

## TAPES FOR ELECTRICAL & ELECTRONIC EQUIPMENT





#### Nitto Denko Corporation

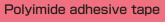




#### **INDEX**

Heat-resistant tape 2
Polyimide adhesive tape No.360 Series
Polyester adhesive tape7Polyester adhesive tapeNo.31Series / No.3157Polyester adhesive tapeNo.336 / No.3378Flame-retardant polyester adhesive tapeNO3161FR Series8
Composite adhesive tape9Composite adhesive tapeNo.340 / No.341 Series / No.343B9Composite adhesive tapeNo.345EG9
High-function tape       10         Self-fusing tape No.11/No.15/No.66/No.660       10         Acetate adhesive tape No.5/No.5EG/No.151UL/No.153/No.155/No.156A       11         Cotton adhesive tape No.7A       12         Vinyl adhesive tape No.223S       12         Non-halogen adhesive tape No.2400/No.2450       13
Heat bonding sheet15Polyester nonwoven fabric thermosetting bonding tape/sheet P-EF Series15Backing-less thermoplastic bonding tape/sheet FB-ML4·FB-ML8016
Applications 17
Products list 19

Nitto Technical Support Centers



#### No.360 Series

#### Heat-resistant electrical insulation.

Widely used in a variety of applications, such as heat-resistant electrical insulation, heat-resistant masking, component mounting reflow processes, and the manufacturing processes of various types of electronic components.

#### Features

- •Offers superior electrical insulation properties.
- Offers superior dimension stability.
- Offers superior heat resistance.
- •Available in long lengths.

#### Applications

- Heat-resistant masking.
- •Heat-resistant electrical insulation.

#### Structure



●No.360A



#### Line-up

Product No.	Thickne	ess (mm)	Standard length (m)	Color	
Floduct No.	Total	(Backing)	Standard length (III)	Color	
N - 000111	0.060	(0.025)	20	Light Ambor Proug	
No.360UL	0.090	(0.050)	20	Light Amber Brown	
No.360A	0.053	(0.025)	20	Light Ambar Brausa	
	0.080	(0.050)	20	Light Amber Brown	

#### Properties

Product No.	Peel adhesion (N/19mm)	Tensile strength (N/19mm)	Elongation (%)	Breakdown voltage (kV)	Electrolytic corrosion factor
No 2001II	5.4	145	65	8.0	1.00
No.360UL	5.4	250	65	11.0	1.00
N - 000 A	4.0	145	65	8.0	1.00
No.360A	4.4	250	65	11.0	1.00

● UL 510 Flame Retardant • E34833



#### Fluoroplastic adhesive tape

#### NITOFLON® No.903UL / No.923UT

Structure

●No.903UL

■No.923UT

#### Single-coated fluoroplastic tape equipped with a wide array of features.

NITOFLON® No.903UL consists of a polytetratfluoroethylene (PTFE) film base coated on one side (treated side) with heat-resistant silicone adhesive. The tape offers resistance to heat and chemicals as well as an abundance of superior properties such as excellent electrical properties, non-tackiness and low coefficient of friction.

# No.188UL

Glass-cloth adhesive tape

#### No.185 / No.188UL

#### Super strong electrical insulation tape that offers reliable adherence.

No.185 is a heat-resistant adhesive tape featuring superior physical strength and electrical insulation properties. No.188UL is a heat-resistant electrical insulation tape that offers superior heat resistance, mechanical strength and flame retardancy (UL certified).

#### Features

- ●UL 510 Flame Retardant certified.
- Applied in the same manner as ordinary tape; realizes smooth wrapping, bundling and sealing.
- Offers superior flame retardancy.
- •Uses class H insulation materials.
- ●Environment-friendly product conforms to Notification No.20 of the Japanese Ministry of Health, Labour and Welfare.
- ●No.923UT is only 0.04mm thick and does not take space.

#### Applications

- •Heat-resistant electrical insulation.
- Heat seals.Sliding material.
- Prevents tacky material from adhering.

#### Line-up

Product No.	Thickness (mm)	Width (mm)	Standard length (m)
No.903UL	0.08, 0.13, 0.18, 0.23	5, 9, 10, 13, 15, 18, 19, 20, 22, 25, 30, 38, 40, 50, 75, 80, 100, 150, 200, 250, 300, 350, 400, 450	10
No.923UT	0.04	10, 13, 19, 25, 30, 38, 50, 75, 100, 125, 150, 200	5,10

#### ● UL 510 Flame Retardant • E34833

#### Features

- Offers superior physical strength and electrical insulation
- Offers superior thermal insulation.
- •Thermosetting properties offer enhanced solvent and wax resistance by heating.
- •Heating significantly increases adhesive strength.

#### Applications

- Outer and interlaminar insulation for heat-resistant transformers.
- Covering of parts.
- Outer insulation for and bundling of coils.

#### Structure ●No.185 Thermosetting rubber adhesive Glass cloth ●No.188UL Silicone adhesive

Glass cloth

#### Properties

Product No.	Thickness (mm)  Total (Backing)	Standard length (m)	Color	Peel adhesion (N/19mm)	Tensile strength (N/19mm)	Elongation (%)	Breakdown voltage (kV)	Electrolytic corrosion factor
No.185	0.170 (0.130)	20	White	7.5	500	8	3.0	0.8 or more
No.188UL	0.180 (0.130)	33	White	6.7	600	5	3.5	0.96

●No.188UL(UL 510 Flame Retardant E34833)

#### Fluoroplastic adhesive tape

#### NITOFLON® No.903-T

#### Fluoroplastic tape with release liner that facilitates work.

NITOFLON No.903-T is a polytetratfluoroethylene adhesive tape with a polyester liner. The tape is provided with various features such as electrical properties and facilitates work such as punching and application.

#### Glass-cloth adhesive tape

#### ST-HG-T

#### Flame-retardant tape with superior heat resistance and adherence.

ST-HG-T is a heat-resistant electrical insulation tape consisting of glass cloth coated with silicone adhesive.

#### Features

- Offers superior punchability.
- Easy to apply.
- Provided with polyester film release liner.

#### Applications

- •Heat-resistant electrical insulation.
- Heat seals.Sliding material.
- Prevents tacky material from adhering.

#### Structure



#### Polyester film release liner Silicone adhesive Single- surface treated PTFE film

Silicone adhesive

Silicone adhesive

Single- surface treated

high strength PTFE film

PTFE film

Single- surface treated

#### Features

- Provides superior physical and mechanical strengths.
- •Special satin weave glass-cloth backing offers superior adherence to substrates
- Offers heat-resistance and enhances adhesive strength when heated.
- Offers superior flame retardancy (UL 510 Flame Retardant certified).

#### Structure Flame Retardant Silicone adhesive Glass cloth

#### Applications

- •Heat-resistant termination and bundling of coils.
- •Heat-resistant outer insulation and protection of parts.

#### Properties

· · · · · · · · · · · · · · · · · · ·								
Product No.	Thickness (mm) Total (Backing)	Standard length (m)	Color	Peel adhesion (N/19mm)	Tensile strength (N/19mm)	Breakdown voltage (kV)	Electrolytic corrosion factor	
ST-HG-T	0.19 (0.12)	20	White	8.0	600	3.0	0.95 or more	

●UL 510 Flame Retardant E64170

#### Line-up

Product No.	Туре	Thickness (mm)	Width (mm)	Standard length (m)
		0.08		
No.903-T	With Polyester	0.13	25 50 75 100 150 200 250 500	40
140.903-1	release liner	0.18	25, 50, 75, 100, 150, 200, 250, 500	10
		0.23		



#### Nomex adhesive tape

#### No.380 / No.386UL

#### Stable electrical insulation properties at high temperatures.

Structure

●No.380

●No.386UL

Nomex that provides superior heat-resistance is used as the backing. Very practical for electrical insulation and battery electrode insulation that require heat resistance. No. 386UL is a UL certified tape. \*Nomex is a registered trademark of DuPont

#### Polypropylene adhesive tape No.370 Series

#### Polypropylene adhesive tape with superior solvent resistance.

Structure

Tape developed to maintain insulation properties inside electronic components using organic solvents such as capacitors and batteries is equipped with a polypropylene film backing with superior solvent resistance. The tape is ideal for fixing of aluminum electrolytic capacitor elements and lithium ion secondary batteries.

#### Features

- Offers superior electrical insulation.
- Offers superior flame retardancy.
- Offers superior heat resistance.
- Available in long lengths (up to 300m).

#### Applications

- Outer insulation and termination of coils.
- Heat-resistant electrical insulation.
- Battery electrode insulation.

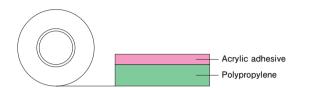
#### Properties

Product No.	Thickness (mm) Total (Backing)	Standard length (m)	Color	Peel adhesion (N/19mm)	Tensile strength (N/19mm)	Elongation (%)	Breakdown voltage (kV)	Electrolytic corrosion factor
No.380	0.100 (0.050)	50	White	8.0	80	10	3.0	0.95 or more
10.360	0.130 (0.075)	50		7.5	140	10	3.5	0.95 or more
No 296111	0.120 (0.050)	50	White	6.5	80	10	3.0	0.9 or more
No.386UL	0.140 (0.075)	50	White	6.5	140	10	3.5	0.9 or more

●No.386UL(UL 510 Flame Retardant E34833)

#### Features

- Offers superior electrical insulation.
- Offers superior solvent resistance.



#### Applications

- •Fixing of aluminum electrolytic capacitor elements.
- •Fixing of lithium ion secondary battery elements.

#### Properties

Product No.	Thickness (mm) Total (Backing)	Standard length (m)	Color	Peel adhesion (N/10mm)	Tensile strength (N/10mm)	Elongation (%)
No.3703F	0.055 (0.030)	400, 4000, 8000	Transparent	3.5	40	180
No.3703DF	0.055 (0.030)	200, 400	Light green	3.5	40	180



#### PPS adhesive tape

#### No.320A Series

For structural materials of chip electrolytic capacitors and secondary batteries.

Employing heat-resistant Nomex as the backing, Nitto No.403FP is used as electrical insulation and for insulation of battery electrodes requiring heat resistance.

Structure

\*Nomex is a registered trademark of DuPont

#### Special film heat-resistant light adhesion tape/sheet

#### T-APN10

Heat-resistant light adhesion adhesive tape with special film backing that allows easy removal of the applied tape even after heated.

Structure

This light adhesion tape with superior heat-resistance withstands various heating processes used for printed circuit board or device component production.

Release liner

Polyester film %T-APN10:PEN film

Acrylic adhesive

Special polyester film,

#### Features

- •Offers superior electrical insulation.
- Offers superior dimension stability.
- Offers superior heat resistance.

#### Applications

- •Fixing of aluminum electrolytic capacitor elements.
- ●Insulation of electrodes in lithium ion secondary batteries.



Acrylic adhesive

Flame-retardant

Nomex paper

#### Line-up

Dod ot No	Thickne	ess (mm)	Ctondord longth (m)	Color	
Product No.	Total	(Backing)	Standard length(m)	Color	
No.320A#16	0.035	(0.016)	- 20	Croom	
No.320A	0.053	(0.025)	- 20	Cream	

#### Properties

1 Topol God											
Product No.	Peel adhesion (N/10mm)	Tensile strength (N/10mm)	Elongation (%)	Breakdown voltage (kV)	Electrolytic corrosion factor						
No.320A#16	3.0	34	64	3.7	1.00						
No.320A	3.3	55	60	5.5	1.00						

#### Features

- Offers very light adhesion that allows easy removal.
- •Even after heated, leaves no adhesive residue when removed and exhibits superior dimension stability.
- ●Long shelf life up to 6 months at room temperature.
- Offers superior punchability.

#### Applications

- •Reinforcement and masking for ultra-thin circuits (thin copper coated base & copper foils).
- Protection during through-hole drilling.
- •Suitable for masking during conductive paste filling.

#### Properties

1 Toper des				
Product No.	Thickness (mm) * Total (Backing)	Standard length (m)	Color	Peel adhesion (N/20mm)
T-APN10	0.020 (0.016)	200	Transparent	0.20

<sup>\*</sup>Excluding the release liner

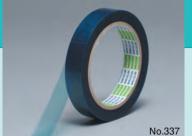


#### Polyester adhesive tape

#### No.31 Series / No.315

#### Used for outer/interlaminar insulation of transformers and coils.

Tape developed for outer/interlaminar insulation of transformers and coils. Nitto has a wide lineup of backing thicknesses and adhesive types/colors; the tapes can be used for various applications. Nitto is also proud of its abundant experience with tapes for electronic equipment insulation.



#### Polyester adhesive tape No.336 / No.337

Thin backing and thick adhesive layer make No.336/No.337 adhesive tape deal for plating masking.

Thin backing and thick adhesive layer makes the tape ideal for heat-resistant plating masking. Almost no plating solution leaks in so it exhibits high reliability.

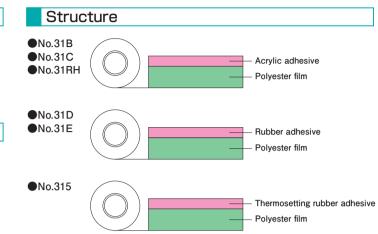
#### Features

- Offers superior electrical insulation.
- Offers superior dimension stability.
- Offers superior heat resistance.
- Narrow width processing is available.
- •Available in long lengths.

#### Applications

• Electrical insulation of transformers and coils.





#### Features

- •Film is thin and offers excellent flexibility.
- $\bullet \mbox{Has}$  thick adhesive layer so almost no plating solution leaks in.

\*\*Resistability of plating solution. Backing will be changed weaker when it soaked in heated alkali solution by long hours using.



#### Applications

•Heat-resistant masking.

#### Properties

Product No.	Thickness (mm) Total (Backing)	Standard length (m)	Color	Peel adhesion (N/19mm)	Tensile strength (MPa)	Elongation (%)	Breakdown voltage (kV)	Electrolytic corrosion factor
No.336	0.060 (0.025)	33	Transparent,	6.4	130	80	5.4	
140.550	0.080 (0.050)	33	Blue	6.6	170	100	3.4	1.00
No.337	0.100 (0.025)	33	Blue	6.2	130	80	5.5	1.00

#### Properties T

Product No.		ess (mm) (Backing)	Standard length(m) [Core diameter(mm)]	Color	Peel adhesion (N/19mm)	Tensile strength (N/19mm)	Elongation (%)	Breakdown voltage (kV)	Electrolytic corrosion factor
N= 04D	0.053	(0.025)	- 50【75φ】	Transparent	5.5	100	110	5.5	
No.31B	0.080	(0.050)	50[/5φ]	Transparent	7.5	196	130	8.0	
N= 210	0.053	(0.025)	50【75φ】	White, Yellow, Red, Green,	5.5	100	110	7.0	
No.31C	0.080	(0.050)	- 30[/3φ]	Blue,Black	7.5	196	130	11.0	
N. 04511	0.053	(0.025)	50/75 . 1	Transparent	6.5	100	110	5.5	
No.31RH	0.053	(0.025)	- 50 <b>[</b> 75φ]	White,Red, Green,Blue, Black	6.5	100	110	7.0	1.00
No.31D	0.053	(0.025)	- 50【75φ】	Transparent	5.5	100	110	5.5	1.00
NO.STD	0.080	(0.050)	30 [7 3ψ]	Hansparem	7.0	196	130	8.0	
No.31E	0.053	(0.025)	50[75φ]	White, Yellow, Red, Blue, Black	5.5	100	110	7.0	
	0.060	(0.025)		Trononoront	12.0	100	110	5.5	
N= 015	0.085	(0.050)	50【75φ】	Transparent	14.5	196	130	8.0	
No.315	0.060	(0.025)	30 [7 5φ]	Vallani	12.0	100	110	7.0	
	0.085	(0.050)		Yellow	14.5	196	130	11.0	



Flame-retardant polyester adhesive tape

#### NO3161FR Series

Flame-retardant polyester tape is UL-510FR certified at 130°C temperature rating.

Electrical insulation adhesive tape consists of polyester film backing, coated with flame-retardant acrylic adhesive.

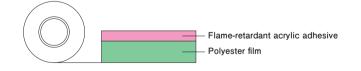
#### Features

- Offers superior electrical insulation.
- Does not contain Polybrominated Biphenyl or Polybrominated Diphenylethers to comply with RoHS regulations.

#### Applications

- Outer/interlaminar insulation of power switching transformers and ordinary power transformers.
- Outer/interlaminar insulation for the high frequency chalk coil, high voltage transformer.

#### Structure



#### Properties

Product No.	Thickness (mm) Total (Backing)	Standard length(m) [Core diameter(mm)]	Color	Peel adhesion (N/19mm)	Tensile strength (N/19mm)	Elongation (%)	Breakdown voltage (kV)	Electrolytic corrosion factor
NO01C1ED1	0.054 (0.005)		Milky	0.0	100	110	6.0	
NO3161FR1	0.054 (0.025)	50【75φ】	White, Yellow, Red, Green, Blue, Black	8.0	100	110	7.0	1.00
NO3161FR2	0.080 (0.050)	50[/5φ]	Milky	9.0	196	130	8.0	1.00

●UL 510 Flame Retardant temperature rating: 130°C E34833



Composite adhesive tape

#### No.340 / No.341 Series , No.343B

Structure

#### High-electrical insulation and tracking-resistant properties that contribute to increasing the compactness of coils and transformers.

High-insulation adhesive tape with an acrylic adhesive applied to a composite substrate of nonwoven fabric and polyester film. This can serve not only as a winding stopper for the exterior of coils but also contribute to greater transformer design freedom and more compact transformers.

Polyester nonwoven fabric

## **2000**

Self-fusing tape

#### No.11 / No.15 / No.66 / No.660

#### Rubber-based self-fusing tapes that have excellent electrical properties.

No.11,15 are butyl rubber self-fusing tapes that do not cause metal corrosion. No.66, 660 are silicone rubber type self-fusing tapes that are heat and weather resistant.

#### Features

- •Adheres well to coils, etc., and offers superior flexibility.
- •Heating increases adhesive strength.
- Offers superior electrical insulation.
- Complies with PLC-O of UL-746A (CTI: 600U or more).
- ●Conforms to CTI grade I of IEC-950.

#### Applications

- Outer insulation and termination of coils.
- •Barrier insulation of transformers and coils.

#### Properties

Product No.	Thickness (mm) Total (Backing)	Standard length (m)	Color	Peel adhesion (N/19mm)	Tensile strength (N/19mm)	Elongation (%)	Breakdown voltage (kV)	Electrolytic corrosion factor
No.340	0.240 (0.180)	50	White, Blue	7.5	170	60	5.5	0.98 or more
No.341F	0.420 (0.350)	50,200	White, Blue	6.0	120	60	5.5	0.98 or more
No.341S	0.250 (0.160)	100	White, Blue	10.5	130	100	9.0	0.98 or more
No.343B	0.420 (0.370)	30	White	17.0	205	33	8.0	0.98 or more

●No.343B(UL 510 Flame Retardant temperature rating: 130°C, CTI PLC of O E34833)

Composite adhesive tape

#### **No.345EG**

Low-VOC adhesive tape with superior hand-cuttability and sound deadening qualities.

Sound deadening tape coated with low-VOC acrylic adhesive on our original special carrier of nonwoven fabric sandwiched between polyethylene(PE) films.

#### Features

- •Superior workability due to its superior hand cuttability
- Superior sound deadening qualities due to the use of nonwoven fabric with superior cushioning
- •Use of low-VOC adhesive as an environmental measure

#### Applications

•For wiring harnesses and sound deadening

## Acrylic adhesive Polyethylene Nonwoven fabric Polyethylene(Gray)

#### Properties

Product No.	Thickness (mm) Total (Backing)	Standard length (m)	Color	90°peel adhesion	Tensile strength (N/19mm)	Elongation (%)
No.345EG	0.250 (0.210)	14	Gray	5	70	10

#### Features

- Excellent in the electrical property, ozone resistance and weather resistance
- ●Do not cause metal corrosion (No.11,15)
- ●Excellent heat resistance (No.66, 660)

#### Applications

- ●Treating/connecting the ends of electrical cables. (No.11,15)
- •Insulation banding for wire harness in the engine area of the car. (No.66, 660)

#### Structure

●No.11

Self-fusing b rubber layer



●No.66, 660



#### Properties

Product No.	Thickness(mm)*	Width (mm)	Standard length (m)	Color	Tensile strength (N/19mm)	Elongation (%)	Breakdown voltage (kV)
No.11	0.5	19	10	Black	30	500	20
No.15	0.5	19	10	Black	30	500	20
No.66	0.5	19, 25	15	Red brown	70	500	20
No.660	0.22	19	15	Red brown	25	400	13

<sup>\*</sup>Excluding the release liner



#### Acetate adhesive tape

#### No.5 / No.5EG / No.151UL / No.153 / No.155 / No.156A

#### Acetate cloth adhesive tape offers superior heat resistance and flexibility.

Electrical insulation tape consists of acetate cloth coated with acrylic or rubber adhesive. No.156A and No.151UL are UL-certified flame-retardant adhesive tape, and is used insulating electrical and electronic equipment, protective insulation of wire harnesses and binding.



#### Cotton adhesive tape

#### No.7A

#### Ideal for outer insulation and termination of coils.

Adhesive tape designed to facilitate work consists of cotton cloth coated with acrylic adhesive. Ideal for outer insulation and termination of coils.

Structure

#### Features

- Easy to work with.
- •Superior flexibility makes it ideal for binding uneven electrical wiring.
- •Offers superior corrossion resistance.
- ●Environment-friendly tape of low VOC.(No.5EG)
- ●No.151UL is halogen-free.
- ●Low VOC strong adhesive tape.(No.153)

#### Applications

- Outer insulation and termination of coils.
- For bonding wire harness on home appliances.(No.151UL)



#### **Properties**

Product No.	Thickness (mm) Total (Backing)	Standard length (m)	Color	Peel adhesion (N/19mm)	Tensile strength (N/19mm)	Elongation (%)	Breakdown voltage (kV)
No.5	0.23 (0.18)	30	White, Black	6.0	120	20	3.0
No.5EG	0.23 (0.18)	20	Black	5.0	120	20	3.0
No.151UL	0.23 (0.18)	50	Black	5.0	120	20	3.0
No.153	0.21 (0.18)	50	White, Black	10.0	120	20	3.0
No.155	0.23 (0.18)	30	Black	8.0	130	20	3.0
No.156A	0.25 (0.18)	30	White, Black	8.0	130	20	2.0

●No.151UL (UL 50 Flame Retardant E64170), No.156A (UL 510 Flame Retardant E34833)

#### Features

- Easy to work with.
- •Flexible and is easy to cut straight.

#### Applications

Outer insulation and termination of coils.

### Acrylic adhesive Cotton cloth

#### Properties

Product No.	Thickne Total	ess(mm) (Backing)	Standard length(m) [Core diameter(mm)]	Color	Peel adhesion (N/19mm)	Tensile strength (N/19mm)	Elongation (%)	Breakdown voltage (kV)
No.7A	0.22	(0.15)	30 <b>[</b> 75φ]	White	3.5	200	7.0	1.0

#### Vinyl adhesive tape No.223S

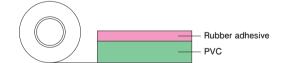
#### A standard tape meeting the UL standards.

This vinyl adhesive tape is used as a flame-retardant insulation of degaussing coils. The tape meets standards of the American UL (Underwriters Laboratories) and the Canadian CSA (Canadian Standards Association) and contributes to enhancing safety of electronic equipment and products.

#### Features

- Offers superior flame-retardant and electrical insulation properties.
- Can be used for wrapping corners of degaussing coils.
- ●UL 510 Flame Retardant and CSA certified.

#### Structure



#### Applications

•Electrical insulation and binding of CRT degaussing coils.

#### Properties

Product No.	Thickness (mm)	Standard length (m)	Color	Peel adhesion (N/19mm)	Tensile strength (N/19mm)	Elongation (%)	Breakdown voltage (kV)
No.223S	0.190	20	White, Gray, Yellow, Red, Green, Blue, Black	5.64	73.5	280	11.22

- ●UL 510 Flame Retardant E34833
- OSA C22.2 No.197-M1983 028317\_0\_000



#### Non-halogen adhesive tape

#### No.2400 / No.2450

#### Realizes same bundling properties as PVC without halogen.

Structure

Nitto has developed an adhesive tape that offers the same strength and user-friendliness as PVC plus better heat resistance through a combination of non-halogen base film and adhesive.

#### Features

- •Same colors of PVC are available in Non-halogen, and can maintain the same color identification.
- Tape design offers same banding performance as PVC and is just as easy to use.
- Offers improved long-term heat resistance and fogging properties that are the disadvantages of PVC.

#### Applications

•For banding wire harness and identification.

## Non-halogen adhesive Special non-halogen base

#### Properties

Product No.	Thickness (mm)	Standard length (m)	Color		Peel adhesion (N/19mm)		Elongation (%)	
No.2400	0.11	0.5	Disal	Stainless steel plate	4.12	07.5	205	
(For general banding)	0.11	25	Black	Own backing	4.95	27.5	365	
No.2450	0.11	25	12 colors	Stainless steel plate	4.36	27.5	266	
(For identification)	011		12 Colors	Own backing	5.42	27.5	366	



Polyester nonwoven fabric thermosetting bonding tape/sheet

#### **P-EF Series**

Thermosetting bonding sheets with superior sealing properties that offer easy taping.

P-EF Series is a thermosetting bonding sheet using polyester nonwoven fabric impregnated with epoxy resin.

# FB-ML4

Backing-less thermoplastic bonding tape/sheet

#### FB-ML4 · FB-ML80

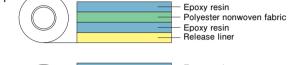
Thermoplastic bonding tape that strongly and rapidly bonds in a few seconds.

FB-M Series is a thermoplastic bonding tape with superior and quick bonding properties for various materials, and is storable at room temperature.

#### Features

- ullet Long shelf life up to 3 months at a temperature under 20°C (P-EF50).
- Containing a sufficient amount of resin, P-EF11 provides a just the right amount of resin flow.
- ●The surface adhesive layer provides increased workability (P-EF50).
- Their sufficient flexibility provides superior adherence to substrates.

#### Structure •P-EF11





#### Applications

- Adhesion of a HIC metal board to its plastic case.
- Outer insulation and protection of coils.

#### Properties

Draduat Na	Thickness*	Standard length	Color	Shear strength	Bonding condition (	approximate values)	Ctorogo condition
Product No.	(mm)	(m)	Color	(N/cm²)	Temperature (°C)	Time (min.)	Storage condition
P-EF11	0.3, 0.5	20	White	1400	100-140	60-30	Sealed and stored at 10°C or less
P-EF50	0.18	30	Milky	1400	120-180	60-30	Sealed and stored at 20°C or less

<sup>\*</sup>Excluding the release liner

#### Features

- Bonds in a few seconds.
- ML4 offers superior bond strength for PET, PI, PC, ABS, PPO and PVC; PI, PC, ABS, and PVC; ML80 for PVC, PET-G, and epoxy glass.
- ●Long shelf life up to 6 months at a room temperature.

#### Applications

- Fixing modules of smart cards and small memory cards.
- Fixing plastic chasis to FPC.
- Bonding PET stiffeners to FPC.
- Bonding metal components with plastic chasis.

# Structure Release liner Polyester resin Release liner Polyester resin

#### Properties

Product No.	Thickness*	Standard length	Color	Shear strength	Bonding condition (	approximate values)	Storage condition
1 Toddot 140.	(mm)	(m)	Color	(N/cm²)	Temperature (℃)	Time (sec.)	Storage condition
FB-ML4	0.05, 0.07	50	Semi-transparent	1600	130-	5-	Room temperature
FB-ML80	0.05	100	Semi-transparent	1600	120-	2-	Room temperature

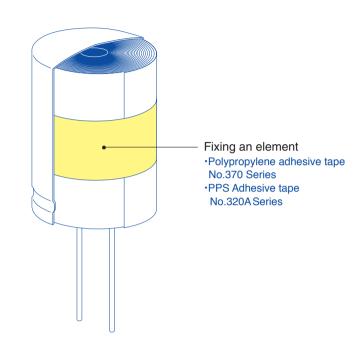
<sup>\*</sup>Excluding the release liner

#### ■ Structural materials

# Core outer layer No.31 Series Interlaminar insulation No.31 Series and NO3161FR Series Coil Outer insulation No.31 Series and NO3161FR Series Creeping insulation No.343 Series

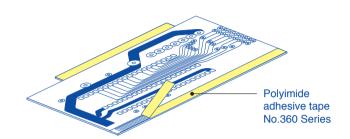
Power switching transformers

#### Aluminum electrolytic capacitor

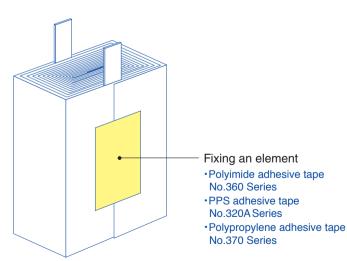


#### **■**Process materials

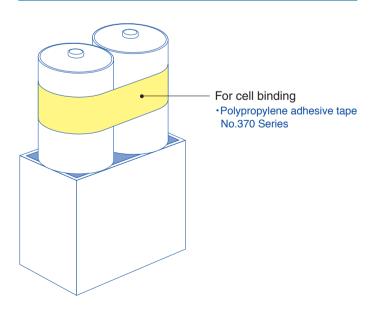
#### PCB masking



#### Square secondary battery



#### Battery package



#### **Products list**

Product	Product No.	Thickness (mm)	Standard length (m)	Color	Page
Polyimide adhesive tape	No.360UL	0.060, 0.090	20	Light Amber Brown	2
	No.360A	0.053, 0.080	20	Light Amber Brown	2
Fluoroplastic adhesive tape (NITOFLON®)	No.903UL	0.08 ~ 0.23	10	_	3
	No.923UT	0.04	10	-	3
	No.903-T	0.08 ~ 0.23	5, 10	_	3
Glass-cloth adhesive tape	No.185	0.170	20	White	4
	No.188UL	0.180	33	White	4
	ST-HG-T	0.19	20	White	4
Nomex adhesive tape	No.380	0.11, 0.13	50	White	5
	No.386UL	0.120, 0.140	50	White	5
PPS adhesive tape	No.320A#16	0.035	20	Cream	5
	No.320A	0.053	20	Cream	5
Polypropylene adhesive tape	No.3703F	0.055	400, 4000, 8000	Transparent	6
	No.3703DF	0.055	200, 400	Light green	6
Special film heat-resistant light adhesion tape/sheet	T-APN10	0.020	200	Transparent	6
Polyester adhesive tape	No.31B	0.053, 0.080	30, 50	Transparent	7
	No.31C	0.053, 0.080	30, 50	Various colors	7
	No.31RH	0.053	30, 50	Various colors	7
	No.31D	0.053, 0.080	30, 50	Transparent	7
	No.31E	0.053	30, 50	Various colors	7
	No.315	0.060, 0.085	20, 50	Transparent, Yellow	7
	No.336	0.060, 0.080	33	Transparent, Yellow	8
	No.337	0.100	33	Blue	8
Flame-retardant polyester adhesive tape	NO3161FR1	0.054	30, 50	Various colors	8
	NO3161FR2	0.080	30, 50	Milky	8
Composite adhesive tape	No.340	0.24	50	White, Blue	9
	No.341F	0.42	50, 200	White, Yellow, Red, Blue	9
	No.341S	0.25	100	White, Yellow, Blue	9
	No.343B	0.42	30	White	9
	No.345EG	0.25	14	Gray	9

Product	Product No.	Thickness (mm)	Standard length(m)	Color	Page
Self-fusing tape	No.11	0.5	10	Black	10
	No.15	0.5	10	Black	10
	No.66	0.5	15	Red brown	10
	No.660	0.22	15	Red brown	10
Acetate adhesive tape	No.5	0.23	30	White, Black	11
	No.5EG	0.23	20	Black	11
	No.151UL	0.23	50	Black	11
	No.153	0.21	50	White, Black	11
	No.155	0.23	30	Black	11
	No.156A	0.25	30	White, Black	11
Cotton adhesive tape	No.7A	0.22	30	White	12
Vinyl adhesive tape	No.223S	0.19	20	Various colors	12
Non-halogen adhesive tape	No.2400	0.11	25	Black	13
	No.2450	0.11	25	12 colors	13
Polyester nonwoven fabric thermosetting bonding tape/sheet	P-EF11	0.3, 0.5	20	White	15
	P-EF50	0.18	30	Milky	15
Backing-less thermoplastic bonding tape/sheet	FB-ML4	0.05, 0.07	50	Semi-transparent	16
	FB-ML80	0.05	100	Semi-transparent	16

#### **Nitto Technical Support Centers**

#### **Product Information Contacts**

•About Products •Catalog and Data Sheet Delivery •Various Available Product Samples •Practical Evaluations •Other

#### **TCAT**

#### Tape Customer Assistant Team

Supported Products : High adhesion double-coated tapes,

Double-coated adhesive tapes, Metal foil tapes Supported Sample Sizes: A4, specified width (small roll)

TEL: +81-532-41-8400 FAX: +81-532-41-8473

E-mail: tcat@nitto.co.jp



#### Tape and Foam Expert Support Center

Supported Products : Sealing materials (Foam materials, Reinforcing materials,

Vibration-damping materials), Waterproof and airproof tapes, Masking tapes for painting, Vinyl tapes, Bar code labels

TEL: +81-532-41-7838 FAX: +81-532-41-8446

E-mail: tfox@nitto.co.jp



#### Technical Dock (Doctor)

Supported Products : Surface protective films, Masking tapes for plating

Supported Sample Sizes: Specified width (small roll, approx. 20m)

TEL: +81-532-41-7223 FAX: +81-532-41-8446

E-mail: tdoc@nitto.co.jp

#### **TCOW**

#### Technical Support for Customer of World

Supported Products : Electrical insulating tapes, Tapes for transporting and

manufacturing electronic components, Semiconductor wafer

protection and fixing tapes

TEL: +81-532-41-7559 FAX: +81-532-41-8446

E-mail: tcow@nitto.co.jp

Hours: 9:00 - 17:30 (excluding Saturdays , Sundays, public holidays, year-end and new year period, and summer holidays) 18, Hirayama, Nakahara-cho, Toyohashi, Aichi 441-3194

#### YES

#### Engineering Plastics Your Enhancement System

Supported Products : Fluoroplastic products (sheets, tapes, filters), Ultra-high

molecular weight polyethylene products (Low-friction tape,

Air permeability sheets)

Supported Sample Sizes : A4, etc.

TEL: +81-48-571-3340 FAX: +81-48-571-3325

E-mail: eyes@nitto.co.jp

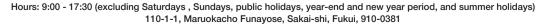
Hours: 9:00 - 17:30 (excluding Saturdays, Sundays, public holidays, year-end and new year period, and summer holidays)
1-8-5, Hatara-cho, Fukaya, Saitama 366-8521

## NITTO SHINKO products

#### Nitto Shinko Corporation Technical Support Center (TSC-NSK)

TEL: +81-776-67-0700 FAX: +81-776-67-8090 E-mail: tsc-nsk@nitto.co.jp











- The contents of this catalogue are effective as of November 2019.
- Certain products listed in this catalogue may not be available in some countries. Please contact us via our website for product availability.
- The information contained in this catalogue is subject to change without prior notice. This can be for, but not limited to, product improvement or other reasons at our own discretion.
- $\boldsymbol{\cdot}$  The data and figures contained in this material are NOT guaranteed values but typical values.
- The application examples of products stated in this catalogue are for illustrative purposes only and NOT guaranteed. Please read all instructions completely before use.
- · All text and images in this catalogue are copyrights of Nitto Denko Corporation.
- All logos, product names, and other related information used in this catalogue are the brands or registered trademarks of Nitto Denko Corporation and its affiliates in Japan and/or other countries.
- If you wish to use the content of this catalogue for purposes other than the original intent, please consult us in advance. Any unauthorized use, copying or reprinting of the contents or part thereof in this catalogue without obtaining our prior written consent is strictly prohibited.