Nitto
Innovation for Customers

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KLEBEN VERBINDET

Cautions for surface protective materials

⚠ Cautions	Storage	Avoid exposing the product to direct sunlight. Store it in locations with normal temperature.
		Be sure to use the surface protective materials within six months after delivery.
	Outdoor use	When using laminated substrates or for use outdoors, choose weather-resistant surface protective materials.
	Substrate	You may feel a sense of heaviness while peeling-off the surface protective material of a coated substrate in accordance with the baking conditions of the protective material, or you may peel-off coated layers. Furthermore, uneven color may occur depending on the type of painting materials employed when vinyl chloride surface protective materials are used.
		Some surface protective materials that are surface-treated, such as alumite treated substrates, may exhibit different peeling properties depending on the treatment conditions of the substrates.
		Carefully consider the applicability of surface protective materials, especially on naturally occurring substrates (e.g., marble stone and wood).
		When surface protective material is peeled off from substrates, a minute amount of it may be transferred to the surface of the substrate. This transfer can cause failure to occur when the substrates are painted, plated, etched, or bonded. Before using the substrate, adequately consider conditions such as surface cleaning, surface preparation, and baking.
	Laminating	The surface protective film on a substrate may float from the substrate at its ends over time if the film is laminated with excessive tension throughout.
		Any matter that attaches to a substrate's surface, such as machining oil or dirt, may adversely affect the properties of its surface protective material.
	Request for confirmation using actual products	Before use, be sure to confirm working conditions using actual products.

Product warranty

- The product warranty period is six months after delivery of the product.
- The warranty covers product properties and quality, but does not cover all uses and processes.
- If any abnormality is discovered before or after the use of this product, the defective product can be replaced with a new one or refunded to the extent of the money paid at the time of delivery.
- Before use, be sure to perform adequate verification and review before making a final judgment on whether the product is conformable or not.

Nitto Denko Corporation

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Nitto
Innovation for Customers

Surface Protective Materials

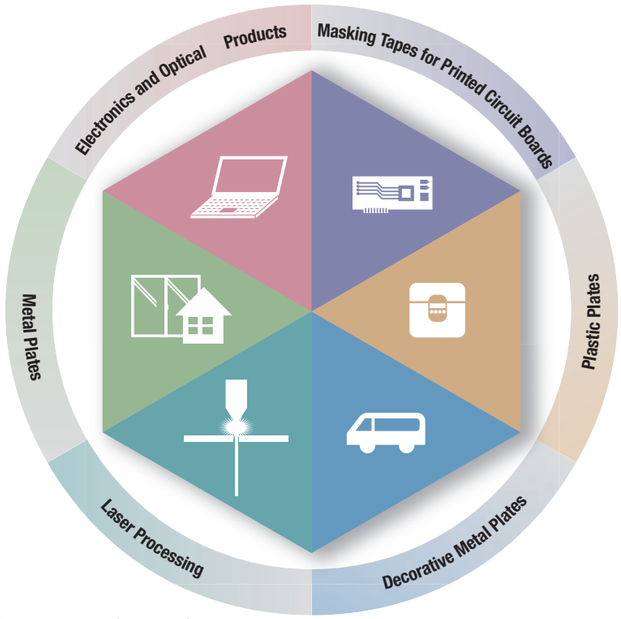
E-MASK™•SPV™•ELEP Masking Tape

Diversely protects

Flexibly protects

Nitto's SPV features our proprietary laminated structure created using highly sophisticated technologies that enable it to be used in a wide assortment of applications and environments.

Nitto's products boast a wide scope of applications, ranging from surface protection of stainless steel, aluminum, decorative metal plates and other metal products to housing products, curing materials used in the automotive industry as well as for applications in the optoelectronics sector.



Stylishly protects

Extensively protects

Offers refined protects

Contents

Selection Guidelines How to Select the Most Suitable Surface Protective Materials

Nitto offers a wide variety of surface protective materials to meet your needs and demands. To select the surface protective material most suitable for the application and environment in which it is going to be used, detailed information corresponding to a particular function is required. Please refer to the "Basic functional requirements for surface protective materials" and "Criteria for selecting a surface protective material" below. Along with the information you obtain from these charts, please consult our staff at the nearest sales office for additional assistance and information.

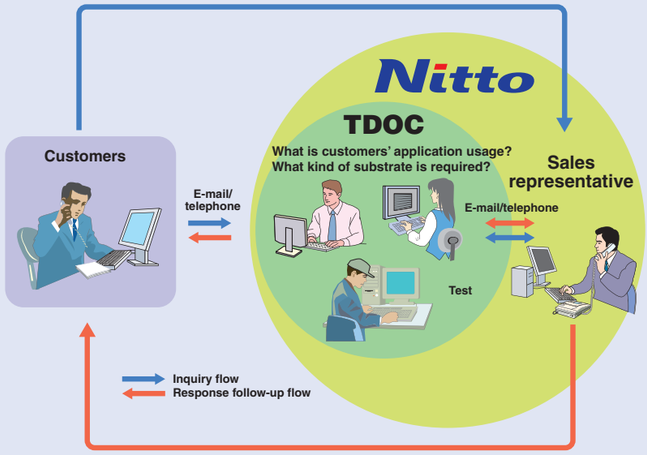
Criteria for selecting a surface protective materials

- 1. Confirm what is to be protected
  - Type of substrate
    - Metal
    - Plastic
  - Surface condition (roughness, activated, etc.)
    - Flat
    - Embossed
- 2. Film application conditions
  - Application method
    - Mechanical
    - Manual
  - Application environment
- 3. Processing conditions
  - Mechanical processing method and conditions
  - Chemical processing method and conditions
- 4. Storage conditions
  - Indoors or outdoors
  - Storage period
  - Heat/pressure
- 5. Peel conditions
  - Peel speed/angle
  - Peel environment
  - After peeling off the film, will surface be given coating, vapor-deposition, chemical treatment, etc.?

Surface Protective Products Technical Support Center

TDOC = Technical Dock (Doctor)

Nitto will continue to advance together with customers as a counseling center.



Service Operations

- Respond to inquires related to tape selection
- Shipping of evaluation samples
- Send brochures, data sheets and other materials
- Conduct a practical evaluation test service
- Others

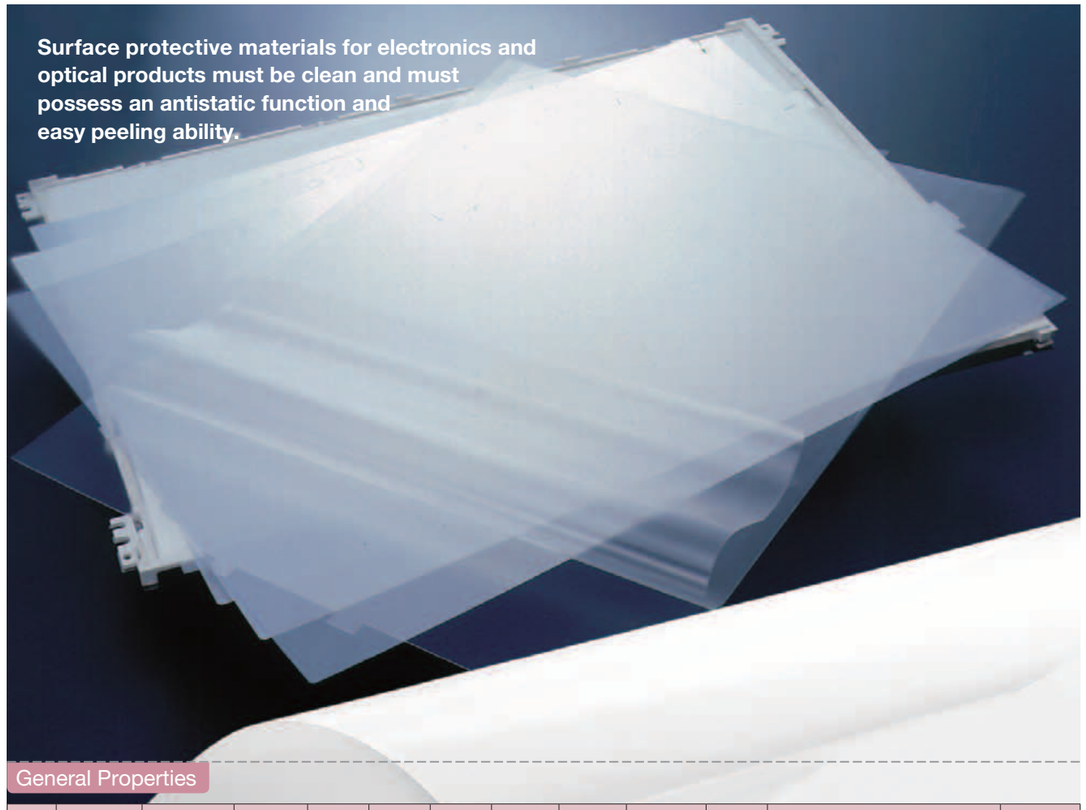
"Sufficient adhesion and smooth peeling"

Striving to meet the difficult challenge of satisfying these contradicting functions in one tape, TDOC responds to a diverse range of customers' needs to protect products for various occasions and provides various value-added services to enhance customer satisfaction.

For inquiries:
Surface Protective Products Technical Support Center (TDOC)

18 Aza Hirayama, Nakahara-cho, Toyohashi City, Aichi Pref. 441-3194
Tel: 81-532-41-7223 Fax: 81-532-41-8446
E-mail: tdoc@nitto.co.jp

Surface Protective Materials for Electronics and Optical Products



General Properties

Type	Product No.	Base material	Adhesive	Tape thickness (mm)	Maximum width (mm)	Standard length (m)	Color	Core	Adhesive strength* (N/20mm)	Antistatic treatment	Features	Clean room production (Class 1000)
RP	RP207	Polyester film	Acrylic	0.059	1,300	200	Clear	Plastic	0.11 (N/25mm)	Yes	Easy peeling/ printable dustproof layer	Yes
	RP301								0.25 (N/25mm)		Easy re-application	
AW	AW303EB	Polyester film	Urethane	0.048	1,200	200	Clear	Plastic	0.02 (N/25mm)	No	Adhesive with good wettability/ suppression of static electricity when peeled	Yes
	AW343EB			0.060								
	AW5003			0.150						Yes		
R	R-50EP	Polyethylene film	Acrylic	0.060	1,250	200	Clear	Plastic	0.10	No	Easy application	No
	R-100			0.065			Clear (Light blue)	Paper (Plastic)	0.30			
	R-200								0.50			
	R-300			0.070			Clear		0.80			
HR	HR6010	Polyethylene film	Acrylic	0.063	1,310	200	Clear	Plastic	0.50	No	Easy peeling	No
	HR6030			0.070					0.90			
RB-S	RB-100S	Polyolefin film	Acrylic	0.045	1,250	200	Clear	Plastic	0.05	Yes	Easy peeling	No
	RB-200S								0.15			
	RB-300S			0.050					0.35			
LS	LS63T6H1	TAC	Acrylic	0.163	1,300	200	Clear	Plastic	30.00*1 (N/25mm)	No	High lamination level and superior stability	Yes
	LS5005	Polyester film		0.100					18.00 (N/25mm)	Yes		

*Measured on acrylic plates.
Notes: The above sizes may vary according to the current state of production.
Please contact Nitto for sizes other than the above.
*1 90°peeling adhesion

E-MASK™ RP Series

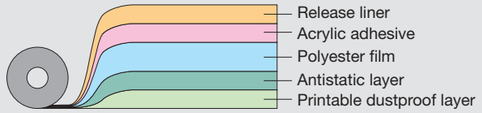
Optical grade protective film with an antistatic property produced in a class 1000 clean environment

E-MASK RP Series for the surface protective of optical grade protective film with an antistatic property uses a polyester film as a base material and was produced in a class 1000 clean environment.

Structure

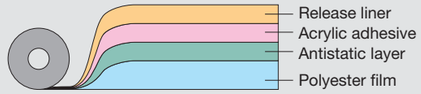
RP207

Easy removal of dust on the backing, printable backing



RP301

Stable antistatic function, printable backing



Features

- Superior transparency enables inspection of outer appearance of optical film without removing the tape.
- Offers good wettability for optical films and outstanding reapplication properties.
- Easy peeling. Suitable for large-size optical films (RP207).
- High resistance to dust on the backing and ease of wiping dust off (RP207).
- Backing printable with stamp or ink jet printer (RP207/ RP301).

General Properties

Product No.	Thickness* (mm)	Adhesive strength (N/25mm)	Color	Core
RP207	0.059	0.11	Clear	Plastic
RP301		0.25		

*Does not include thickness of the release liner.
*Measured on acrylic plates.

E-MASK™ AW Series

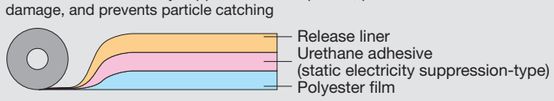
Surface protective material with good wettability and easier re-applicability

E-MASK AW-Series is made of polyether film-based surface protective materials and uses urethane adhesive with good wettability.

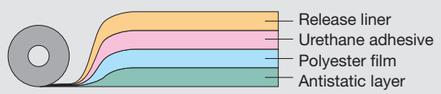
Structure

AW303EB/AW343EB

Excels in static electricity suppression when peeled, protects sensors from damage, and prevents particle catching



AW5003



Features

- Good wettability and easier re-applicability
- Stable adhesion over time
- Good low-contamination performance
- Excels in static electricity suppression when peeled, protects sensors from damage, and prevents particle catching

Application Examples

- Protection of smart phones and mobile phones during shipment
- Protection of touch panels during the manufacturing process
- Protection of touch panels during shipment

General Properties

Product No.	Thickness*1 (mm)	Adhesive thickness (mm)	Adhesion to glass*2 (N/25mm)	Adhesion to HC film (HC face)*3 (N/25mm)	Static electricity voltage when peeled from glass*4 (kV)
AW303EB	0.048	0.010	0.02	0.02	0
AW343EB	0.060				
AW5003	0.150	0.075			

*1 Release liner thickness is not included.
*2 Measured at a peeling speed of 300 mm/min and a peeling angle of 180°, 20-40 minutes after application.
*3 Measured at a peeling speed of 300 mm/min and a peeling angle of 180°, 20-40 minutes after application.
*4 Measured at a temperature of 23°C, a humidity of 50%, a peeling speed of 10 m/min, and a measuring distance of 100 mm with a sliding-type surface potential sensor.

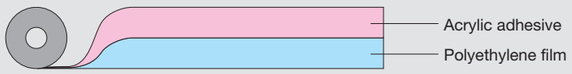
Surface Protective Materials for Electronics and Optical Products

E-MASK™ R Series

Low contamination type developed for surface protection of optical parts

E-MASK R Series consists of polyethylene-based surface protective tapes developed utilizing proprietary adhesive synthesis technologies. This series is especially suitable for surface protection of LCD polarizing films, hard-coat or non-glare treated acrylic plates and polyester films during processing and transportation.

Structure



Features

- Minimal change in adhesive strength following application ensures easy peeling.
- Superior transparency enables inspection of the substrate surface condition without removing the tape.

Applications

- Surface protection for optical films such as polarizing films (during LCD shipment) and screen protection for mobile phones.

General Properties

Product No.	Thickness* (mm)	Adhesive strength (N/20mm)	Color	Core
R-50EP	0.060	0.10	Clear	Plastic
R-100	0.065	0.30	Clear Light blue	Paper (Plastic)
R-200		0.50		
R-300	0.070	0.80	Clear	

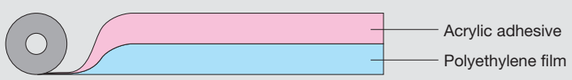
*Measured on acrylic plate

E-MASK™ HR Series

Low contamination type developed for surface protection of optical parts

E-MASK HR Series consists of polyethylene-based surface protective tapes developed utilizing proprietary adhesive synthesis technologies. This series is especially suitable for surface protection of LCD polarizing films, hard-coat or non-glare treated acrylic plates and polyester films during processing and transportation.

Structure



Features

- Minimal change in adhesive strength following application ensures easy peeling.
- Superior transparency enables inspection of the substrate surface condition without removing the tape.
- Good lamination for uneven surface such as anti-glare treatment.

Applications

- Surface protection for optical films such as polarizing films (during LCD shipment) and lenses for mobile phones.

General Properties

Product No.	Thickness* (mm)	Adhesive strength (N/20mm)	Color	Core
HR6010	0.063	0.50	Clear	Plastic
HR6030	0.070	0.90		

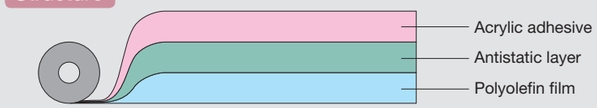
*Measured on acrylic plate

E-MASK™ RB-S Series

Surface protective tapes with an antistatic property that are ideal for applications that do not tolerate static electricity such as LCD panels

E-MASK RB-S Series is a surface protective tapes developed for optical films such as LCD polarizing film. Prevents static electricity produced and offers stable adhesion and easy peeling.

Structure



Features

- It has good initial lamination level and light peeling force.
- Minimal change in adhesive strength following application ensures easy peeling.
- Offers superior dustproofness when unwinding.

Applications

- Surface protective for optical films such as polarizing films (during LCD shipping)
- Applications that do not permit attraction of dust and dirt due to static electricity produced when applying or peeling the tape.

General Properties

Product No.	Thickness* (mm)	Adhesive strength (N/20mm)	Color	Core
RB-100S	0.045	0.05	Clear	Plastic
RB-200S		0.15		
RB-300S	0.050	0.35		

*Measured on acrylic plate

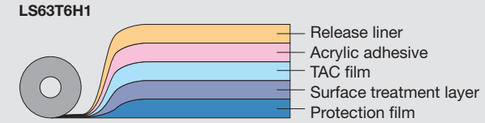
E-MASK™ LS Series

Single-sided optical grade anti-scattering protection tape

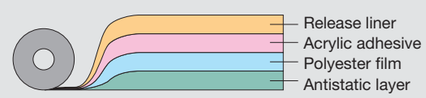
E-MASK LS Series is a single-sided constantly adhering sheet developed utilizing proprietary adhesive synthesis technology. Our product lineup uses a TAC/PET base material for each optical property.

Structure

LS63T6H1



LS5005



Features

- Offers superior transparency.
- Suitable for application to glass or plastic plates such as polycarbonate plates.
- It has high lamination level.
- Produced in clean rooms.

Applications

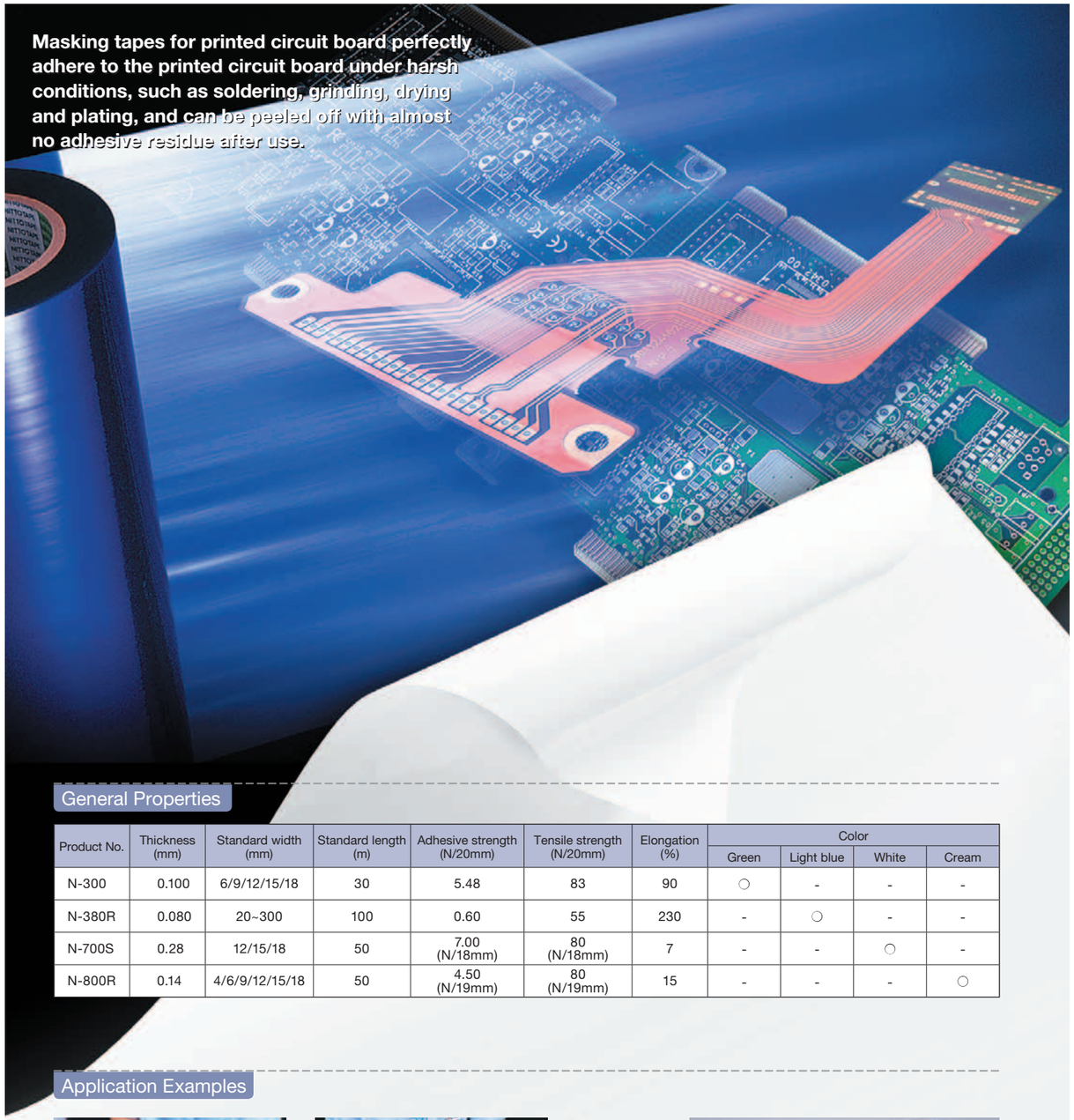
- Window glass scattering preventive film

General Properties

Product No.	Thickness*1 (mm)	Adhesive strength*2 (N/25mm)	Color	Core
LS63T6H1	0.163	30.00	Clear	Plastic
LS5005	0.100	18.50		

*1 Does not include thickness of the release liner.
*2 LS63T6H1 and LS5005 have 90° and 180° peeling adhesion (to acrylic plates), respectively.

Masking Tapes for Printed Circuit Boards

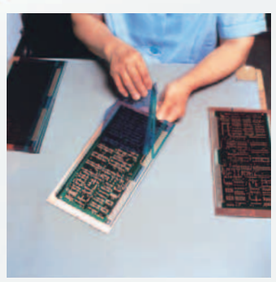


Masking tapes for printed circuit board perfectly adhere to the printed circuit board under harsh conditions, such as soldering, grinding, drying and plating, and can be peeled off with almost no adhesive residue after use.

General Properties

Product No.	Thickness (mm)	Standard width (mm)	Standard length (m)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Color			
							Green	Light blue	White	Cream
N-300	0.100	6/9/12/15/18	30	5.48	83	90	○	-	-	-
N-380R	0.080	20~300	100	0.60	55	230	-	○	-	-
N-700S	0.28	12/15/18	50	7.00 (N/18mm)	80 (N/18mm)	7	-	-	○	-
N-800R	0.14	4/6/9/12/15/18	50	4.50 (N/19mm)	80 (N/19mm)	15	-	-	-	○

Application Examples



N-380R/N-300

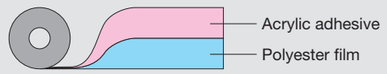
N-700S

ELEP Masking N-300

Tapes for masking terminals during plating of printed circuit boards

ELEP Masking N-300 is a masking tape with a polyester film as a base material. Offering excellent chemical resistance and tight adhesion properties, ELEP Masking N-300 is used for masking terminals during the plating of printed circuit boards, mainly for preventing ingress of the painting solution.

Structure



Features

- Light unwinding and easy application.
- Special adhesive enables tight adhesion to printed circuit board and tape does not peel or become misaligned during work processes.
- Utilizes even higher degree of tight adhesiveness when applied using heat and roller pressure.
- Offers excellent chemical resistance.
- Can withstanding harsh usage conditions and leaves no adhesive residue.
- Minimal change in adhesive strength following application ensures easy peeling.

Applications

Prevents ingress of plating solution during plating of printed circuit boards.

General Properties

Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)
0.100	5.48	83	90

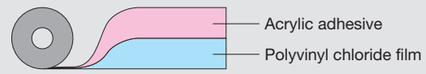
*Stainless steel plate as the substrate.

ELEP Masking N-380R

Tapes that protect printed circuit boards from spray and hot vapors of plating solution during plating of printed circuit boards

ELEP Masking N-380R is a surface protective masking tape with a polyvinyl chloride film carrier developed for masking during the plating of printed circuit boards. Offering excellent chemical resistance and very tight adhesion, this masking tape is suitable for preventing contamination from the spray or hot vapor of plating solution.

Structure



Features

- Light unwinding and easy application.
- Special adhesive enables tight adhesion to the printed circuit board, and tape does not peel or become misaligned during work processes.
- Utilizes even higher degree of tight adhesiveness when applied using heat and roller pressure.
- Offers excellent chemical resistance.
- Uses no silicon-based release coating, resulting in no slippage when layering.
- Minimal change in adhesive strength following application, ensures easy peeling.

Applications

Masking during plating of printed circuit boards.

General Properties

Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)
0.080	0.60	55	230

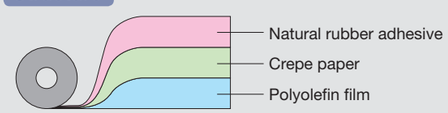
*Stainless steel BA plate as the substrate.

ELEP Masking N-700S

Tapes for masking terminals on printed circuit boards during solder leveling process

ELEP Masking N-700S is a tape for masking featuring excellent resistance to solder and flux with superior adhesion. This tape is used for masking terminals during the solder leveling process on printed circuit boards.

Structure



Features

- Light unwinding and easy application.
- Special adhesive enables tight adhesion to the printed circuit board and tape does not peel or become misaligned during work processes
- Utilizes even higher degree of tight adhesiveness when applied using heat and roller pressure.
- Excellent soldering and reflex resistance and prevents ingress of solution.
- Can withstand harsh usage conditions and leaves no adhesive residue.
- Minimal change in adhesive strength following application ensures easy peeling.

Applications

Prevents ingress of flux or soldering solution during solder leveling process on printed circuit boards.

General Properties

Thickness (mm)	Adhesive strength (N/18mm)	Tensile strength (N/18mm)	Elongation (%)
0.28	7.00	80	7

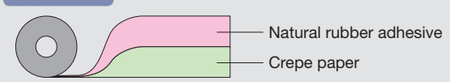
*Stainless steel plate as the substrate.

ELEP Masking N-800R

Tapes for protective during soldering for mounting printed circuit board components

ELEP Masking N-800R is a crepe paper masking tape developed for use in the soldering process when mounting components onto printed circuit boards. This tape provides excellent solder and flux resistance in addition to strong adhesiveness, while permitting easy peeling after the soldering process and leaving almost no adhesive residue.

Structure



Features

- Light unwinding and easy application.
- Special adhesive enables tight adhesion to the printed circuit board and tape does not peel or become misaligned during work processes
- Utilizes even higher degree of tight adhesiveness when applied using heat and roller pressure.
- Excellent soldering and reflex resistance and prevents ingress of solution.
- Can withstand harsh usage conditions and leaves no adhesive residue.
- Minimal change in adhesive strength following application ensures easy peeling.

Applications

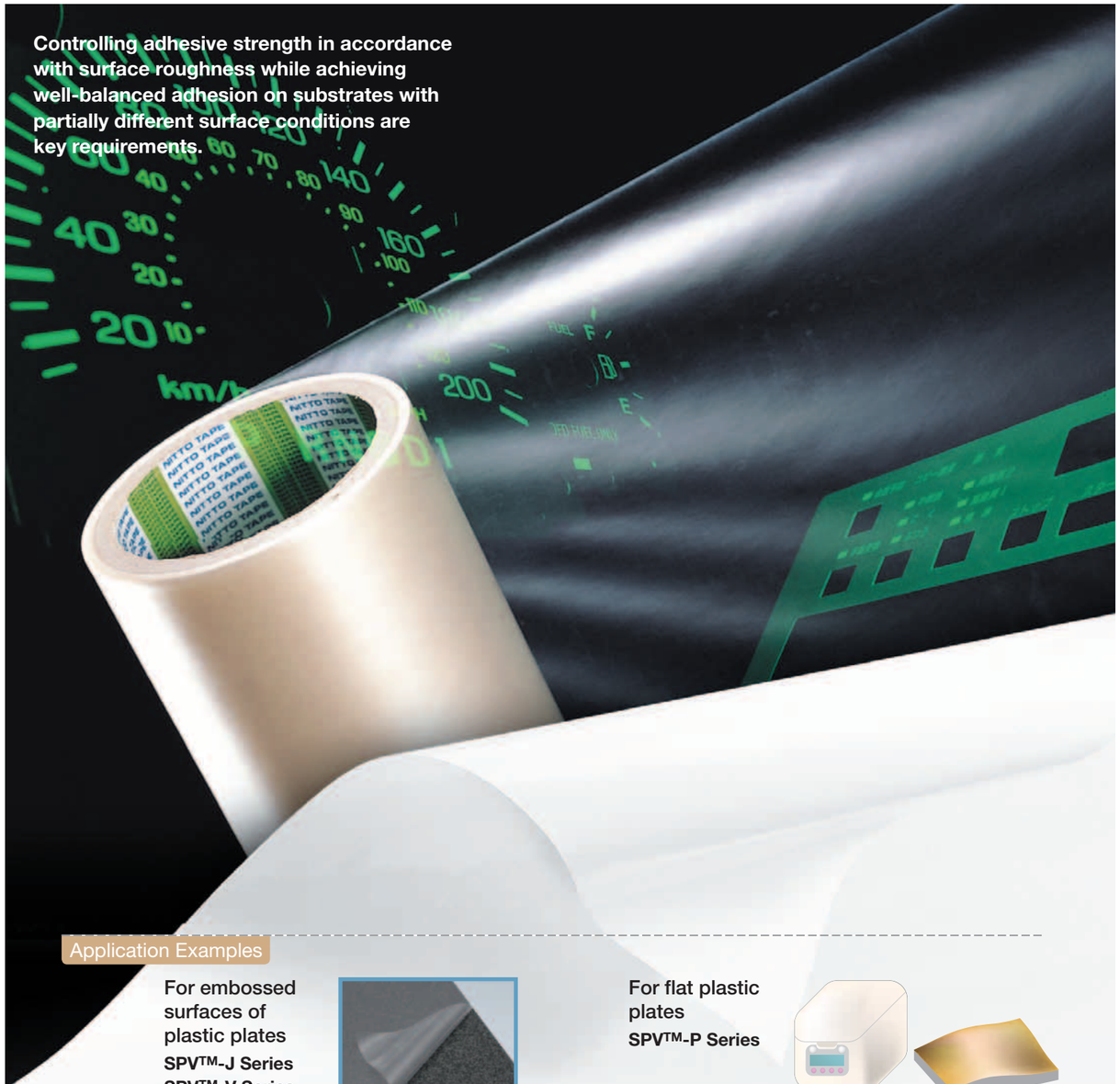
For use during the soldering process when mounting components onto printed circuit boards, mainly preventing ingress of flux or soldering solution.

General Properties

Thickness (mm)	Adhesive strength (N/19mm)	Tensile strength (N/19mm)	Elongation (%)
0.14	4.50	80	15

*Stainless steel plate as the substrate.

Surface Protective Materials for Plastic Plates



Controlling adhesive strength in accordance with surface roughness while achieving well-balanced adhesion on substrates with partially different surface conditions are key requirements.

Application Examples

For embossed surfaces of plastic plates
SPV™-J Series
SPV™-V Series

For flat plastic plates
SPV™-P Series

Used in the production process for home appliances, etc.

SPV Application by Substrate

	Substrate	Polyolefin based SPV™
Plastic	Acrylic resin, ABS	362, J, P Series
	Polycarbonate	P Series
	Polyvinyl chloride	364, J, V Series

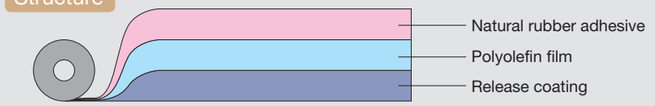
This catalog contains examples of measured values, not guaranteed values. Moreover, Nitto does not guarantee suitability for the applications contained in this catalog. Before use, consideration should be given to proper usage upon ascertaining whether the product is suitable for the substrate (material to which SPV will be applied).

SPV™-J Series

Offers outstanding surface protective for printing, punching and transportation of plastic nameplates

SPV-J Series of polyolefin surface protective tapes was developed to provide effective surface protective for printing, punching and transportation of plastic nameplates.

Structure



Features

- Minimal change in adhesive strength following application ensures easy peeling.
- J Series has variety adhesive strength level. The product can adjust various surface roughness and process levels.
- Offers excellent initial adhesion and easy application. Film can be easily peeled and re-applied (manual application) when inspecting printed surfaces.
- Suitable for nameplate punching and molding processes.

Applications

Surface protective for printing, punching and transportion of plastic nameplates.

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h))
J-200	0.045	0.25	35	500	20
J-300		0.45			
J-400		0.90			
J-500		1.20			

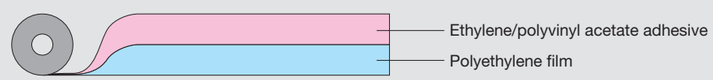
*Stainless steel BA plate as the substrate.

SPV™-P Series

Low-adhesive material with superior transparency that do not contaminate surface of substrates

SPV-P Series was developed using Nitto's proprietary multilayer film forming technology. Offers stable surface protective for cutting, punching, in-process transport and shipment for such substrates as PMMA (acrylic) plates, PC (polycarbonate) plates and LCD polarizing films.

Structure



Features

- Superior transparency enables inspection of the surface condition of the substrate without removing the tape.
- Low adhesion SPV-P Series is suitable for smooth surfaces.

Applications

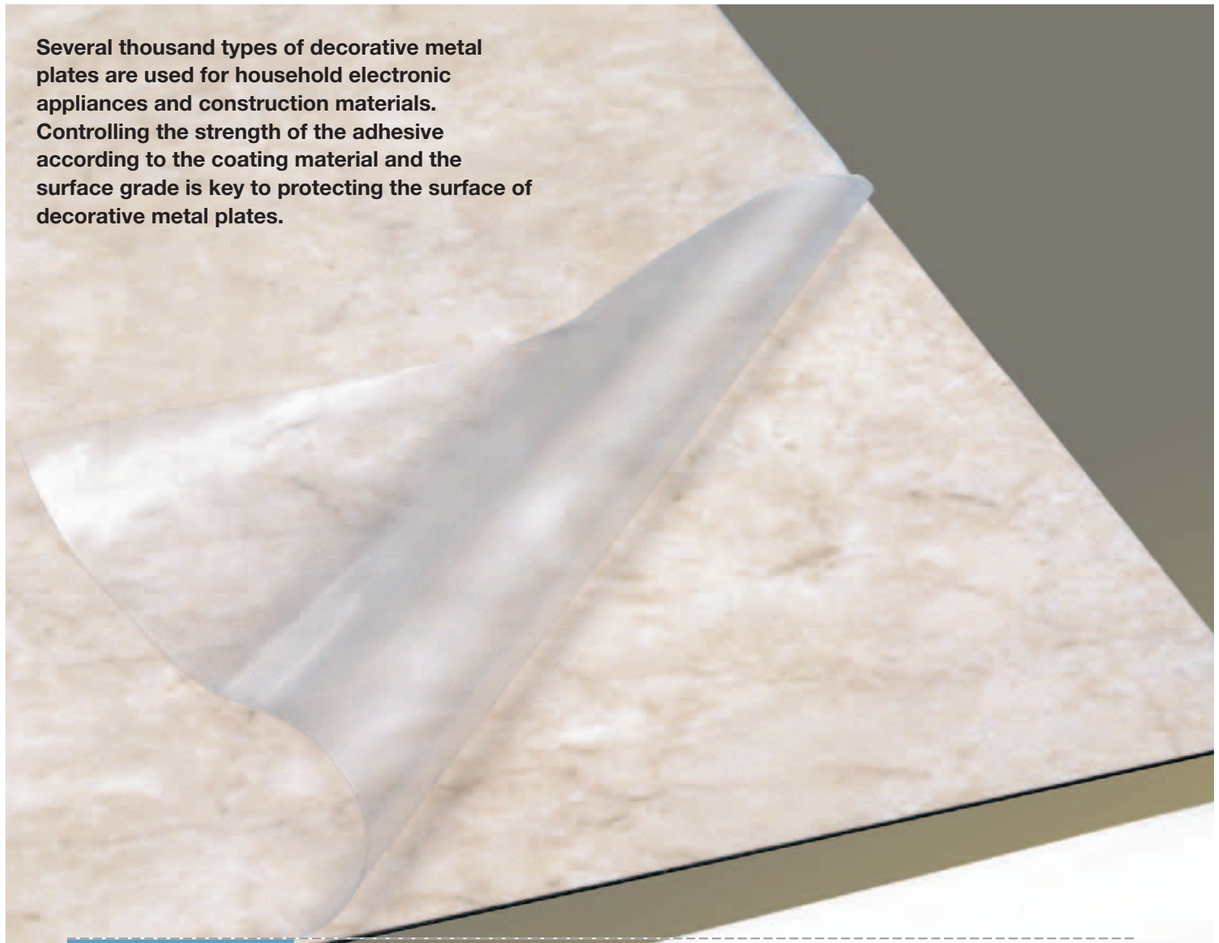
Surface protective of plastic plates during transportation.

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h))
P-367K	0.060	0.05	20	200	50
P-366K		0.60			30

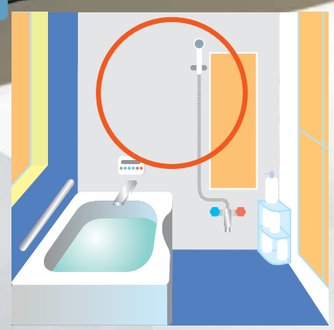
*Measured on acrylic plates.

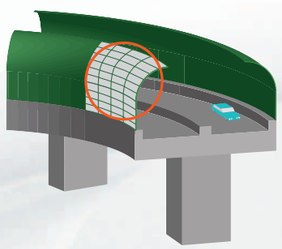
Surface Protective Materials for Decorative Metal Plates



Several thousand types of decorative metal plates are used for household electronic appliances and construction materials. Controlling the strength of the adhesive according to the coating material and the surface grade is key to protecting the surface of decorative metal plates.

Application Examples





SPV Application by Substrate

Substrate			Polyolefin based SPV™
Epoxy			364, A, C, FB, J Series
Polyester			
Acrylic resin			
Polyvinyl chloride	Film type		364, J, V Series
Fluoroplastics	Paint type	High temperature lacquering	364, FB, J Series
		Middle/low temperature lacquering	364, FB Series

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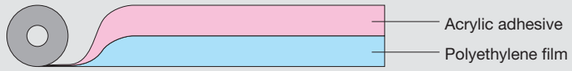
SPV™-C Series

Colored metal plate surface protective tapes

SPV-C Series of surface protective tapes uses a polyethylene film as a base material, which is developed by utilizing Nitto's proprietary technology. This Series offers superior protective for colored metal plates during transportation and processing.

Structure



Features

- Minimal change in adhesive strength following application ensures easy peeling.
- Superior transparency enables inspection of the surface condition of the substrate without removing the tape.
- Depending on the surface roughness and degree of processing, the most suitable product among a wide range of adhesive strength products can be used.
- SPV-C-6010 is particularly focus on environmental friendly since the product don't use organic solvent in adhesive.

Applications

Surface protective of colored metal plates during transportation and processing.

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h))
C-6010	0.060	1.30	30	300	150
C-100		0.70	25	250	
C-200		1.40			
C-300		1.80			100
C-400		2.00			
C-500		2.50			
C-600	0.090	2.00	30	220	

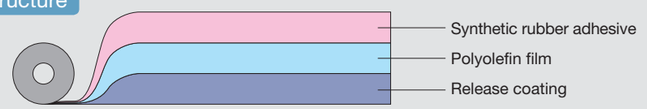
*Stainless steel BA plate as the substrate.

SPV™-364 Series

Polyolefin-based surface protective tapes suitable for decorative metal plates and nameplates

SPV-364 Series of surface protective tapes uses a polyolefin film as a base material. This series is highly effective in protecting the surfaces of pre-coated steel plates and nameplates.

Structure



Features

- Minimal change in adhesive strength following application ensures easy peeling.
- Outstanding re-application properties.
- Light unwinding and easy application.

Applications

Surface protective of pre-coated steel plates and nameplates during transportation and processing.

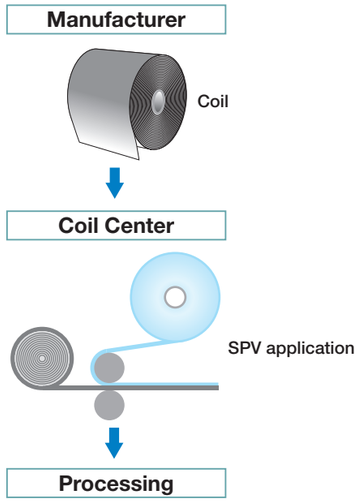
General Properties

Product No.	Thickness (mm)	Adhesive strength(N/20mm)		Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h))
		SUS430BA*1	Colored metal board (Ra0.4μm)			
364CK2	0.050	2.60	0.40	50	700	50
364MK2	0.055	2.70	0.64			
3641FK2	0.043	1.20	-		800	
3643FK2	0.055	2.10	0.23			
3648FK2	0.055	6.60	0.055	70*2	600	500

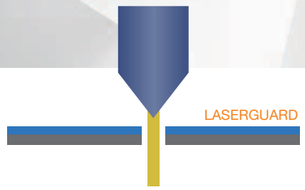
*1 Colored metal board *2 N/25mm

Surface Protective Materials for Laser Processing

Transportation and processing of stainless steel and aluminum plates



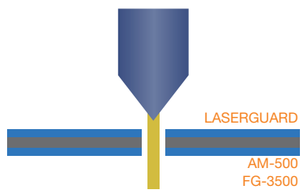
Laser processing (top-end surface protective film application)



LASERGUARD processing example

- Strong adhesive type so that the occurrence of film peeling caused by assist gas is minimal.
- Almost no emission of chlorine type of gas during laser processing.
- Eliminates the trouble of peeling film before processing, enabling reduced operation time.
- Moreover, cutting pierced and cut sections twice allows better finish.

Laser processing (rear surface protective film application)



AM-500

General surface protective material

FG-3500

- Minimal occurrence of burr compared with conventional product when applied to rear surface (lower surface).
- Almost no emission of chlorine type of gas during laser processing.
- Reduces time of removing burr, enabling reduced operation time.

Cautions

Matters requiring attention during laser cutting

When using these products with laser processing, unpeeling can occur depending on the cutting conditions. However, processability can be enhanced by reviewing the following conditions.

1) Please sufficiently secure necessary adhesive strength. (Use only after leaving product in place for several days after application.)
2) Perform cutting at fast speeds. (Perform cutting at 2,000/mm per minute or faster.)
3) Lower assist gas pressure.
4) Set a large gas nozzle diameter.
5) Shorten time from piercing to the start of cutting.
6) Lengthen distance from the piercing to the areas to be cut.
7) Using oxygen or flammable gasses cause fire risk during laser cutting together with tape. Please consult with machine supplier about the conditions.

SPV™-AM-500/FG-3500

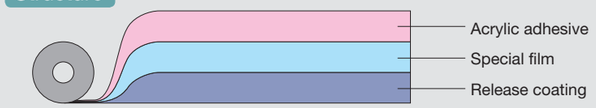
Surface protective tapes for metal plates. These products show excellent performance during the metal fabrication processes both in punching and bending. And good for bottom side protection during laser cutting.

These products are protective tapes consisting of special carrier film and unique adhesive. They can also be used for punch press (NCT) process as well as laser-cutting process.

AM-500

FG-3500

Structure



Features

- Prevents entrainment of metal chips which often occurs with thick-type surface protective tapes.
- Almost no emission of chlorine type of gas during incineration, such as gas from incineration of polyvinyl chloride films.
- Excellent film strength and bending processability during processing of metal plates.
- Minimize dross during laser cutting as bottom side protection.

Applications

Surface protective for stainless steel and aluminum plates during transportation and processing.

General Properties

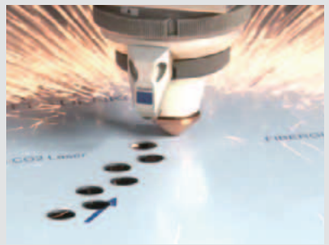
Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherbility (S-W-M (h))	Applications
AM-500	0.050	1.50	150	170	100	for CO_2
FG-3500	0.035	2.50	80	130	500	for fiber

*Stainless steel BA plate as the substrate.

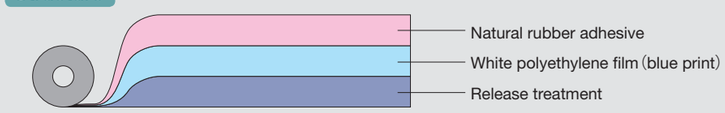
LASERGUARD (SPV™-LG-4000/LG-4002/LG-5000/310GH5)

Metal Surface Protective Materials with Excellent Laser Processability

Nitto's wide lineup offers total solutions for surface protective materials for laser cutting.



Structure



Features

- No need for film peeling-off work that was previously required before processing; this can lead to shortened working hours.
- SPV-LG-4002 (for CO_2) and SPV-310GH5 (for both CO_2 and fiber) are added to our product lineup as high-strength adhesive types designed with an emphasis on film peel-off prevention with assist gas.
- SPV-LG-4000 (for CO_2) and SPV-LG-5000 (for both CO_2 and fiber) are added to our product lineup as middle-strength adhesive types designed with an emphasis on light releaseability.
- No chlorine-based gas emissions during laser machining.
- Finer finishing by twice cutting pierced parts or cut sections.

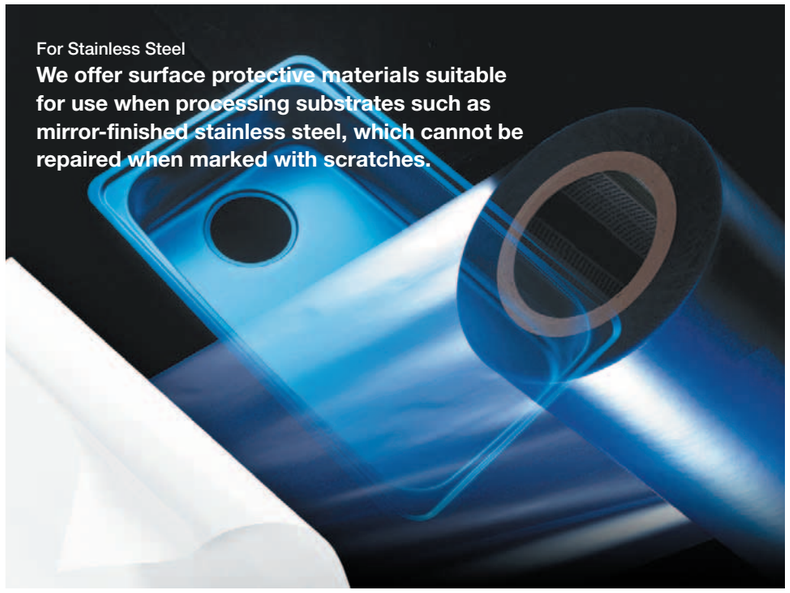
Applications

- Surface protective for stainless steel and aluminum plates during transportation and processing.
- Suitable for bender work

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation MD (%)	Weatherbility (S-W-M (h))	Reverse Printing	Applications
LG-4000	0.100	2.7	30	250	75	NO	for CO_2
LG-4002		4.5					
LG-5000	0.090	1.7		300	150	YES (blue)	for both CO_2 and fiber
310GH5	0.100	4.0	40	320			

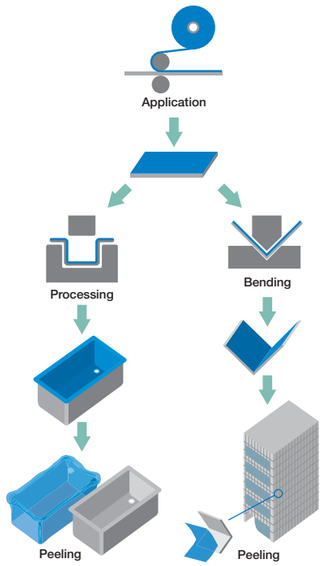
Surface Protective Materials for Metal Plates



For Stainless Steel

We offer surface protective materials suitable for use when processing substrates such as mirror-finished stainless steel, which cannot be repaired when marked with scratches.

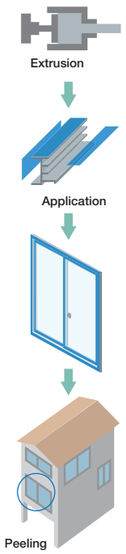
Application Examples



For Aluminum and Aluminum Sashes

Exterior surface protective materials for various long and heavy building construction materials; durable and tough enough to prevent scratching caused by large shocks and feature weather-ability enabling use during long construction periods.

Application Examples



SPV Application by Substrate

Substrate			Polyvinyl chloride based SPV™	Polyolefin based SPV™
Stainless steel	BA plate		202, 205, 224 Series	301, 363, M, S, AM Series
	HL, No.4		201, 202, 205, 224 Series	
	Mirror finish		205 Series	-
	Colored stainless plate			
Aluminum	Bear plate		201, 202, 205, 224, AL Series	301, 363, C, M Series
	Alumite (sealed)		201, 202, 205, AL Series	
Aluminum sashes	Paint	Lacquered	-	A Series
		Electric coloring	202, 224, AL Series	-
	Binding, Holding		202 Series	-

Note: Please consult us regarding titanium and copper plates

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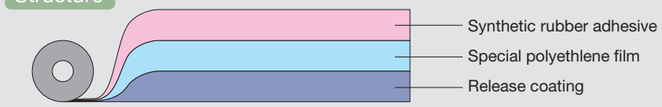
SPV™-ME-4001

Environment-friendly surface protective tapes suitable for bending

SPV-ME-4001 is environment-friendly surface protective tapes developed for stainless steel and other plates that do not use polyvinyl chloride as a base material. The bending processability of this products is superior to that of existing polyvinyl chloride surface protective tapes by using special polyethylene film as a base material.

Structure



Features

- Almost no chlorine type of gas from polyvinyl chloride films produced when incinerated.
- Excellent application throughout the year.
- Applicable for bending processability.

Applications

Surface protective for stainless steel and aluminum plates during transportation and processing.

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h))
ME-4001	0.100	3.40	42	450	300

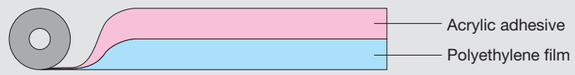
*Stainless steel BA plate as the substrate.

SPV™-M-6020/M-6030

Environment-friendly and water-based adhesive product for use with stainless steel and other metal plates

SPV-M-6020/M-6030 are water-based adhesive films developed for surface protective of stainless steel and other metal plates. Unlike conventional products, these environment-friendly films use no organic solvents during the adhesive manufacturing stage and also use polyethylene film as a base material.

Structure



Features

- Environment-friendly due to no organic solvents being used from the manufacturing stage.
- Easily peels off after use.
- Offers superior adhesion at low temperatures.
- Ideal for light processing.

Applications

Surface protective for stainless steel and aluminum plates during transportation and processing.

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h))
M-6020	0.060	1.80	30	300	150
M-6030		2.50			

*Stainless steel BA plate as the substrate.

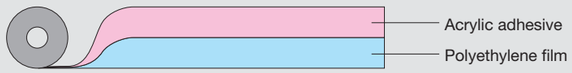
Surface Protective Materials for Metal Plates

SPV™-A-6050/A-8050

Environment-friendly product for aluminum sashes

SPV-A-6050/A-8050 are a surface protective tapes that use a water-based adhesive. These environment-friendly product use a polyethylene film as a base material.

Structure



Features

- Offers superior adhesiveness to aluminum sashes.
- Easily peels off after use.
- Does not depend largely on surface roughness of substrate.
- Offers outstanding weatherability.

Applications

Surface protective of aluminum sashes, etc.

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h))
A-6050	0.065	2.75	30	250	500
A-8050	0.085	3.00	35		

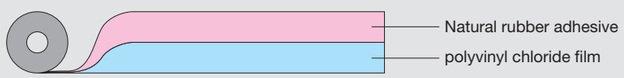
*Stainless steel BA plate as the substrate.

SPV™-201SR/2001SR

Standard surface protective tapes for metal plates that uses a polyvinyl chloride film as a base material (Comply with RoHS2 regulations)

SPV-201SR/2001SR are surface protective tapes that use a polyvinyl chloride film as a base material. These products are suitable for protecting the surface of stainless steel aluminum plates during transportation and light processing.

Structure



Features

- Light unwinding and easy application.

Applications

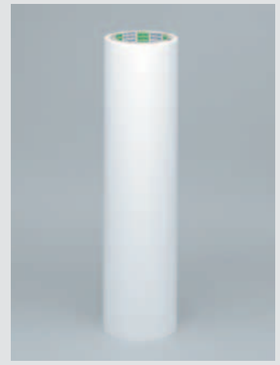
Surface protective of and stainless steel aluminum plates during transportation and light processing.

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h)) White
201SR	0.12	0.80	80	250	25
2001SR	0.100	0.90	70		25

*Stainless steel BA plate as the substrate.

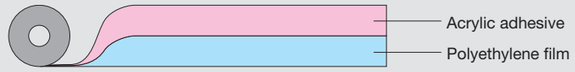
SPV™-301/302



Surface protective tapes feature excellent processability and weather resistance

SPV-301/302 are surface protective tapes for metal plates that use a polyethylene film as a base material. Providing excellent processability and weather resistance. These products prevent scratching of metal plate surfaces during processing and transportation.

Structure



Features

- Minimal change in adhesive strength following application ensures easy peeling.
- Excellent weatherability with little adhesive residue on the substrate.
- Capable of tracking during drawing and bending processes, thus preventing damage to metal surfaces.

Applications

Surface protective of stainless steel and aluminum plates during transportation and processing.

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)		Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h))
		SUS430BA	SUS301LDF			
301	0.11	2.50	0.70	40	300	300
302	0.12	2.20	2.20			

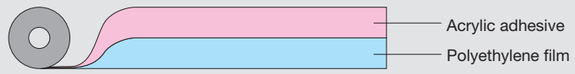
*SPV302 has stronger lamination than SPV-301 for rough surface, such as DF.

SPV™-363

Surface protective tape for metal plates that provides easy peeling and excellent processability

SPV-363 is a surface protective tape for metals plates that has a polyethelylene film. Featuring excellent processability, SPV-363 is ideally suited for surface protective during the processing of stainless steel and aluminum plates.

Structure



Features

- Light unwinding and easy application.
- Easy peeling.
- Usable during drawing and bending as well as roll processing.

Applications

Surface protective of stainless steel plates and aluminum plates during transportation and processing.

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h))
363	0.070	1.80	30	350	150

*Stainless steel BA plate as the substrate.

SPV™-224R/214R

SPV-224R/214R are PVC base surface protective tapes for metal plates that complies with RoHS2 regulations.

Offers outstanding weatherability through the utiilzation of special acrylic adhesive.

SPV-224R

Structure

Features

- Surface protective tape that uses RoHS2 compliant PVC.
- Utilizes acrylic adhesive that enables outdoor use.
- Suitable to use during processing of stainless steel plates, aluminum plates and nameplates.

Applications

- Surface protection for stainless steel, aluminum and nameplates to prevent damage during processing.
- Storage of glass, aluminum sashes, etc.

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h))
224R	0.080	1.00	50	200	500
214R	0.120	1.20	70	200	400

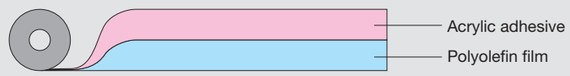
*Stainless steel BA plate used as the substrate.

SPV™-S-400X

Surface protective tapes for deep drawing of stainless steel

SPV-S-400X of surface protective tapes was developed for surface protective during stainless steel processing. Products can be selected in accordance with the shape from simple processing to complex processing.

Structure



Features

- Minimal film floating during drawing; multistep drawing is possible.

Applications

Surface protective during stainless steel deep drawing.

General Properties

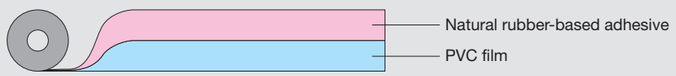
Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h))	Notes
S-400X	0.045	2.70	45	600	50	For such complex shapes as irregularly shaped sinks

*Stainless steel BA plate as the substrate.

SPV™-202R

SPV-202R is a PVC base surface protective tape for metal plates that complies with RoHS2 regulations.

Structure



Features

- Strong adhesive type, suitable for harsh processing.
- Sufficient oil resistance, applicable for milling operation of aluminum.

Applications

- Surface protection for stainless steel plates, aluminum and polished steel plates during deep drawing and roll forming.

General Properties

Product No.	Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability (S-W-M(h)) White/Black
202R	0.12	2.70	65	200	25/250

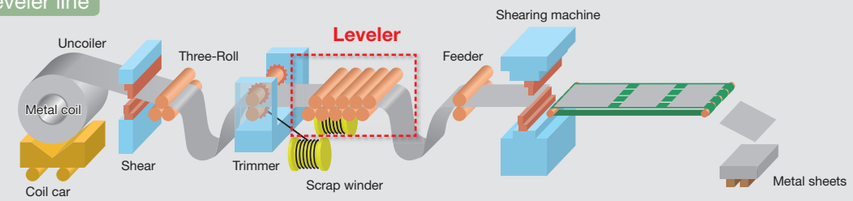
*Stainless steel BA plate used as the substrate.

Leveler Cleaning Sheet LCS-100

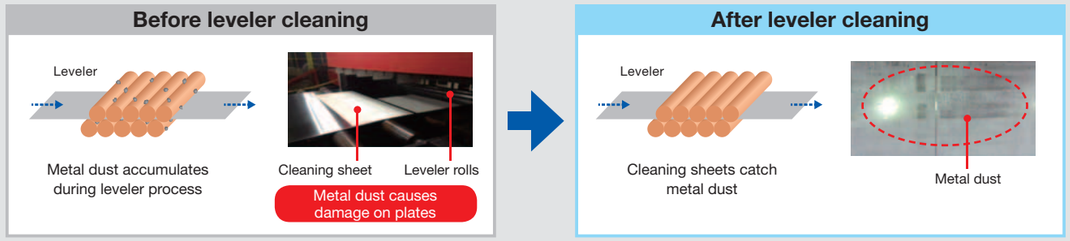
Easy metal dust cleaning of metal coil leveler line

LCS-100 is a cleaning sheet for removing metal dust attached to metal leveler roll.

Metal coil leveler line



Performance



General Properties

PVC Type SPV™ for Metal Plates

Product type	Number	Properties						Size		Color				Structure	
		Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability S-W-M(h) White/Black		Maximum width (mm)	Standard length (m)	White	Black	Clear	Blue (Semi-transparent)	Base material	Adhesive
201 Series	201SR	0.12	0.80 *b	80	250	25		1,600	200	○	-	-	-	Polyvinyl chloride film	Natural rubber
	2001SR	0.100	0.90 *b	70	250	25		1,600	200	○	-	-	-		
	201R	0.12	1.60 *b	80	250	25		1,250	200	○	-	-	-		
202 Series	202R	0.12	2.70 *b	65	200	25/250		1,260	50	○	○	-	-		
205 Series	205R	0.12	0.50 *b	85	290	700		1,260	200	○	-	-	-	Polyvinyl chloride film	Acrylic
224 Series	224R	0.080	1.00 *b	50	200	500		1,260	200	-	-	○	○		
	214R	0.120	1.20 *b	70	200	400		1,260	100	-	-	○	-		
AL Series	AL-200R	0.080	0.75 *b	50	250	700		1,600	200	-	-	-	○		

SPV™-202R might change its color due to type of stainless or surface treatment.

PO Type SPV™ for Multipurpose Applications

Product type	Number	Properties						Size		Color				Structure	
		Thickness (mm)	Adhesive strength (N/20mm)	Tensile strength (N/20mm)	Elongation (%)	Weatherability S-W-M(h)		Maximum width (mm)	Standard length (m)	White	Black	Clear	Blue (Semi-transparent)	Base material	Adhesive
301 Series	301	0.11	2.50 *b	40	300	300		1,250	200	○	-	-	-	Polyethylene film	Acrylic
	302	0.12	2.20 *b	40	300	300		1,250	200	○	-	-	-		
362 Series	3620	0.070	2.80 *b	20	200	50		1,250	50	-	-	○	○		
	362MK	0.075	1.90 *b	30	200	150		1,250	200	-	-	○	-		
	362X-2K	0.075	1.50 *b	30	200	150		1,250	200	-	-	○	-		
363 Series	363	0.070	1.80 *b	30	350	150		1,250	100	-	-	○	○		
364 Series	364CK2	0.050	2.60 *a	45	600	50		1,250	200	-	-	○	-	Polyolefin film	Synthetic rubber
	364MK2	0.055	2.70 *a	45	600	50		1,250	200	-	-	○	-		
	3641FK2	0.043	1.20 *a	45	600	50		1,250	200	-	-	○	-		
	3643FK2	0.045	2.10 *a	45	600	50		1,250	200	-	-	○	-		
	3648FK2	0.055	6.60 *b	40	600	400		1,250	200	○	-	-	-		
A Series	A-6050	0.065	2.75 *a	30	250	500		1,250	100	-	-	○	○	Polyethylene film	Acrylic
	A-8050	0.085	3.00 *a	35	250	500		1,250	100	-	-	-	○		
C Series	C-6010	0.060	1.30 *b	30	300	150		1,250	100	-	-	○	○	Polyethylene film	Acrylic
	C-100	0.060	0.70 *a	25	250	150		1,250	200	-	-	○	-		
	C-200	0.060	1.40 *a	25	250	150		1,250	200	-	-	○	○		
	C-300	0.060	1.80 *a	25	250	100		1,250	200	-	-	○	○		
	C-400	0.060	2.00 *a	25	250	100		1,250	200	-	-	○	-		
	C-500	0.060	2.50 *a	25	250	100		1,250	200	-	-	○	-		
	C-600	0.090	2.00 *b	30	220	-		1,250	200	-	-	○	-		
FB Series	FB-5050	0.050	2.20 *a	47	600	350		1,250	100	-	-	○	○	Polyolefin film	Synthetic rubber
J Series	J-200	0.045	0.25 *a	35	500	20		1,250	200	-	-	○	-	Polyolefin film	Natural rubber
	J-300	0.045	0.45 *a	35	500	20		1,250	200	-	-	○	-		
	J-400	0.045	0.90 *a	35	500	20		1,250	200	-	-	○	-		
	J-500	0.045	1.20 *a	35	500	20		1,250	200	-	-	○	-		
LASERGUARD Series	LG-4000	0.100	2.70 *b	30	250	75		1,250	200/500	○	-	-	-	Polyethylene film	Natural rubber
	LG-4002	0.100	4.50 *b	30	250	75		1,250	200/500	○	-	-	-		
	LG-5000	0.090	1.70 *b	30	300	150		1,250	200	○	-	-	-		
	310GH5	0.100	4.00 *b	40	320	150		1,530	200	○	-	-	-		
M Series	ME-4001	0.100	3.40 *b	42	450	300		1,250	200	○	-	-	-	Special polyethylene film	Synthetic rubber
	M-6020	0.060	1.80 *b	30	300	150		1,250	200	-	-	-	○	Polyethylene film	Acrylic
	M-6030	0.060	2.50 *b	30	300	150		1,250	200	-	-	○	○		
AM-500/FG-3500	AM-500	0.050	1.50 *b	150	170	100		1,250	100	-	-	○	-	Special film	Acrylic
	FG-3500	0.035	2.50 *b	80	130	500		1,250	100	-	○	-	-		
P Series	P-367K	0.060	0.05 *b	20	200	50		1,300	200	-	-	○	-	Polyethylene film	Ethylene/Polyvinyl acetate
	P-366K	0.060	0.60 *b	20	200	30		1,300	200	-	-	○	-		
S Series	S-400X	0.045	2.70 *a	45	600	50		1,250	500	-	-	-	○	Polyolefin film	Acrylic
V Series	V-420	0.055	3.80 *a	40	550	80		1,250	200	-	-	○	-	Polyolefin film	Synthetic rubber

Substrates: Stainless steel BA plates, acrylic plates
■As it may require lot production on the size and color of the product, please consult our sales representative.
■The above chart shows examples of measured values, not guaranteed values.

Thickness: Nominal thickness.

*Adhesive strength a) Peeling angle 90° Peeling speed 300mm/min
b) Peeling angle 180° Peeling speed 300mm/min
Tensile Strength, Elongation: Tensile speed 300mm/min

SPV™ Weights

Unit (kg)
Calculations are based on a width of 1m. (including the core)

Base material	Number	Weight (kg/m²)	Length			
			100m	200m	500m	1,000m
Polyvinyl chloride	SPV™-2001SR	0.125	15	27	65	127
	SPV™-201SR	0.145	17	31	75	147
	SPV™-224R	0.095	12	21	50	97
Polyolefin	SPV™-302	0.104	13	23	54	106
	SPV™-363	0.065	9	15	35	67
	SPV™-C-300	0.057	8	13	31	59
	SPV™-364MK2	0.050	7	12	27	52

Note: The above chart shows examples of measured values, not guaranteed values.

SPV™ Log Roll Diameter

Base material	Number	Thickness (mm)	Length			
			100m	200m	500m	1,000m
Polyvinyl chloride	SPV™-2001SR	0.100	141	181	267	370
	SPV™-201SR	0.12	150	194	292	403
	SPV™-224R	0.080	129	172	245	323
Polyolefin	SPV™-302	0.12	150	196	280	385
	SPV™-363	0.070	130	166	235	317
	SPV™-C-300	0.060	127	160	223	303
	SPV™-364MK2	0.055	124	149	207	277

Note: The above chart shows examples of measured values, not guaranteed values.