs and significantly reducing power consumption.
- 2 Quality**  
By removing the effects of infrared rays, you can reduce heat damage and improve product quality.
- 3 Efficiency & Environment**  
Immediate lighting improves work efficiency. Additionally, since it is ozone-free and does not require exhaust equipment, it also improves the production environment.



UV-LED irradiation equipment

## Properties

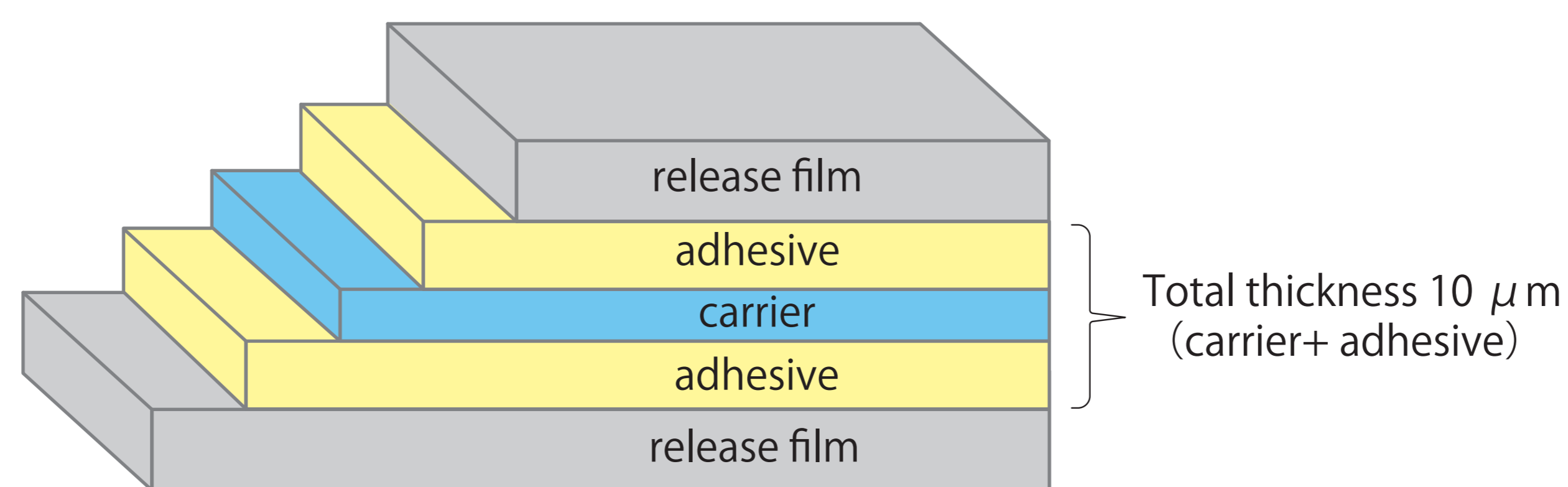


Adhesive strength decreases with short irradiation

# Ultra-thin double-sided tape

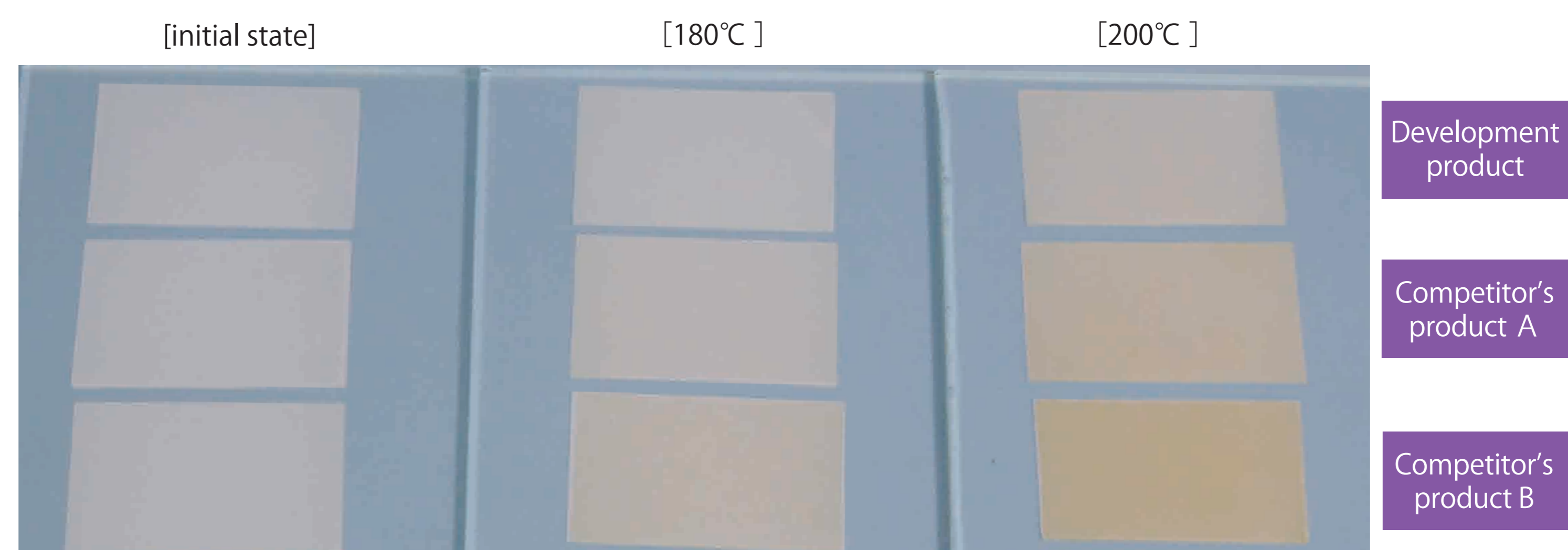
Ultra-thin double-sided tape for electronic components with a total thickness of 10  $\mu\text{m}$ .

## Structure

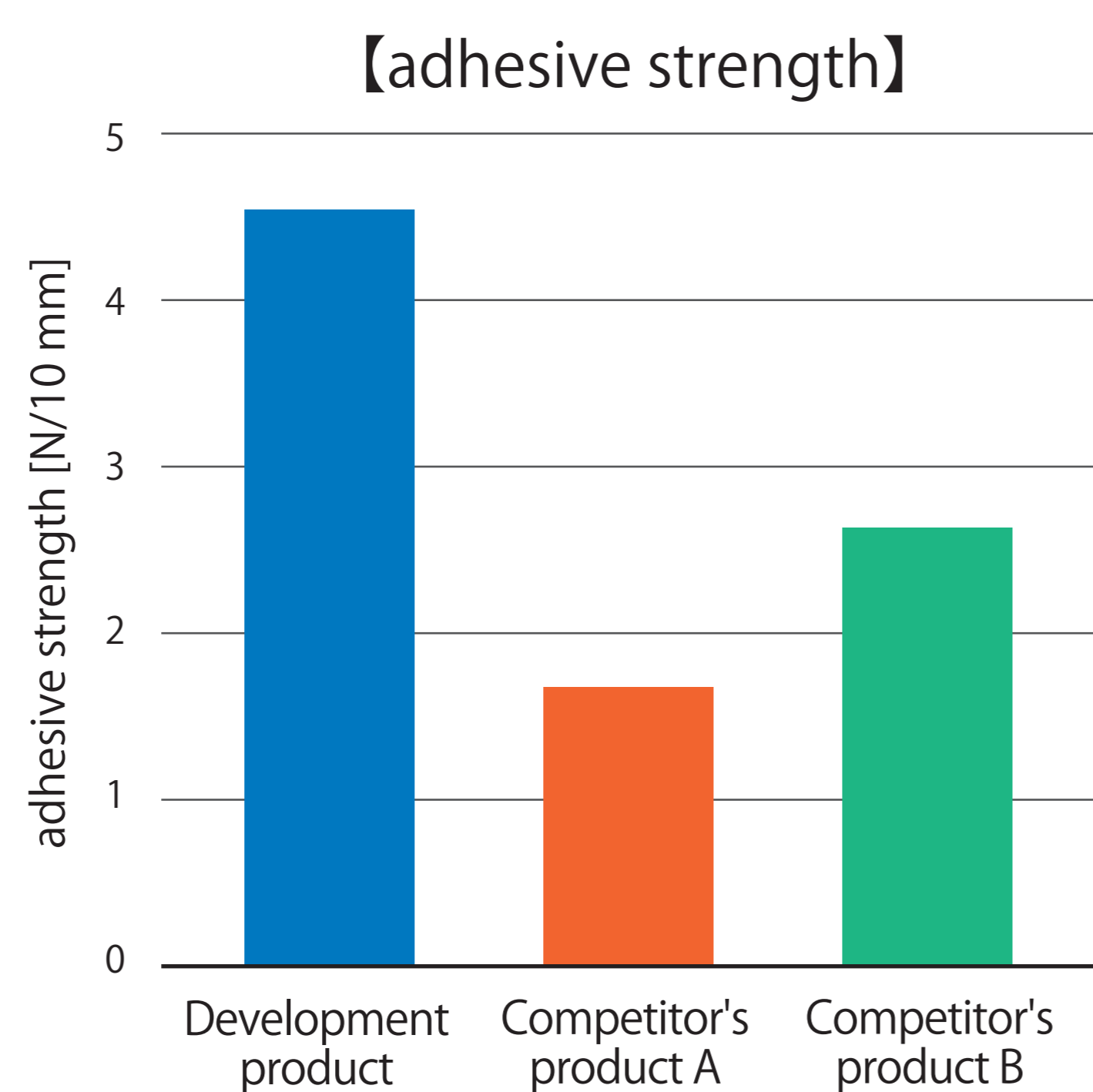


## Features

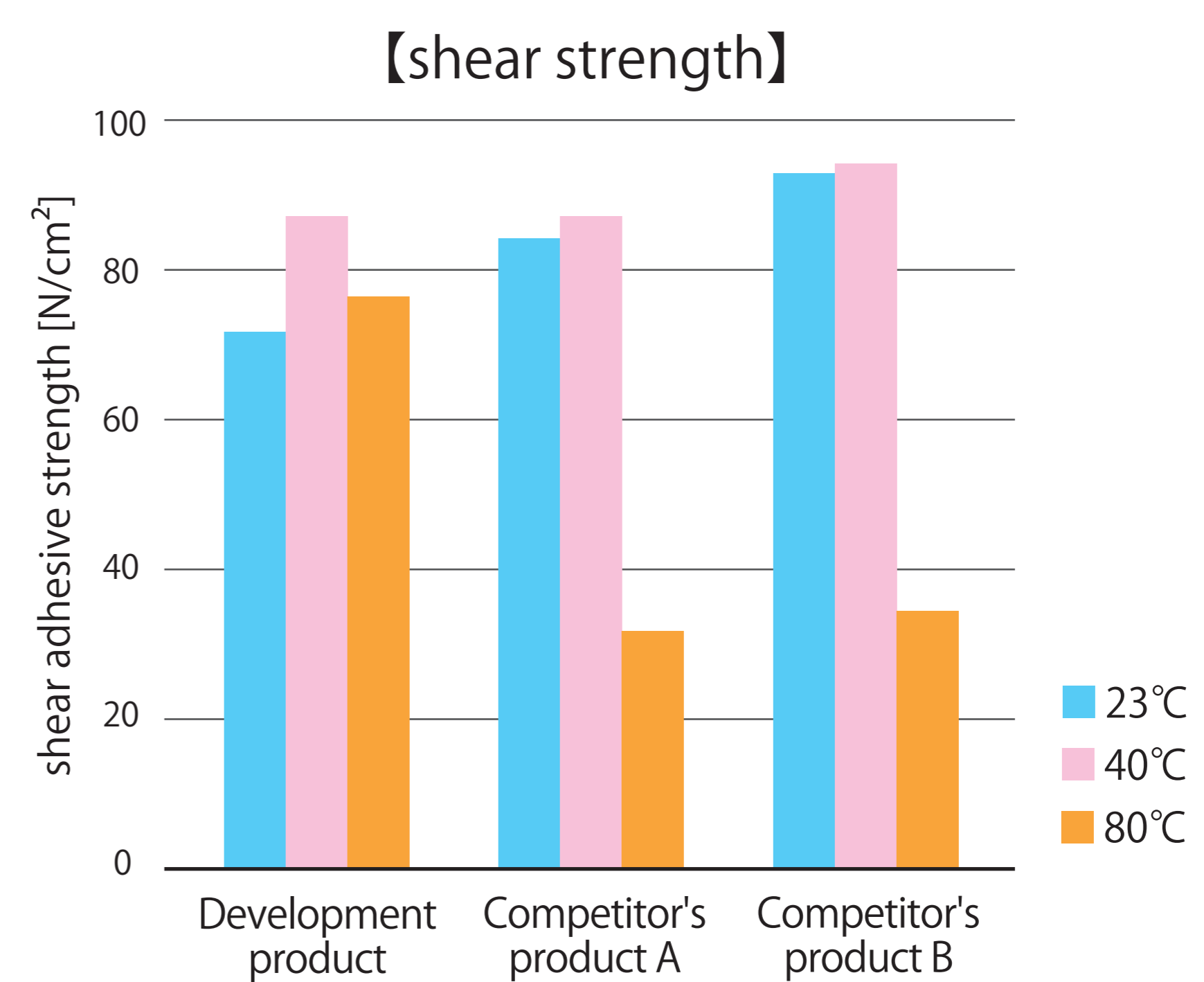
- 1 Although it is a very thin adhesive tape, it has strong adhesion. In addition, since the carrier is flexible and strong, so it has high followability.
- 2 It does not easily shift even under load and has excellent heat resistance.
- 3 Even when heated at high temperatures (180°C to 200°C), there is little discoloration and it is not noticeable even on white plates.



## Properties



Strong adhesive even though it is thin



Maintains high adhesion even when heated

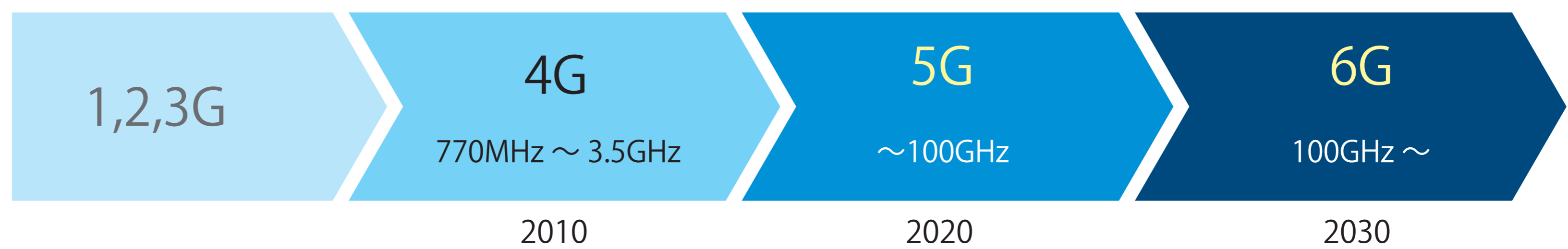
※Properties are not guaranteed values.

# Low Dielectric Adhesive

A low dielectric adhesive compatible with high frequency communication

## What's low dielectric?

Evolution of mobile communication systems



## Applications

The adhesive is expected to be used in next-generation high-speed communication components such as circuit boards and antennas.

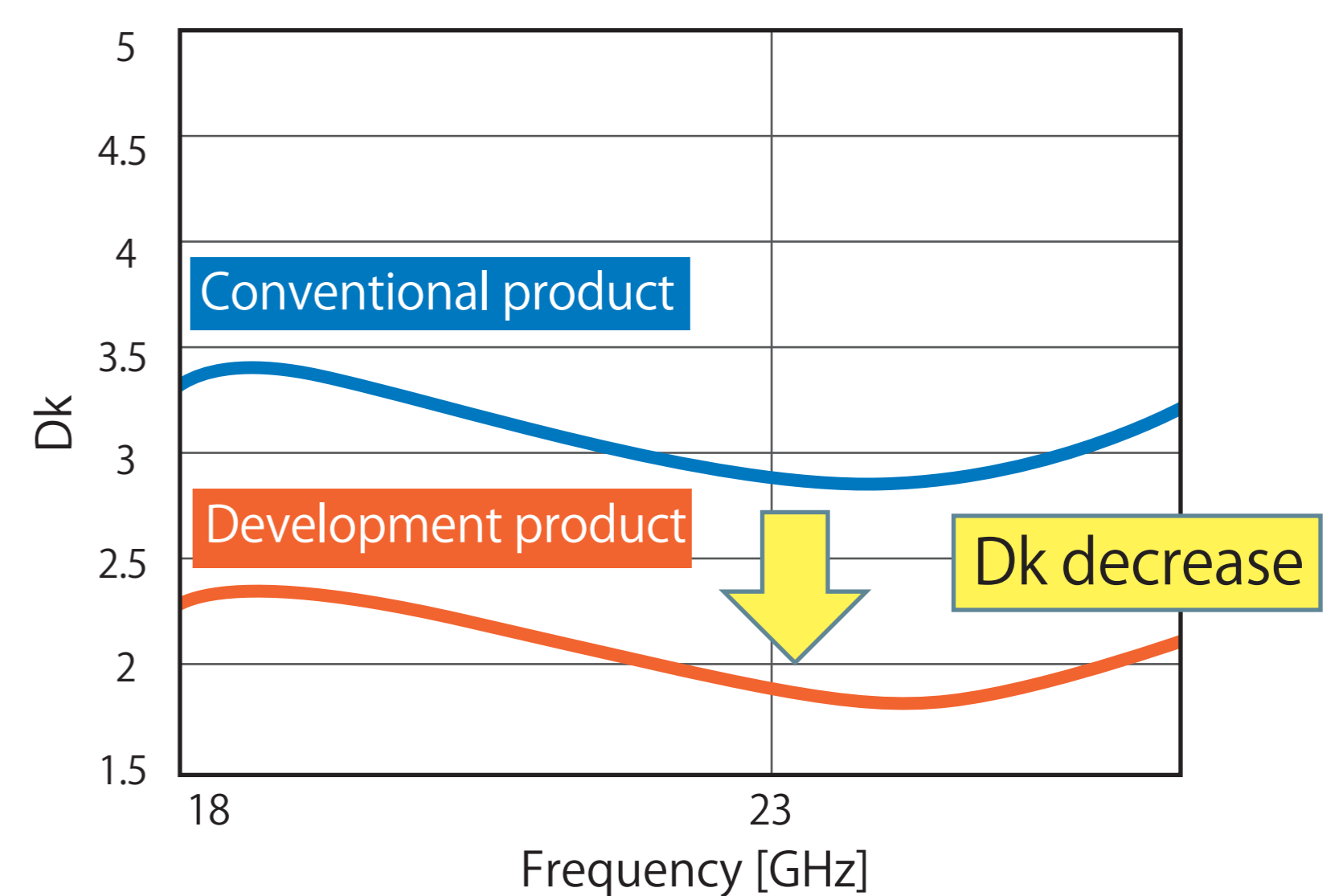
## Properties

Lower dielectric constant than our conventional products. Possible to achieve both low dielectricity and adhesiveness.

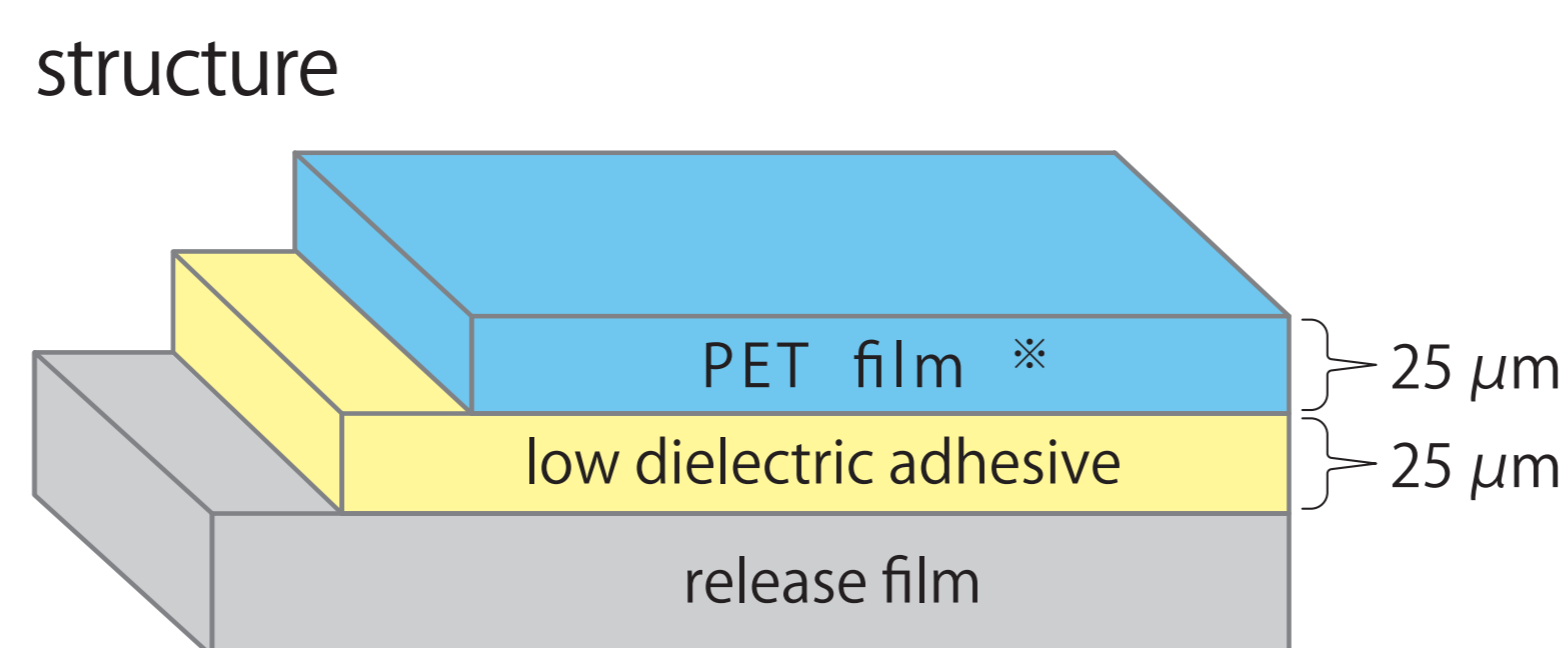
### Dielectric properties

		Development product	Conventional product
Dk	18GHz	2.3	3.5
	22GHz	2.0	3.0
	25GHz	1.9	2.9

measurement method: free space method



### Adhesive properties



※Used only for measuring adhesive properties

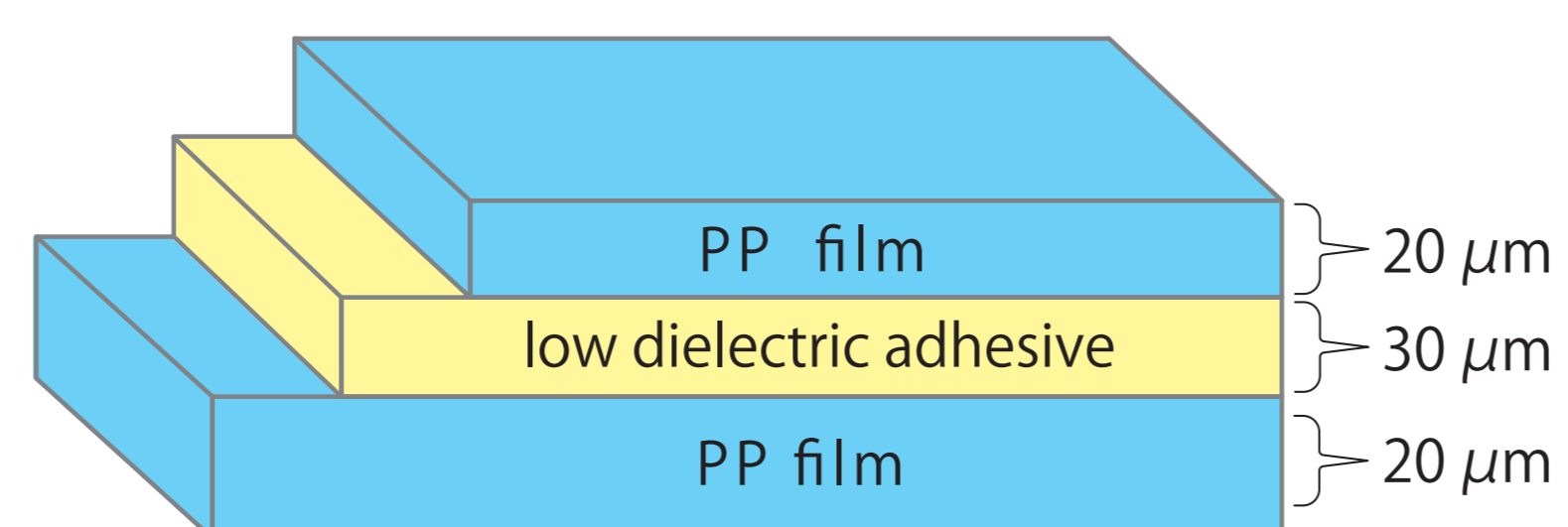
adhesive strength [N/10mm]	2.3
holding power [mm]	0
ball tuck [No.]	7

※Properties are not guaranteed values.

## Dielectric properties

Almost no frequency dependence, exhibits similar low dielectric properties up to high frequencies

Structure



※Structure for measurement.

Dielectric constant / Dissipation tangent

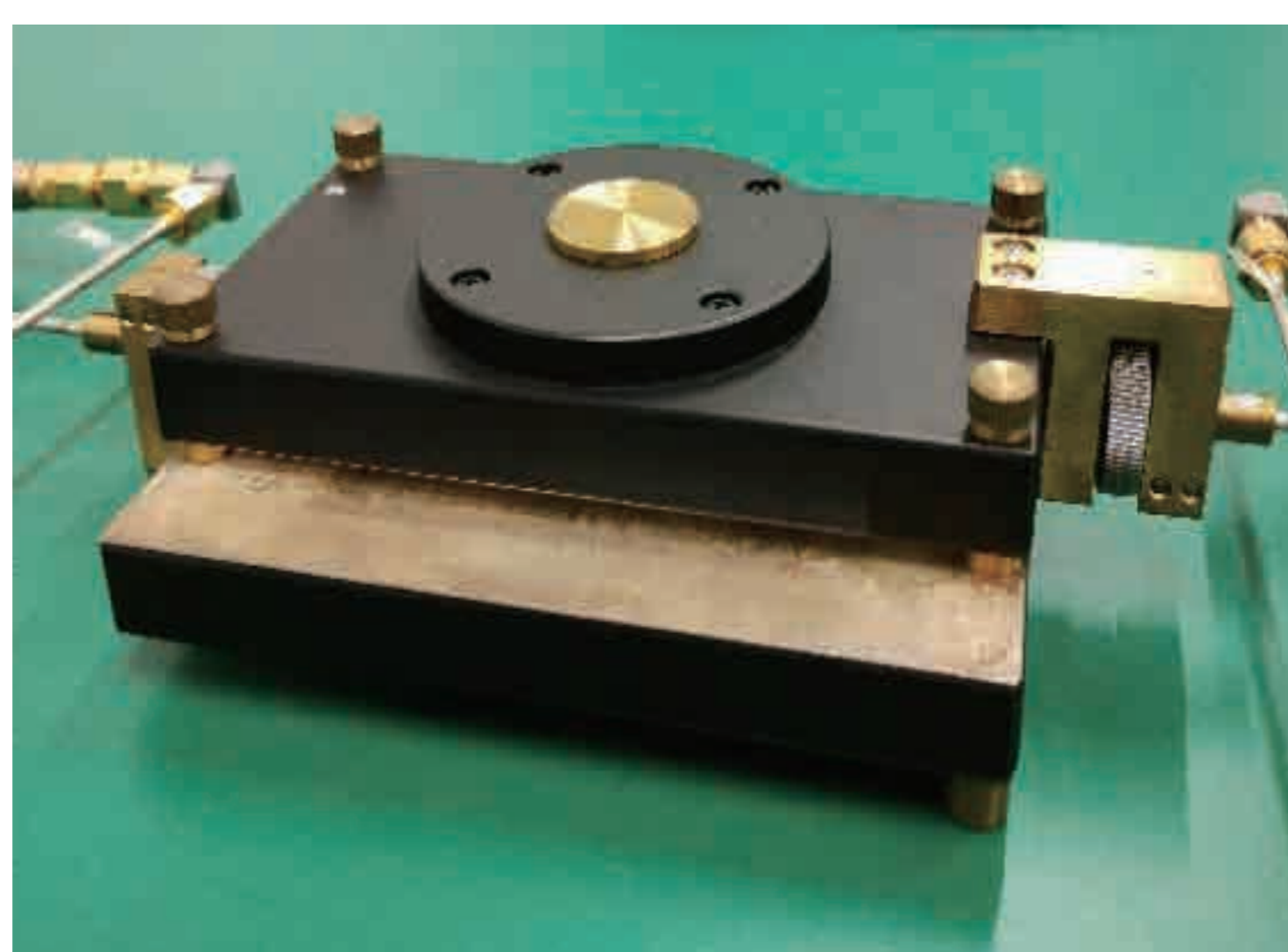
The following data was measured using the resonator method.

	3GHz	15GHz	28GHz	60GHz	80GHz
Dielectric constant	2.39	2.32	2.38	2.38	2.38
Dissipation tangent	0.013	0.011	0.011	0.011	0.011

※Measurement data arithmetically excludes the value of PP film.

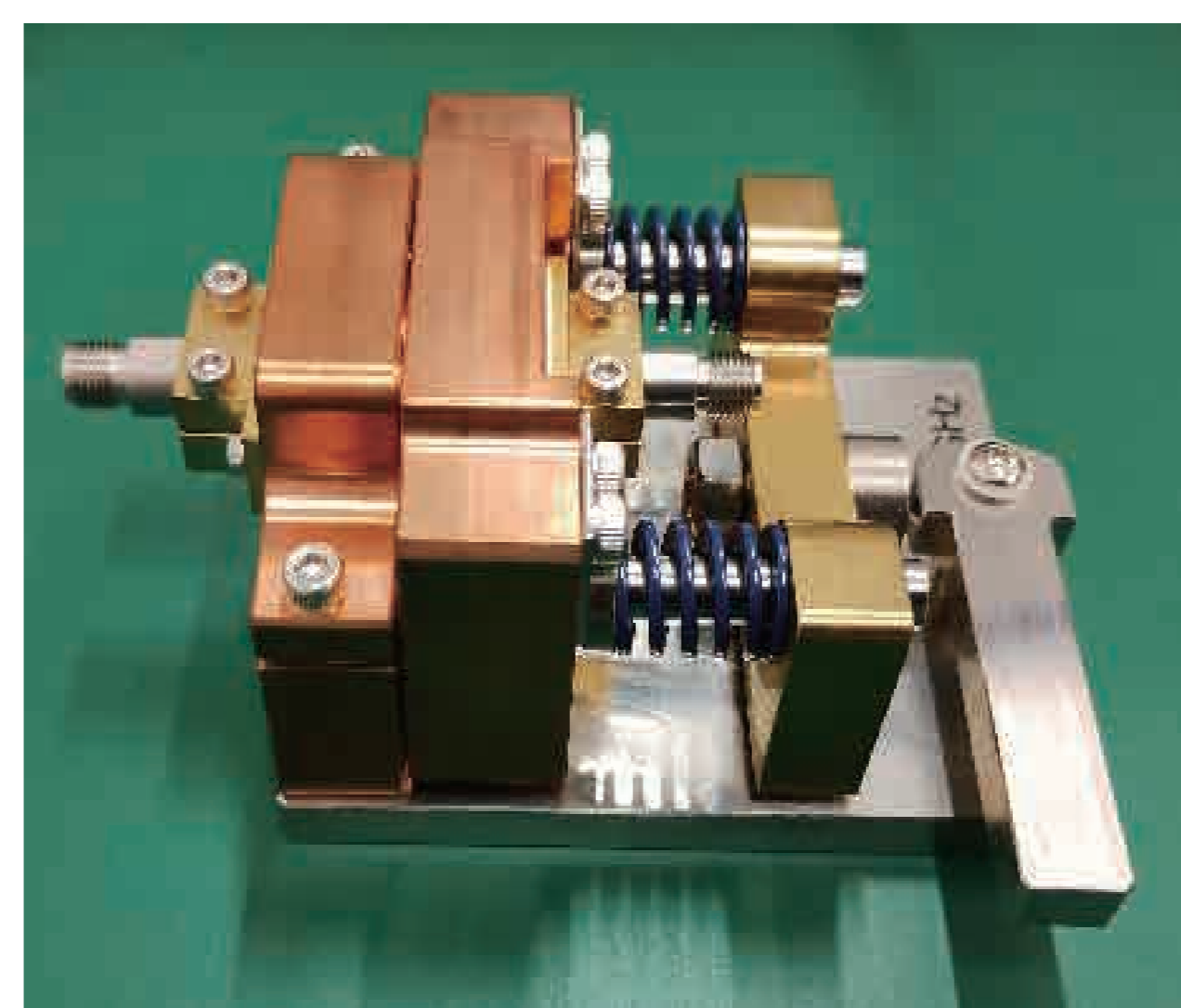
※Properties are not guaranteed values.

Split Post



3GHz、15GHz

Split Cylinder



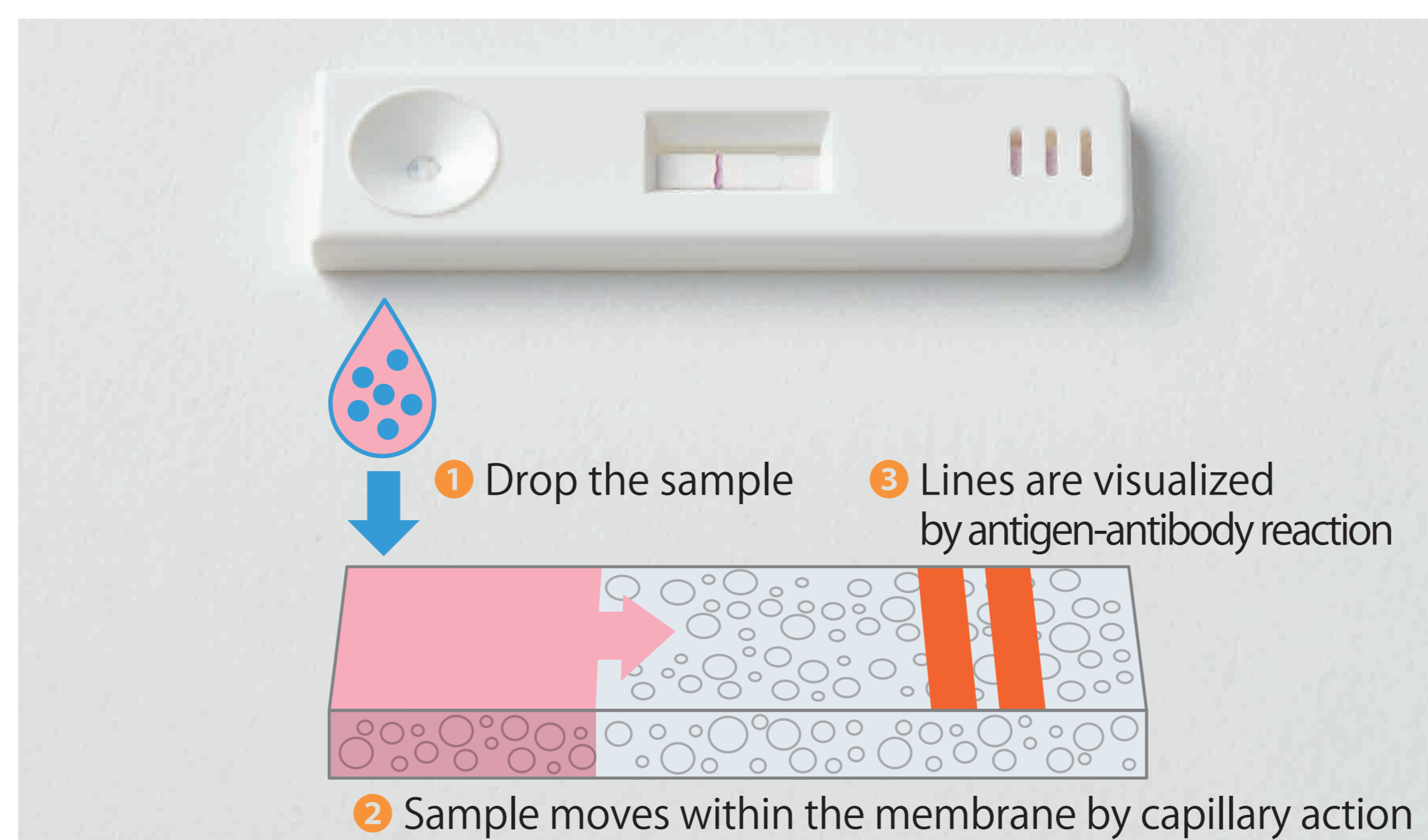
28GHz、60GHz、80GHz

# Nitrocellulose Membrane For immunochromatography

Medical components used in simple test kits that utilize antigen-antibody reactions.

## What's nitrocellulose membrane

It is a porous material mainly made of nitrocellulose, and the sample that is dropped moves through the membrane by capillary action.



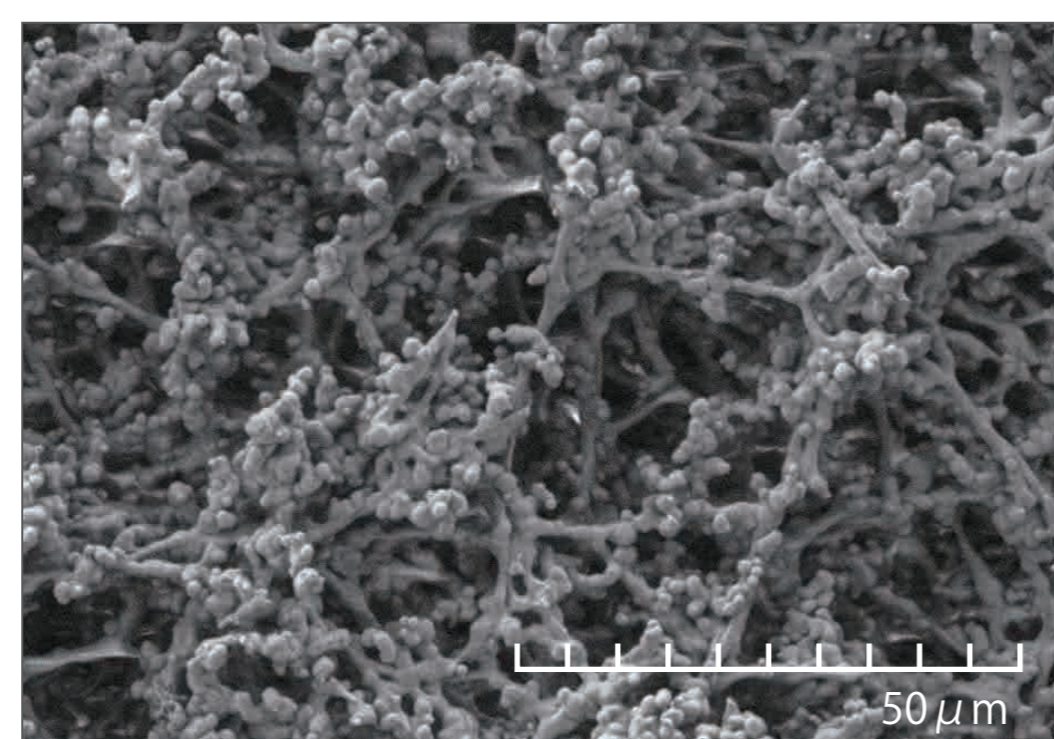
※The diagram above shows a simplified internal structure of the test kit.

## Points

- 1 | Stable supply through domestic production in Japan
- 2 | Shorter lead time compared to products from overseas
- 3 | Can be customized for each customer

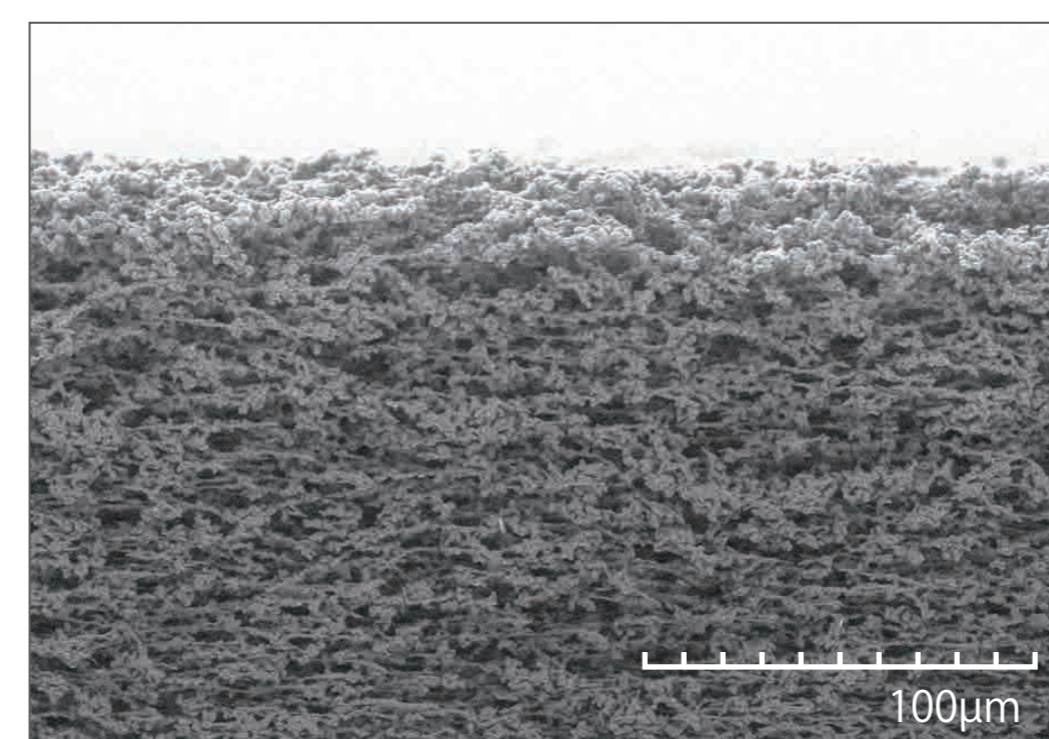
### Special membrane with porous structure

surface



(1000 x)

cross section



(400 x)

water absorption

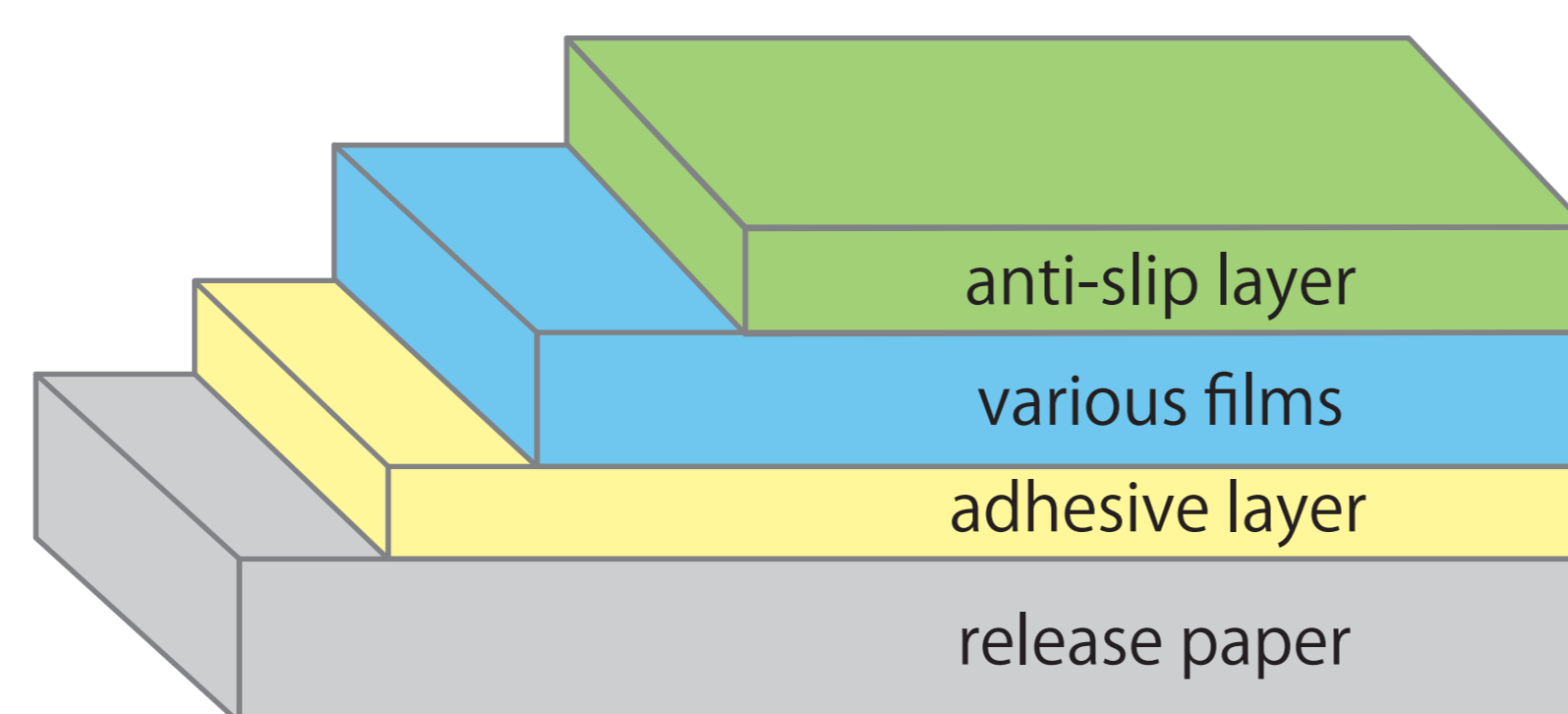


※Electron micrographs were taken at the National Institute for Materials Science (NIMS).

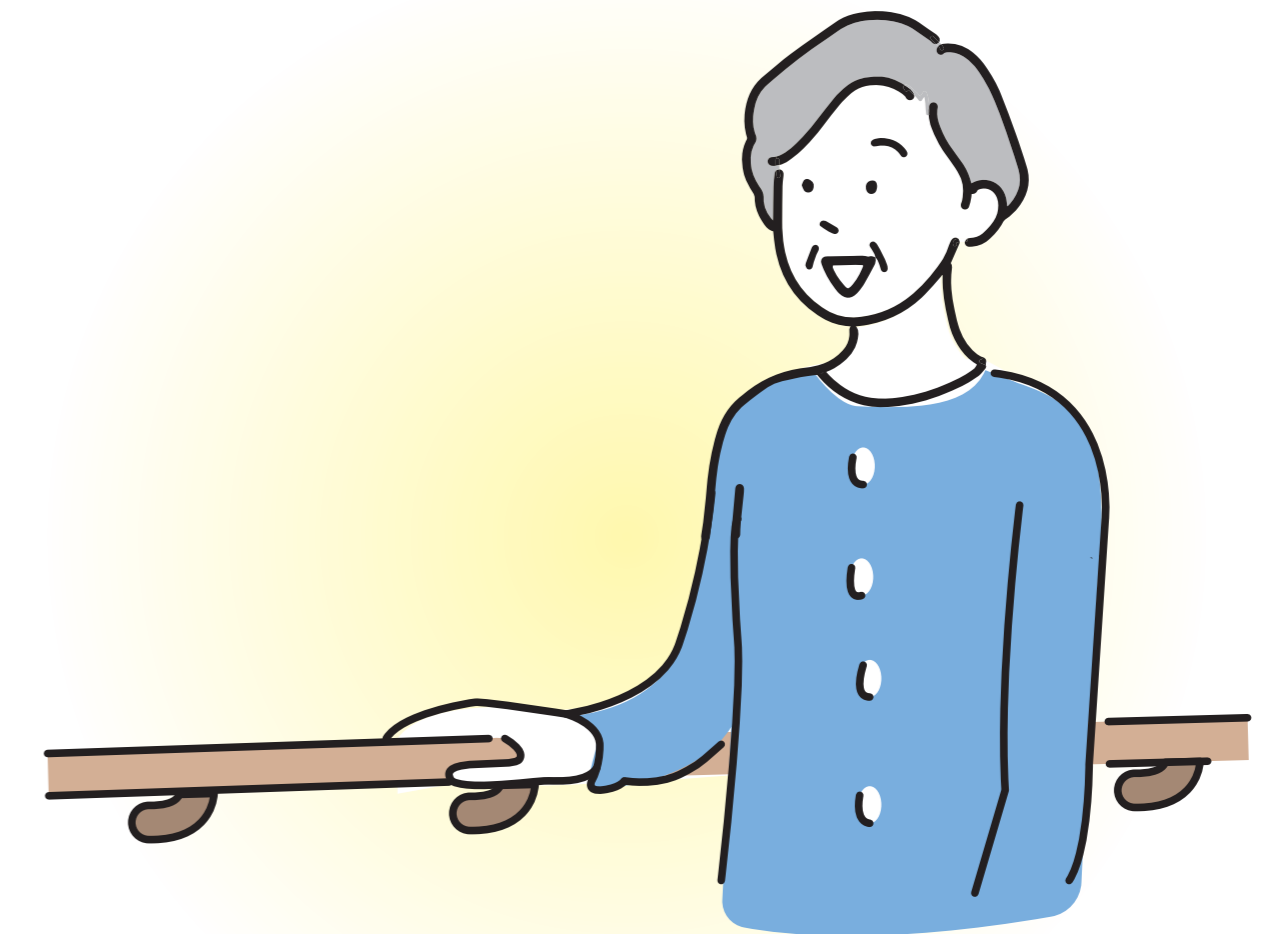
# Soft Feel Tape

Anti-slip tape designed to feel comfortable on bare skin.

## Structure



※The structure is an example and can be changed upon request.



## Features

- 1 **Feel of touch**  
Anti-slip tape with a soft feel that reduces stress on bare skin  
Ideal for anti-slip handrails and floors in nursing care settings, etc.
- 2 **Diverse designs**
  - Adjustable to desired color
  - Texture can be changed
  - The shape of the seat can be freely designed
- 3 **Hygienical**  
Can provide antibacterial, mildew resistant, and antiviral properties  
Even if it gets dirty or damaged, it can be easily replaced, so you can use it cleanly

### 【Mildew resistance test results (in accordance with JIS Z 2911 B)】

	Incubation days			
	7 days later	14 days later	21 days later	28 days later
Development product (mildew resistance)	0	0	1	1
Competitor's product①	4	4	4	4
Competitor's product②	4	4	4	5

evaluation	Bacteria growth condition
0	No bacteria are growing at all
1	Visible under a microscope
2	Growth below 25%
3	Growth of 25% - 50%
4	More than 50% growth
5	Covers the all surface

※Properties are not guaranteed values.

## Properties

	Development product	Competitor's product ①	Competitor's product ②
static friction coefficient	3.0	2.3	1.5
dynamic friction coefficient	2.2	1.5	1.2

load : 20g, speed : 10mm/sec, contactor : tactile contactor

## Durability performance

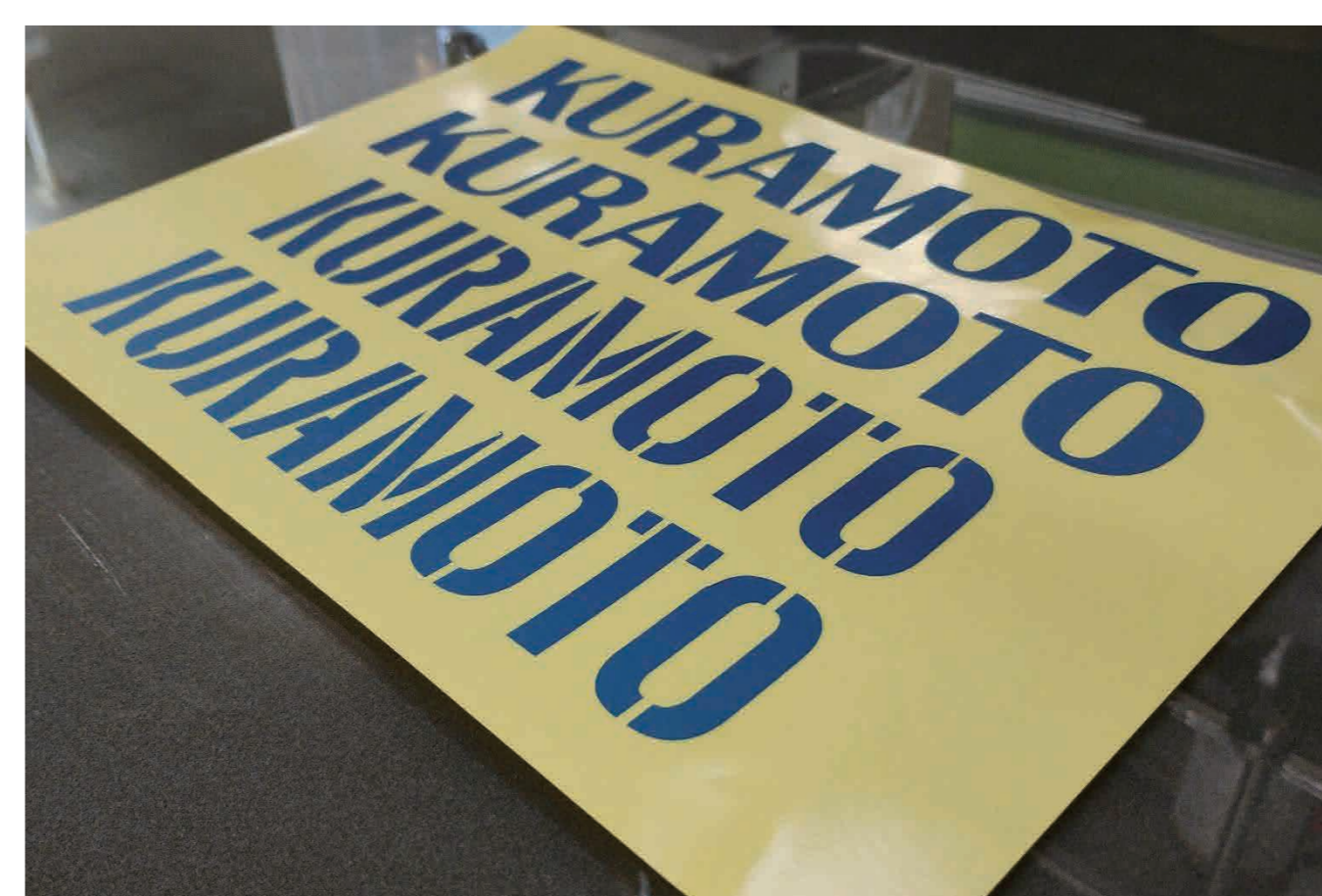
test	conditions	Development product	Competitor's product ①	Competitor's product ②
Cold and heat repeatability	(-10°C × 1h → room temperature × 10min → 60°C × 1h) × 5cyc	○	○	○
High temperature and humidity resistance	50°C, 90RH% × 7days	○	○	○
Hot water resistance	50°C, × 2days	○	○	○
Chemical resistance	Household detergent(alkalinity) × 1h	○	○	○
	Household detergent(neutral) × 1h	○	○	○
	Household detergent(mild acidity) × 1h	○	○	○
	Household detergent(strong alkality) × 1h	○	○	○

○ : No change in appearance    × : change in appearance

※Properties are not guaranteed values.



Since it is a semi-transparent product, the design of the base can be utilized.



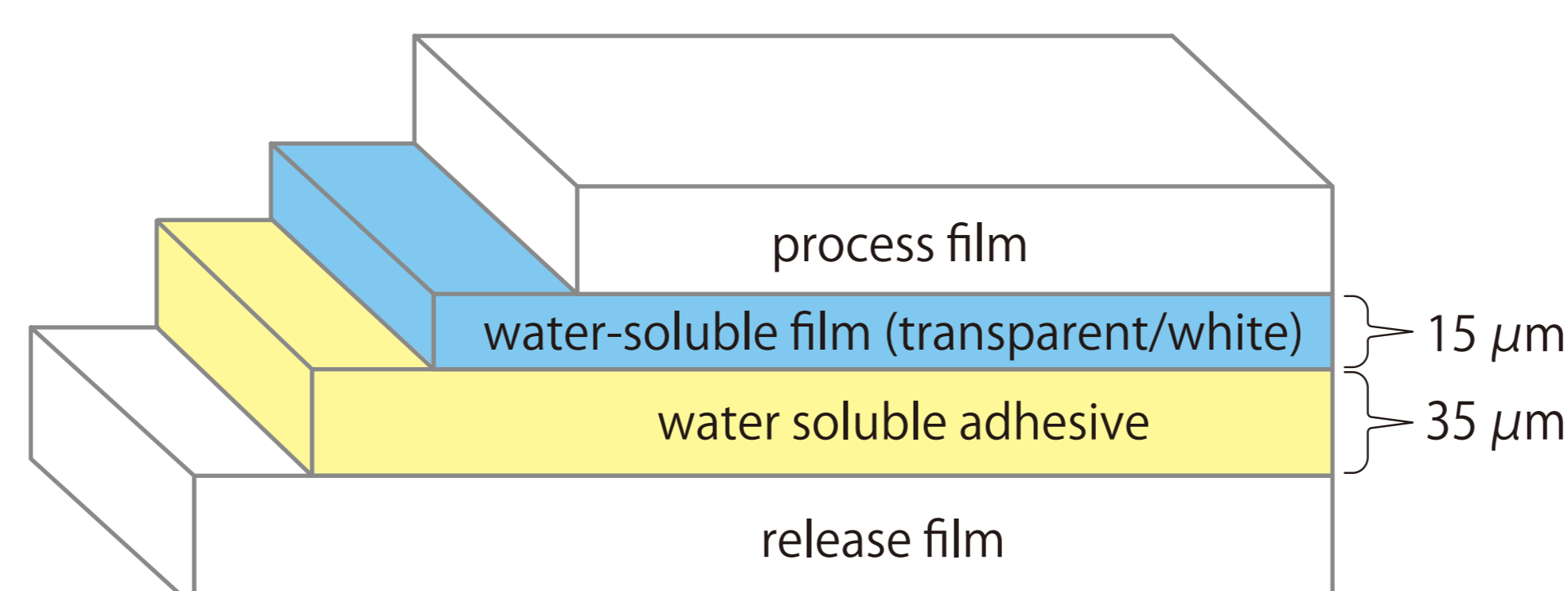
It is also possible to color and shape the anti-slip layer.



# Water-soluble adhesive sheet

This is an adhesive sheet where both the film and the adhesive are soluble in water.

## Structure



## Features

- 1 **Solubility**  
Both the base material and adhesive dissolve in water. Completely soluble even in cold water.
- 2 **Can be colored**  
The base material can be colored white and used for management labels, etc.

## Applications

- As a protective sheet and an application that can be removed using a water washing process.
- Packaging materials and Management label.

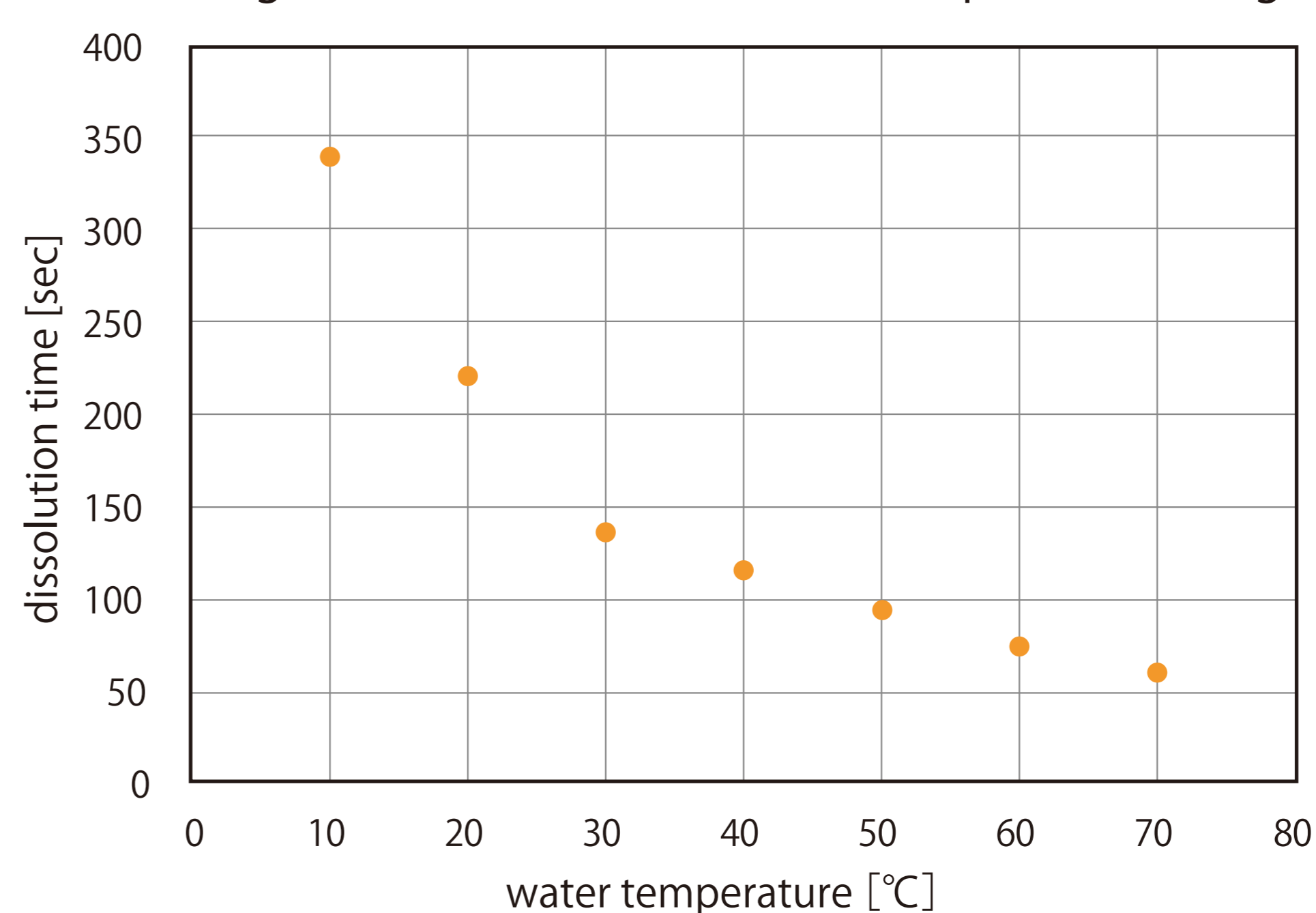
## Properties

Adhesive strength [N/10mm]	2.4 No glue residue
----------------------------	------------------------

※ Adhesive strength  
Adherent: SUS, Tensile speed: 300mm/min

※ The process film was peeled off and a 25 μm PET adhesive sheet was pasted on the surface of the water-soluble film as a reinforcing material and measured.

【Changes in dissolution time due to temperature changes】



# antibacterial/antimold/antivirus 『ion pure seal』

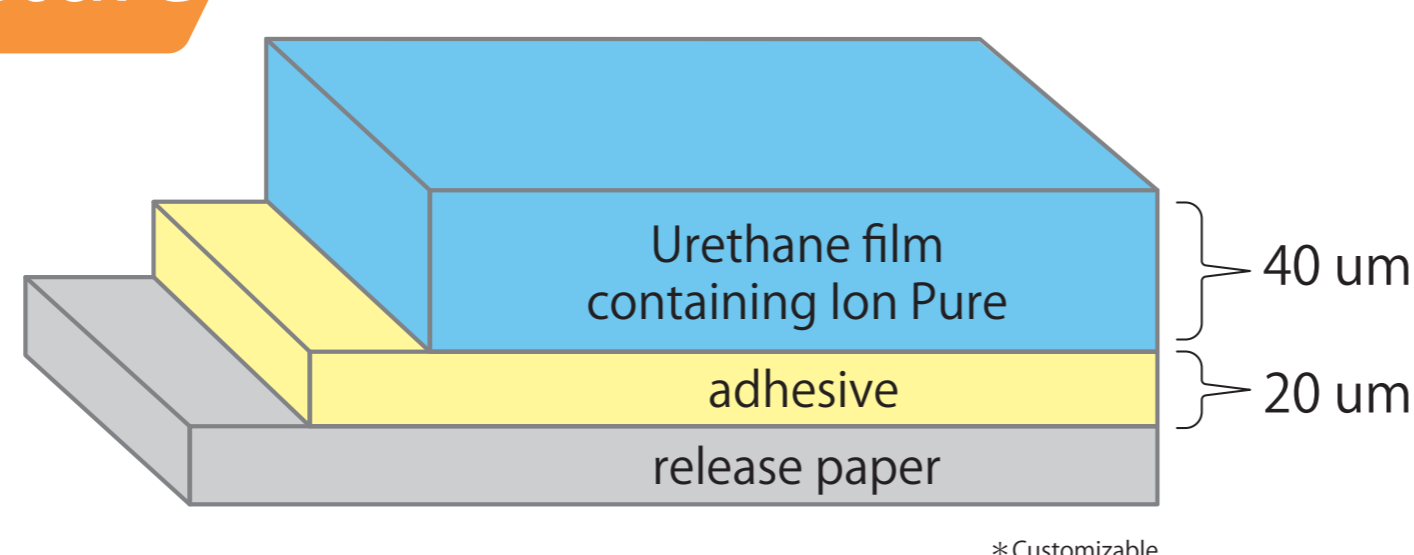


## Features

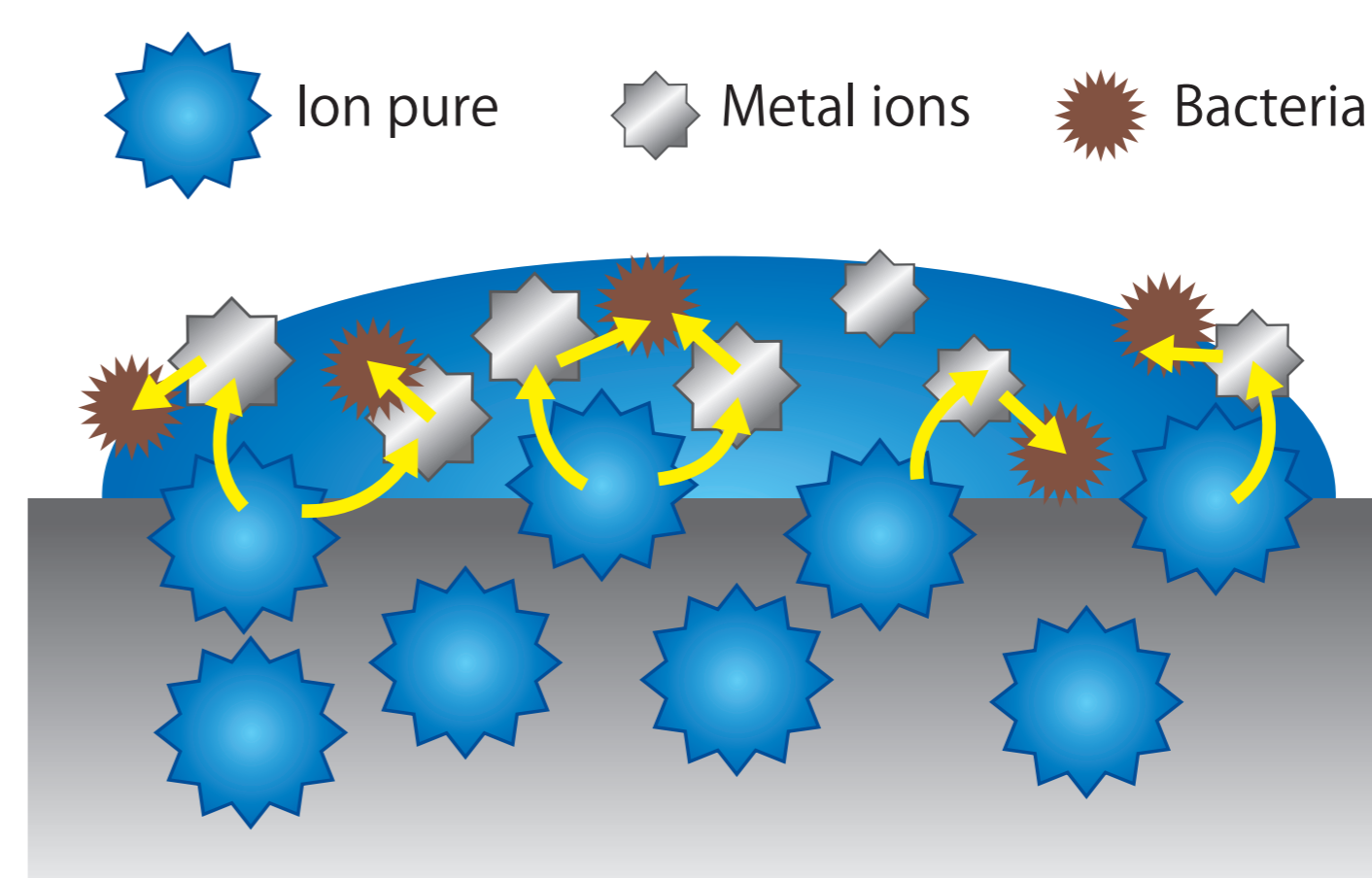
- The industry's only\* antibacterial and antiviral seal that has passed the SIAA weathering test for outdoor use.
- The antibacterial and antiviral agent used is Ion Pure, which has been sold around the world for over 30 years.
- Thanks to silver ions, the number of viruses attached to the film is reduced by more than 99%.
- Since it uses urethane film, it has good followability to curved surfaces.

\*Based on our research as of September 2023.

## Structure



## Mechanism of Ion Pure



Ion Pure is a 100% glass powder. When it comes into contact with moisture in the air, it dissolves very slightly and releases metal ions little by little. Its metal ions are thought to inhibit the growth of bacteria, viruses, and mold.

## Paste verification for 180 days



The stickers are light blue and transparent and do not interfere with the design. Maintains transparency even after 6 months of outdoor use.

## Antibacterial, antimold, antiviral performance

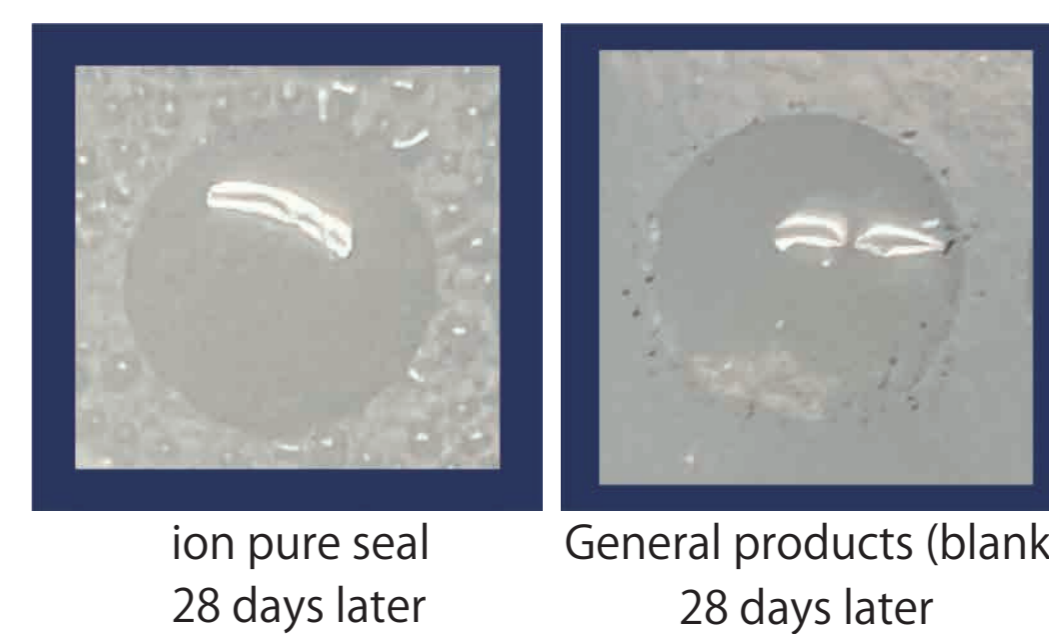
### 【Testing agency】

Ishizuka Glass Co., Ltd. Antibacterial Testing Laboratory (Antibacterial/Antimold Testing)

Japan Textile Products Quality and Technology Center (Antivirus test)

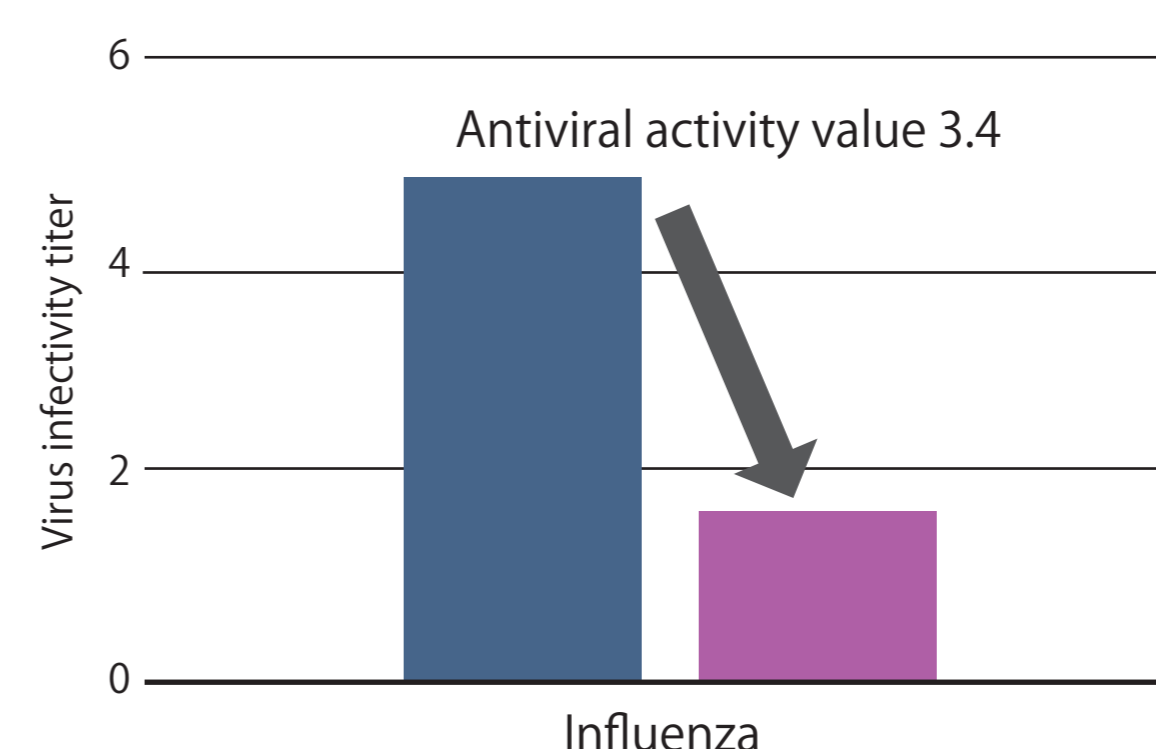
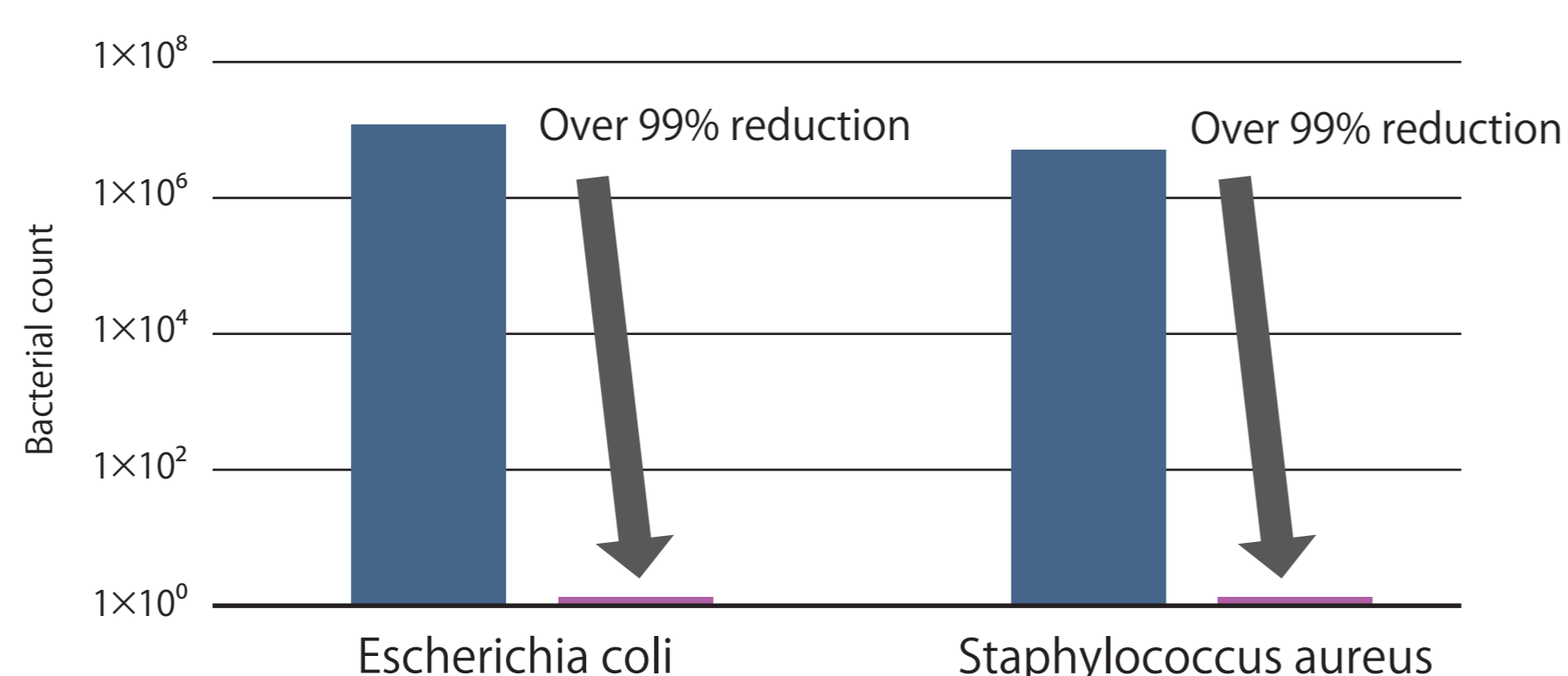
### 【Test method】 JIS Z 2801, JIS Z 2911 A, ISO2170

※These are test results and are not guaranteed values.



Film		Antibacterial test results (activity value)		Antiviral test results (activity value)
		Escherichia coli	Staphylococcus aureus	With envelope
For outdoor	Water resistant <sup>2</sup>	7.0	6.5	3.4
	Lightfastness <sup>2</sup>	5.4	6.0	≥4.4

Aspergillus niger	7 days	14 days	21 days	28 days
General products (blank)	Mold area is less than 25%	Mold area is 25% or more	Mold area is 25% or more	Mold area is 25% or more
Ion pure seal	No mold growth observed	No mold growth observed	No mold growth observed	No mold growth observed



Seller: Ishizuka Glass Co., Ltd.

Manufacturer: Kuramoto Sangyo Co., Ltd.