

**EXTRUSION**  
**ALPHAN**  
**SMER**  
**LTECH**

Hot Melt Films

Thermoplastic Elastomer Films

Co-extruded Protective Films



# Sales Network & Production Facilities

## Origins of Vibrant Energy - Nihon Matai Domestic Network and Development/Production Bases

Nihon Matai operates five sales bases in Japan. We are committed to meeting the needs of customers on a daily basis, with a network system directly connected to our customers. Our development and production bases include three plants in Eastern Japan, and three plants and an R&D Center in Western Japan. We pursue advancements in technology and production, and offer products that meet diversified needs.



# SPECIALITY FILM LINEUP CATALOG

Nihon Matai Co., Ltd.  
 Speciality Film Lineup Catalog

## Technologies That Allow Nihon Matai to Expand Business Overseas

Nihon Matai operates overseas production and sales bases at 11 locations in four countries including China and Southeast Asia. Our global production supply system makes full use of our technological capabilities cultivated over many years.



# NIHON MATAI SPECIALITY FILMS

# ELPHAN® Hot Melt Films

## Pioneer in Elastomer Films in the Country

For the first time in Japan, Nihon Matai realized the practical applications of extruded thermoplastic elastomer urethane. Our processing technologies, which accumulated over many years, enable sheeting of various high function resins, and are widely adopted in industries and fields, including information appliances, electric home appliances, audio equipments, sporting goods, and transport equipments.

By utilizing extrusion processing technologies, cultivated with ESMER® and ELPHAN®, we offer functional multilayer films made of different materials, such as general purpose resins, elastomers, and engineering plastics. We also manufacture on consignment. Through integration of our core competence lamination technologies, which other manufacturers cannot replicate, we are able to manufacture completely unique products with our customers.

## Manufacturing Equipment

### One of the largest film former machines in Japan

- The maximum product width is 2,200 mm, and the range of thickness is 20 μm ~ 2,000 μm.
- Lamination of films made of different materials is also possible.
- Capable of extrusion of various kinds of thermoplastic elastomer resins (polyurethane, polyester, polyamide, polyolefin, etc.).

### 3-type, 3-layer clean film former, and 4-type, 5-layer film former capable of laminating

- The maximum product width is 1,600 mm, and the range of thickness is 20 μm ~ 200 μm (3-type, 3-layer clean film former).
- The maximum product width is 1,350 mm. Lamination of films made of different materials is also possible (4-type, 5-layer film former).

**General Purpose Resins**  
ABS PE PP EVA  
EEA EMMA  
EMAA I.O  
etc...

**Elastomer**  
TPU TPA TPO  
TPEE TPV  
etc...

**Engineering Plastics**  
PC PA6 PA66  
PET PBT  
etc...

**EXTRUSION**

ESMER LITECH  
Co-extruded Protective Films

Turns any kind of resin into film...  
On to future with technology!

## ELPHAN®

### Hot Melt Type Adhesive Film

ELPHAN® is a hot melt type adhesive film with polyamide, polyester, polyurethane, and polyolefin resins as its base. Materials are adhered by being heated and pressed, by which an even adhesive layer can be obtained. It is applicable to a wide range of materials, including textiles, metal, wood, plastic, glass and leather.

#### Features

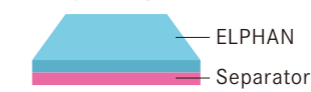
1. Film form allows for an even adhesive layer.
2. Can be cut into various shapes, which prevents adhesive to protrude out.
3. Viscosity adjusting and solvent drying processes, required for a conventional adhesive, can be eliminated. Therefore, a high degree of skill is not required and substantial cost reductions are possible.
4. Strong adhesive force can be easily obtained by any of the following methods: high frequency heating, ultrasonic sealing, and hot pressing.
5. Since no solvent is used, there are no odors or fire risks; workability and safety are excellent.

#### Bonding Method

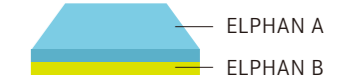
Materials are heated and pressed with a hot press or hot roll machine.

#### Examples of Structure

##### Single layer



##### Two layers



##### Three layers



#### Typical Grades

\*Physical property values shown are typical values of physical properties, and these values do not indicate guaranteed minimum values as per material standard.

\*A wide variety of grades are available. Please contact us for more details.

		PH-413	PH-2251A	UH-203	NT-120	OH-501	
		Polyester type		Polyurethane type	Polyamide type	Polyolefin type	
Melting point (°C)		110	110	98	107	78	
Tensile strength (MPa)		12	44	22	29	9	
Tensile elongation (%)		660	540	490	350	470	
Adherend	Textile	Polyester	◎	◎	○	△	
		Nylon	○	○	◎	○	
	Film	PET	◎	○	×	-	×
		ABS	◎	◎	◎	-	×
Metal	PVC	◎	◎	◎	-	△	
	Copper foil	◎	◎	-	○	-	
	Aluminum	◎	◎	-	○	-	
	SUS	◎	◎	-	○	-	

#### Applications

##### Vehicles

Weight saving Heat resistance



We offer films with durability and heat resistance compatible with vehicle environments.

##### Construction Materials

Weather resistance Durability



We offer films compatible with adherend materials and required durability/weather resistance for exterior materials, such as outer walls and roofs, as well as interior materials, such as system kitchens and unit baths.

##### Apparel

Waterproof breathability Wash resistance



We offer films according to product applications, such as emblems, marks, seam reinforcements, and water proofing.

##### Electronics

Durability Transparency



We offer films with adherend materials and required durability for use in the assembly of electronic devices.

## ESMER®

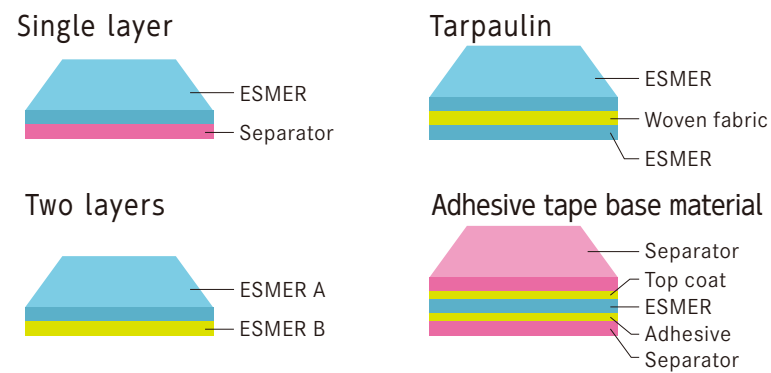
### Extrusion-Molded Sheet/Film Products

In 1973, our company began extrusion processing of thermoplastic polyurethane elastomer (TPU) for the first time in Japan. This product is a thermoplastic elastomer film based on not only polyurethane but also polyester, polyamide, polyolefin, etc.

#### Features

- 1. Excellent elasticity and wear resistance**  
Durability, such as wear resistance, is superior to rubber, even with the elasticity of rubber.
- 2. Capable of lamination with various base materials**  
Since lamination with base materials, such as textiles and plastic films, is possible for the intended purpose, new value can be added.
- 3. Capable of secondary processing**  
With its thermoplasticity, secondary processing, such as thermal fusion bonding and welder bonding, is possible. Functionality can also be added through printing, various types of coating, and coloring.

#### Examples of Structure



#### Functionality and Grade

\*A wide variety of grades are available. Please contact us for more details.

	ESMER URS (Polyurethane type)	ESMER PNS (Polyester type)	ESMER NES (Polyamide type)
Specific gravity	1.13~1.26	1.12~1.19	0.95~1.1
Flexibility	○	○	△
Mechanical strength	◎	◎	◎
Cold resistance	◎	○	○
Heat resistance	○	◎	◎
Weather resistance	△	○	○
Oil resistance	◎	◎	◎
Wear resistance	◎	○	○
Lightweight	△	△	○

- Weather resistance grade
- Breathability grade
- Welder characteristic specialization grade
- Hydrolysis resistance grade
- Heat resistance grade
- Stress-strain curve improvement grade
- Light shielding grade
- Impact absorbing grade
- Multilayer co-extrusion grade
- Polyolefin grade

#### Applications

<b>Vehicles</b> Paint protection Headrest component We offer various films, including those for paint protection and interior materials, by using special TPU base materials that can withstand harsh environments.		<b>Industrial Products</b> Impact absorbing buffer materials Protection of LCD surface We offer customized essential products, such as impact absorbing materials, glass protection films, and speaker vibration plates used for smartphones.	
<b>Electronics</b> Dicing OA equipment material We offer films with improved stress-strain curve by mixing special resins, as well as TPU with excellent wear resistance used for OA equipment.		<b>Healthcare</b> Nursing care bed Surgical tape We offer elastomer films with distinctive features, such as TPU with excellent weldability and breathability.	

## ELTECH®

### Extrusion-Molded Surface Protective Films

ELTECH® is a protective film made by melt co-extrusion that can be used for surface protection of various plastic films and metals that can be customized for specific purposes and applications.

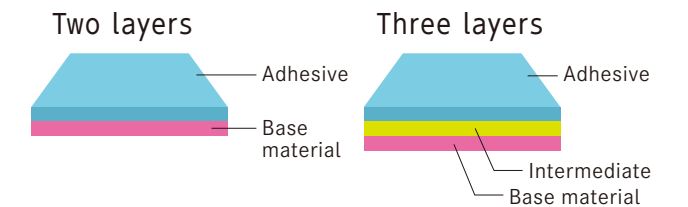
#### Features



- Self-adhesive type, causing almost no contamination or adhesive residue on adherends.
- Our lineup ranges from slight adhesive types to strong adhesive types.
- Small amount of fish eyes.
- Manufactured in a class 10000 clean environment.
- Adhesive force does not increase much over time (weak adhesive type).
- Suitable for thicknesses from 30 μm to 150 μm.
- Can be adhered to various materials such as optical sheets, plastic plates, aluminum plates, stainless steel plates, coated steel plates and PVC steel plates.
- Environmentally friendly product that does not use organic solvents.
- PO film with limited extension gives excellent workability during peel-off.

#### Examples of Structure

Because of the co-extrusion method, the base layer and adhesive layer are firmly adhered.



#### Standard Specifications

Item	Standard value
Thickness (μm)	30~100
Product width (mm)	Max 1,600
Roll length (m)	Arbitrary
Adhesive strength (N/25mm)	0.01~7.2
Coloring	Different colors

#### Applications

<b>Optical Films</b> Slight adhesive Strong adhesive We offer protective films for diffusion plates, prisms, and optical films.		<b>Coated Steel Plates</b> Weak adhesive Mild adhesive Strong adhesive Self-adhesive type based on polyolefin film. Highly effective for coated steel plates.	
<b>Various Plastic Plates</b> Slight adhesive Weak adhesive Highly effective for various plastic plates, as well as optical sheets that require very little contamination.		<b>PVC Steel Plates</b> Mild adhesive Strong adhesive Self-adhesive type based on polyolefin film. Highly effective for PVC steel plates.	

# Research and Development

## Manufacturing with High Originality, Cultivated by Our Core Technologies

In the R&D department of Nihon Matai, we utilize core technologies and knowledge that we have cultivated over many years in the functions of materials, and create new value.

Our R&D center is equipped with small and large prototype machines, as well as evaluation equipment to meet all kinds of customer needs. By utilizing our core technologies, which are thermoplastic resin extrusion, lamination, coating, and printing, we have established a system to speed up development and also to reduce its cost. In addition, we respond quickly to needs for new advancements and cutting-edge solutions, while actively assessing the introduction of prototype machines and evaluation equipment. We manufacture with high originality, with a focus on development, always staying ahead of other manufactures.



## Examples of Our Research and Development Equipment

### Sheet Extrusion Machine



[Features and purpose of use]

- Prototyping of new sheets
- Selection of resins and preparation of samples
- Maximum processing width: 500 mm

### Multilayer Film Extrusion Machine



[Features and purpose of use]

- Prototyping of new multilayer films
- Selection of resins and preparation of samples
- Maximum processing width: 500 mm

### Compound Machine



[Features and purpose of use]

- Manufacturing of samples of functional thermoplastic resin pellets
- Utilization of initial evaluation of material design and process design
- Equipment specifications: 20 mm $\phi$ , intermeshed co-rotation twin screw extruder

### Coating Machine



[Features and purpose of use]

- Prototyping of new films and laminated films
- Selection of materials and manufacturing of samples such as functional thin films, AC agents, and adhesives
- Coating method: Gravure direct and comma  
Maximum processing width: 500 mm

\*We also offer extrusion laminating machines, thermal laminating machines, and inflation machines.

## VALUE CREATION COMPANY

### Creating a Rich Future by Enhancing the Value of Materials

Nihon Matai Co., Ltd. is committed to providing superior products by using its advanced technological capability and a genuine and effective distribution services, enhancing the value of customers' products, and contributing to the development of industry and the culture of life. We aim to be a company with pride and dreams.



Nihon Matai Co., Ltd.

<http://www.matai.co.jp>

[Contact] Nihon Matai Co., Ltd. High Performance Film Division

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[High Performance Film Website]

<http://www.matai.co.jp/english/product/resin>



This is a film type hot melt adhesive with thermoplastic elastomer resins as its base. Materials are adhered by being heated and pressed, by which an even adhesive layer can be obtained. It is applicable to a wide range of materials.

## 1 . Features and Applications

- Excellent adhesive strength for paper and textiles.
- Excellent wash resistance and dry-cleaning resistance when adhered to textiles.

## 2 . Table of Physical Properties

			NT-100	NT-120
Material		Polyamide type		
Melting point (°C)			86	107
Tensile strength (MPa)			17	29
Tensile elongation (%)			330	350
100% modulus (MPa)			13	18
Adherend	Paper	Newspaper	◎	◎
		Craft paper	◎	◎
		Fine paper	◎	◎
	Textile	Polyester	○	○
		TC broad cloth	○	○
		Nylon	◎	◎
	Metal	Copper foil	○	○
		Aluminum	○	○
		SUS	○	○

\*Physical property values shown are typical values of physical properties, and these values do not indicate guaranteed minimum values as per material standard.

## 3 . Product Standard

(NT100) 120  $\mu\text{m}$   $\times$  1,050 mm width  $\times$  200 m roll

(NT120) 50, 80, 100  $\mu\text{m}$   $\times$  1,050 mm width  $\times$  200 m roll

\*The product thickness and width can be changed at your request.

## 4 . Recommended Adhering Conditions

To obtain appropriate adhesive strength, proper controls of the temperature (150°C), pressure (1kgf/cm<sup>2</sup>) and time (10 sec.) are necessary. As for the adhering temperature, adjust the adherend and heating method before use so that the hot melt film will be 150°C or higher.

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[ELPHAN Website]

<http://www.matai.co.jp/english/product/resin/resin2>




**MATAI**  
www.matai.co.jp

This is a film type hot melt adhesive with thermoplastic elastomer resins as its base. Materials are adhered by being heated and pressed, by which an even adhesive layer can be obtained. It is applicable to a wide range of materials.

## 1 . Features and Applications

- Excellent adhesive strength is obtained by low temperature adhesion.
- Offers excellent wood adhesion, which is ideal for woodworking and adhering miscellaneous goods.

## 2 . Table of Physical Properties

		OH-501	
Material		Polyolefin type	
Melting point (°C)		78	
Tensile strength (MPa)		9	
Tensile elongation (%)		470	
100% modulus (MPa)		5	
Adherend	Textiles	Polyester	△
		TC broad cloth	○
		Nylon	○
	Film	PET	×
		Soft acrylic	×
		Hard acrylic	×
		ABS	×
		PVC	△

\* Physical property values shown are typical values of physical properties, and these values do not indicate guaranteed minimum values as per material standard.

\* A wide variety of grades are available. Please contact us for more details.

## 3 . Product Standard

50, 80, 100  $\mu\text{m}$   $\times$  1,050 mm width  $\times$  200 m roll

\* The product thickness and width can be changed at your request.

## 4 . Recommended Adhering Conditions

To obtain appropriate adhesive strength, proper controls of the temperature (100°C), pressure (1kgf/cm<sup>2</sup>) and time (10 sec.) are necessary. As for the adhering temperature, adjust the adherend and heating method before use so that the hot melt film will be 100°C or higher.

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This is a film type hot melt adhesive with thermoplastic elastomer resins as its base. Materials are adhered by being heated and pressed, by which an even adhesive layer can be obtained. It is applicable to a wide range of materials.

## 1 . Features and Applications

- Excellent adhesive for films and molded items made from polyester.
- Can be adhered to metal, such as aluminum and copper, as well as textiles.

## 2 . Table of Physical Properties

			PH-413	PH-419	PH-405	PH-640	PH-2251A	
Material		Polyester type						
Melting point (°C)			110	117	140	86	110	
Tensile strength (MPa)			12	13	25	8	44	
Tensile elongation (%)			660	430	170	820	540	
100% modulus (MPa)			7	11	14	5	5	
Adherend	Textile	Polyester	◎	◎	◎	◎	◎	
		TC broad cloth	○	○	○	○	○	
		Nylon	○	○	○	○	○	
	Film	PET	◎	◎	◎	◎	◎	
		Soft acrylic	×	×	×	×	×	
		Hard acrylic	◎	◎	◎	◎	◎	
		ABS	◎	◎	◎	◎	◎	
	Metal	PVC	◎	◎	◎	◎	◎	
		Copper foil	◎	◎	◎	◎	◎	
		Aluminum	◎	◎	◎	◎	◎	
		SUS	◎	◎	◎	◎	◎	

\*Physical property values shown above are typical values of physical properties, and these values do not indicate guaranteed minimum values as per material standard.

\*A wide variety of grades are available. Please contact us for more details.

## 3 . Product Standard

50 μm × 1,050 mm width × 200 m roll

\*The product thickness and width can be changed at your request.

## 4 . Recommended Adhering Conditions

To obtain appropriate adhesive strength, proper controls of the temperature (140°C), pressure (1kgf/cm<sup>2</sup>) and time (10 sec.) are necessary. As for the adhering temperature, adjust the adherend and heating method before use so that the hot melt film will be 100°C or higher.

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This is a film type hot melt adhesive with thermoplastic elastomer resins as its base. Materials are adhered by being heated and pressed, by which an even adhesive layer can be obtained. It is applicable to a wide range of materials.

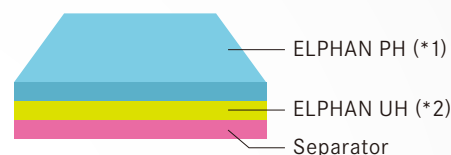
## 1 . Features and Applications

- 2-layer hot melt type adhesive films, composed of a polyester hot melt layer and a polyurethane hot melt layer.
- Offers excellent adhesion between metal (aluminum, copper, etc.) and textiles, films, etc.

## 2 . Table of Physical Properties

Material		PUAE-110 PU/PET type	
Melting point (°C)		98,110	
Tensile strength (MPa)		28	
Tensile elongation (%)		820	
100% modulus (MPa)		5	
Adherend	Textile	Polyester	◎
		TC broad cloth	○
		Nylon	○
	Film	PET	◎
		Soft acrylic	◎
		Hard acrylic	◎
		ABS	◎
		PVC	◎
	Metal	Copper foil	◎
		Aluminum	◎
SUS		◎	

### Structure



\*1 Excellent adhesion of ELPHAN PH surface to metal and film.

\*2 Excellent adhesion of ELPHAN UH surface to textile and leather.

\*Physical property values shown above are typical values of physical properties, and these values do not indicate guaranteed minimum values as per material standard.

\*A wide variety of grades are available. Please contact us for more details.

## 3 . Product Standard

110  $\mu\text{m}$   $\times$  1,050 mm width  $\times$  200 m roll

\*The product thickness and width can be changed at your request.

## 4 . Recommended Adhering Conditions

To obtain appropriate adhesive strength, proper controls of the temperature (140°C), pressure (1kgf/cm<sup>2</sup>) and time (10 sec.) are necessary. As for the adhering temperature, adjust the adherend and heating method before use so that the hot melt film will be 140°C or higher.

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[ELPHAN Website]

<http://www.matai.co.jp/english/product/resin/resin2>




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This is a film type hot melt adhesive with thermoplastic elastomer resins as its base. Materials are adhered by being heated and pressed, by which an even adhesive layer can be obtained. It is applicable to a wide range of materials.

## 1 . Features and Applications

- Very soft texture and excellent elasticity.
- Excellent adhesive strength when adhered to polyurethane or PVC textile or leather.
- Can be used as an adhesive layer for emblems and marks.

## 2 . Table of Physical Properties

			UH-201	UH-203	UH-218
Material			Polyurethane type		
Melting point (°C)			44	98	105
Tensile strength (MPa)			24	22	27
Tensile elongation (%)			670	490	640
100% modulus (MPa)			8	4	5
Adherend	Textile	Polyester	◎	◎	◎
		TC broad cloth	○	○	○
		Nylon	○	○	○
	Film	PET	×	×	×
		Soft acrylic	◎	◎	◎
		Hard acrylic	○	○	○
		ABS	◎	◎	◎
		PVC	◎	◎	◎

\*Physical property values shown above are typical values of physical properties, and these values do not indicate guaranteed minimum values as per material standard.

\*A wide variety of grades are available. Please contact us for more details.

## 3 . Product Standard

50, 70, 100  $\mu\text{m}$   $\times$  1,050 mm width  $\times$  200 m roll

\*The product thickness and width can be changed at your request.

## 4 . Recommended Adhering Conditions

To obtain appropriate adhesive strength, proper controls of the temperature (150°C), pressure (1kgf/cm<sup>2</sup>) and time (10 sec.) are necessary. As for the adhering temperature, adjust the adherend and heating method before use so that the hot melt film will be 150°C or higher.

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**MATAI**  
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# Introduction of Co-extruded Protective Film

## “ELTECH<sup>®</sup> Low, Medium, High Strength Adhesive Types”



This is a protective film used on surface of various types of plastic that can be customized for specific purposes and applications.

## 1. Features and Applications

- Self-adhesive type, causing almost no contamination or adhesive residue on adherends.
- Adhesive strength of our products ranges from low to high.
- Contains very little amount of gels.
- Manufactured in a class 10000 clean environment.
- Can be adhered to various materials, such as optical sheets, plastic plates, aluminum plates, stainless steel plates, coated steel plates and PVC steel plates.
- Environmentally friendly product that does not use organic solvents.
- Non-elastic PO film gives this film excellent workability during peel-off.

## 2. Table of Physical Properties

Types		High Strength Adhesive				Medium Strength Adhesive			Low Strength Adhesive	
Product Names		MVF00125	MVF00125K	SPF-LF0020	IVF00130	IVF00110	IE00110	IE00120	M5710	M0810
Structure	Base material layer	PP	PP	PP	PP	PP	PE	PE	PP	PP
	Adhesive layer	Rubber	Rubber	Acrylic	Special Rubber	Special Rubber	Special Rubber	Special Rubber	Rubber	Rubber
Thickness (μm)		60	60	50	60	60	60	60	30	30
Haze (%)		55	55	15	70	57	19	19	49	49
SUS adhesive strength (N/25 mm)		7.7	7.8	5.0	7.0	2.7	1.7	3.2	0.2	0.7
PVC Steel Sheet (Depth 90 μm: N/25mm)		does not adhere	does not adhere	0.5	1.5	0.1	0.1	0.4	does not adhere	does not adhere
Tensile Strength	MD	25	26	23	30	26	19	15	24	25
	TD	23	18	16	19	21	9	8	20	10
Tensile Elongation	MD	563	565	448	635	497	156	169	444	459
	TD	702	481	470	542	540	244	371	542	440
Tensile Modulus	MD	376	376	534	401	500	186	155	440	564
	TD	340	332	474	352	418	239	192	451	571
Adherend	Stainless steel plate					○	○	○		
	Plastic plate	○	○	○	○	○	○	○		
	PVC steel plate	○	○	○	○			○		
	Coated steel plate	○	○	○	○			○		
	Decorative Steel Plate	○	○	○	○			○		
Notes			Anti-weathering Type			○			○	○

\*Physical property values shown above are typical values of physical properties, and these values do not indicate guaranteed minimum values as per material standard.

\*Colors and adhesive strength can be customized.

## 3. Product Standard

The maximum product width is 1,600 mm, and the range of thickness is 30 μm ~ 100 μm.

The standard roll length is 1,000 m.

The adhesive strength is 0.2 ~ 7.8N/25 mm.

Coloring with different colors is possible.

[Contact]

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[ELTECH Website]

<http://www.matai.co.jp/english/product/resin/resin3>



Surface protective film for various types of plastic that can be customized for specific purposes and applications.

## 1 . Features and Applications

- Self-adhesive type, causing almost no contamination or adhesive residue on adherends.
- We offer an abundant lineup of adhesive grades, allowing for selecting films suitable for various kinds of adherends.
- Small amount of fish eyes.
- Manufactured in a class 10000 clean environment.
- Little increase in adhesive strength over time.
- Environmentally friendly product that does not use organic solvents.
- PO film with limited extension gives excellent workability during peel-off.

## 2 . Table of Physical Properties

		Measuring method	General				Low contamination				High transparency	Antistatic
			108	208	308	408	107	157	318	217	178	138
Structure	Base material layer	–	PP	PP	PP	PP	PP	PP	PP	PO	PP	PP
	Adhesive layer	–	Special PO	Special PO	Special PO	Special PO	PP	Special PO	Special PO	Special PO	Special PO	Special PO
Thickness (μm)		–	30	30	30	30	30	30	35	35	30	30
Transparency	Haze (%)	JIS K 7105	15	15	15	15	15	15	11	30	9	14
PMMA adhesive strength (N/25 mm)		JIS Z 0237	0.05	0.1	0.2	0.3	0.02	0.11	0.17	0.07	0.07	0.08
Surface specific resistance (Ω/□)		JIS K 6911	–	–	–	–	–	–	–	–	–	1×10 <sup>12</sup>
Color	Natural	–	○	○	○	○	○	○	○		○	○
	Green	–					○	○				
	Yellow	–								○		
Adherend	Acrylic	–	○	○	○	○	○	○	○	○	○	○
	PC board	–	○	○	○	○	○	○	○	○	○	○
	Polyester	–	○	○							○	
	Rigid PVC sheet	–		○	○	○						
	Optical sheet	–					○	○	○	○	○	○

\* Physical property values shown above are typical values of physical properties, and these values do not indicate guaranteed minimum values as per material standard.

\* Colors and adhesive strength can be customized.

## 3 . Product Standard

The maximum product width is 1,600 mm, and the range of thickness is 30 μm ~ 100 μm.  
 The standard roll length is 2,000 m.  
 The adhesive strength is 0.05 ~ 0.3N/25 mm.  
 Coloring with different colors is possible.

[Contact]

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 High Performance Film Division

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[ELTECH Website]

<http://www.matai.co.jp/english/product/resin/resin3>



**MATAI**  
[www.matai.co.jp](http://www.matai.co.jp)

Sheets and films are manufactured by directly extruding thermoplastic elastomer resins. In addition to polyurethane, extrusion of various thermoplastic resins, such as polyester, polyamide and polyolefin, is possible.

## 1 . Features and Applications

- Excellent elasticity and wear resistance  
Durability, such as wear resistance, is superior to rubber, even with the elasticity of rubber.
- Capable of lamination with various base materials  
Since lamination with base materials, such as textiles and plastic films, is possible for the intended purpose, new value can be added.
- Capable of secondary processing  
With its thermoplasticity, secondary processing, such as thermal fusion bonding and welder bonding, is possible. Functionality can also be added through printing, various types of coating, and coloring.

## 2 . Table of Physical Properties

	ESMER URS	ESMER URS X	ESMER URS PX	ESMER URS TS	ESMER URS ET	ESMER PNS	ESMER NES	ESMER OES	ESMER MLS
	General polyurethane type	Yellowing-resistant polyurethane type	Non-yellowing polyurethane type	Breathable polyurethane type	Hydrolysis-resistant polyurethane type	Polyester type	Polyamide type	Polyolefin type	Multilayer structure
Hardness JIS A	92	92	95	85	85	98	83	-	-
Tensile strength (MPa)	45	45	50	40	35	35	30	22	-
Elongation (%)	500	500	600	550	500	450	650	620	-
100% modulus (MPa)	8.5	8.5	7.5	6	6.5	-	6	9	-
Tear strength (kN/m)	105	105	130	100	85	177	71	-	-
Abrasion loss H-22 (mg)	40	40	70	25	40	-	-	-	-
Specific gravity	1.20	1.20	1.15	1.12	1.11	1.22	1.01	0.89	-

\*Physical property values shown above are typical values of physical properties, and these values do not indicate guaranteed minimum values as per material standard.

\*A wide variety of grades are available. Please contact us for more details.

## 3 . Product Standard

Single layer : The maximum product width is 2,200 mm, and the range of thickness is 20 μm ~ 2,000 μm.

Multilayer : The maximum product width is 1,600 mm, and the range of thickness is 20 μm ~ 2,000 μm. (3-type, 3-layer clean film former)

Lamination with films made from different materials is also possible, up to 1,350 mm in width. (4-type, 5-layer film former)

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# “ESMER<sup>®</sup> OES”

ESMER OES is a co-extruded multilayer film.

With each individual plastic layer possessing its own unique quality, this is a highly-functional multilayer film that can be customized to appropriate thickness.

## 1 . Features and Applications

- Manufactured under Class 10000 clean environment.
- Contains very little gels.
- Possesses low staining properties
- Thickness can be customized between 50  $\mu\text{m}$  ~150  $\mu\text{m}$
- We accept customization and/or OEM production.

## 2 . Table of Physical Properties

Measurements		Unit	Measuring Method	DC-RP					DC-VS	DC-VM	
Thickness		$\mu\text{m}$	-	80	90	100	140	150	100	100	
Haze		%	JIS K 7136	88	88	88	88	84	88	70	
Tensile Modulus	MD	MPa	JIS K 7127	150	180	140	144	184	91	92	
	TD			140	162	124	138	168	94	93	
Tensile Strength	MD	MPa		26	28	30	33	28	24	23	
	TD			28	24	31	35	30	23	24	
Tensile Elongation	MD	%		750	710	770	850	750	685	635	
	TD			800	680	820	910	800	765	755	
100% Modulus	MD	MPa		10	10	9	9	10	6	6	
	TD			10	10	9	8	10	5	5	
Surface Resistivity	-	$\Omega/\square$		JIS K 6911						$1 \times 10^{11}$	
Color	-	-		-	Natural	Natural	Natural	Natural	Natural	Natural	Natural
Type	-	-	-	PO	PO	PO	PO	PO	PO	PO	

\*Above values are measured values and are not guaranteed.

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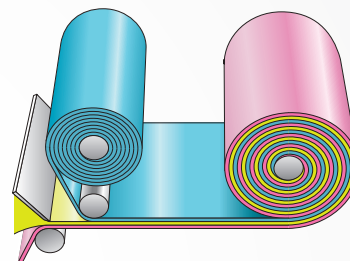
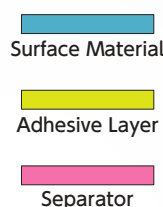
# Heat Resistant PP Film (Silicone-Coated Film) [Film Separator RS Type]

RS Type is a polypropylene based special non-oriented multilayer transparent film with release-coating. **Transfer method adhesive coating is possible with RS series.**

## 1.Characteristics and Application Examples

- 1) They show superior peelability against various adhesive substances, resulting in work process efficiency.
- 2) They are thin and sturdy films.
  - They are less stretchy and have high rigidity compared to common CPP films; therefore transfer adhesion method is possible.
  - Humidity does not cause change to their structure; they are suited for products that need to be kept dry.
  - RS72 and RS82 type have high rigidity, yet possess superior impact resistance and tear resistance.
- 3) They are low in specific gravity, which reduces the weight when substituted for paper and/or PET films.
- 4) RS02 and RS12 types are transparent films that have superior smoothness and transparency.
  - They also do not cause power dust, enabling process under clean environment.
- 5) They have excellent recyclability.

Avoids "tunneling" effect resulting from tension difference between surface material and separator.



## 2.Physical Properties

Measurements	Measuring Method	Unit	Surface/Direction	RS02	RS12	RS72	RS82
Thickness	JIS-K7130	μm	-	60	60	75	65
Haze	JIS-K7105	%	-	26	26	70	60
PBF (Normal) *1	JIS-K6854	mN/25mm	Coated Surface	48	58	54	99
PBF (Heated) *2	JIS-K6854	mN/25mm	Coated Surface	114	206	77	157
Residual Adhesion	Matai Method	%	Coated Surface	90	91	92	90
Adhesion	Matai Method	-	Coated Surface	○	○	○	○
Backside Transferability	Matai Method	-	Coated Surface	○	○	○	○
Tensile Strength	JIS-K7127	MPa	MD	60	60	46	50
			TD	50	50	38	39
Tensile Elongation	JIS-K7127	%	MD	720	720	770	730
			TD	800	800	780	460
Tensile Modulus	JIS-K7127	MPa	MD	1000	1000	770	630
			TD	1000	1000	750	610

\*1 Peel back force under normal condition against Nitto Denko 31B Tape, 180° peeling angle, peeling speed 300mm/min

\*2 Peel back force under heated condition, measured after heating at 70°C for 20 hours

\*Note: Values above are not guaranteed values.

## 3.Product Specification

Maximum Product Width: 1450mm (1150mm for RS82 only)

Standard Roll Length: 3000m for RS02 and RS12; 2000m for RS72 and RS82

Coated Surface: One side (inner side)

[Contact Information]  
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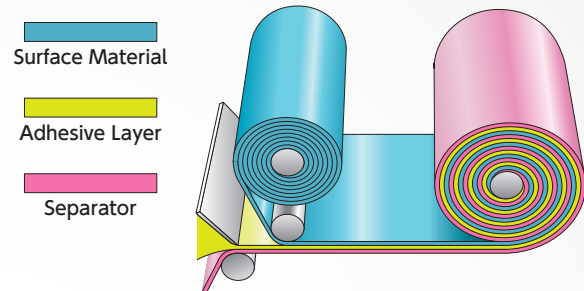
# White-Colored Polyethylene(Silicone-Coated Film) 【Film Separator RW Type】

RW Type is a polyethylene based white-color film with release-coating.

## 1.Characteristics and Application Examples

- 1)They show superior peelability against various adhesive substances, resulting in work process efficiency.
- 2)They are suitable for films that need concealment.
- 3)They are low in specific gravity, reducing the weight when substituted for paper and/or PET films.
- 4)They have excellent recyclability.

Avoids "tunneling" effect resulting from tension difference between surface material and separator.



## 2.Physical Properties

Measurements	Measuring Method	Unit	Surface/Direction	RW02	RW82
Thickness	JIS-K7130	μm	-	70	70
Haze	JIS-K7105	%	-	96	96
PBF (Normal) *1	JIS-K6854	mN/25mm	Coated Surface	40	450
PBF (Heated) *2	JIS-K6854	mN/25mm	Coated Surface	49	1950
Residual Adhesion	Matai Method	%	Coated Surface	80	70
Tensile Strength	JIS-K7127	MPa	MD	39	39
			TD	39	39
Tensile Elongation	JIS-K7127	%	MD	690	690
			TD	870	870
Tensile Modulus	JIS-K7127	MPa	MD	350	350
			TD	440	440

\*1 Peel back force under normal condition against Nitto Denko 31B Tape, 180° peeling angle, peeling speed 300mm/min

\*2 Peel back force under heated condition, measured after heating at 70°C for 20 hours

\*Note: Values above are not guaranteed values.

## 3.Product Specification

Maximum Product Width: 1030mm  
Standard Roll Length: 2000m  
Coated Surface: One side (inner side)

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