Double-coated adhesive tape with easy removal and strong adhesive properties

No.5000E

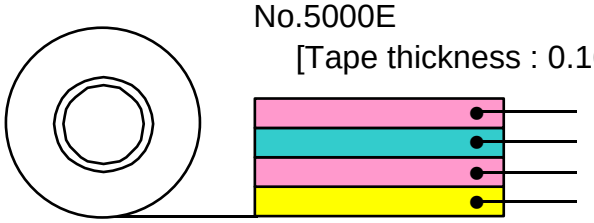
Outline

Nitto No.5000E is a minimal VOC emitted double-coated adhesive tape consisting of solvent-free acrylic adhesive that is applicable to a wide variety of substrates with strong and flexible non-woven fabric carrier. No.5000E is ideally suited for applications that require parts recycling system, because No.5000E has not only high tensile strength so it does not tear but also minimal adhesive residue on the substrate when it was applied for a long period.

Structure

No.5000E

[Tape thickness : 0.16mm (without liner)]



* "Non-woven fabric" is classified under a law called Customs Act of Fixed Rate Chapter 48 "Paper and paperboard; articles of paper pulp, of paper or of paperboard".

[NITTO DENKO Low VOCs] is printed on release liner

Features

- Provide easier to re-peel due to strong tape strength.
- Leaves minimal adhesive residue when it is re-peeled.
- Offers wide temperatures and superior bonding performance.
- Low (*) VOCs double-coated adhesive tape) (*) : Volatile Organic Compounds.
- 10 restricted substances by RoHS are not contained.

Applications

- Bonding of metal plates, plastic plates and foam.
- Bonding of cushioning and sealing materials in:
  Printers, Copiers, Televisions, Air conditioners, other office equipment and home appliances.
- Bonding of inner parts of cellular telephones, computers with PET films.
- Bonding of interior materials for household equipments and automobiles.
- Ideally suited for applications that require recycling.

Sizes

Tape thickness (mm)	Widths (mm)	Lengths (m)
0.16	3-1,050	50

For more information, please contact us.

Properties

● VOC emission measurement values

Measurement material	Guideline value [micro g/m3]	No.5000E
Formic aldehyde	100	ND
Toluene	260	ND
(o,m,p-)Xylene	200	ND
p-Dichlorobenzene	240	ND
Ethylbenzene	3800	ND
Styrene	220	ND
Chlorpyrifos	1	ND
Phthalic acid di-n-butyl	17	ND
Tetradecane	330	ND
Phthalic acid di-2-ethylhexyl	100	ND
Diazinon	0.29	ND
Acetaldehyde	48	ND
Fenobucarb	33	ND

<Analysis method>
JIS A-1901: 2015
Small sized chamber method

17th January 2019
Guidelines published by the Ministry of Health, Labor and Welfare (indoor air pollution)

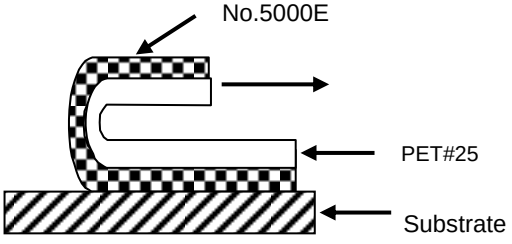
ND=Not detected

※All VOC emission measurement values of No.5000E is under quantitative limit value.

●180 degree peeling adhesion for each substrate

Substrate	No.5000E
Stainless steel plate	15.5
Aluminum plate	13.0
PP plate	11.0
ABS plate	14.5
Acrylic plate	16.5
PCABS plate	15.0
PSt plate	17.0
PC plate	15.5
PET plate	16.0
Glass plate	11.0
POM plate	11.0

(Unit: N/20mm)
Test piece: 20mmx20mm
Lining material: PET#25
Application method:
1 pass back and forth with 2-kg roller
Application temperature: 23 degree C, 50%RH
Applying conditions: 23 degree C/50%RHx30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23 degree C, 50%RH



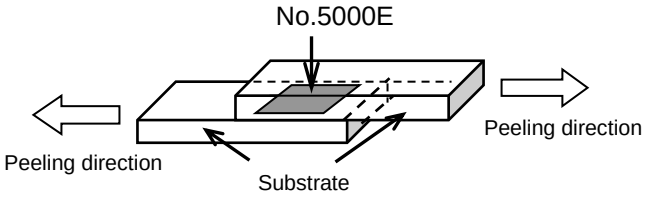
Properties

●Shearing adhesive strength for each substrate

Substrate	No.5000E
Stainless steel plate	480
Aluminum plate	390
PP plate	250
ABS plate	370
Acrylic plate	440
PCABS plate	400
PSt plate	430
PC plate	480
PET plate	480
Glass plate	460

(Unit: N/20mm)
Test piece: 20mmx20mm
Application method:
1 pass back and forth with 5-kg roller
Application temperature: 23 degree C/50%RH
Applying condition:
23 degree C/50%RH x 30min
Measurement temperature: 23 degree C/50%RH
Peeling speed: 50mm/min

[Test method]



●180 degree peeling adhesion for each temperature

Temperature	No.5000E
-20℃	22.0
0℃	18.5
23℃	15.5
40℃	14.0
60℃	13.5
80℃	11.5
100℃	10.0

(Unit: N/20mm)
Substrate: stainless plate
Test piece: 20mm width
Lining material: PET#25
Application method:
1 pass back and forth with 2-kg roller
Application temperature: 23 degree C/50%RH
Applying conditions:
Measurement tempetaturex30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature:
-20, 0, 23, 40, 60, 80, 100 degree C

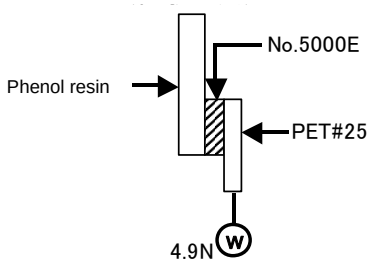
Properties

● Holding power

Temperature	No.5000E
40	0.9
60	0.9
80	1.1

(Unit: mm/hr)
Substrate: Phenol resin
Application time: 23 degree C/50%RH
Applying conditions:
Measurement Temp x 30min
Measurement temperature: 40,60,80 degree C
Laminated area: 20mmx10mm
Load: 4.9N(500g)
Loading time: 1 hour

[Test method]



● Re-peeling properties

Substrate	No.5000E	
	Peeling properties	Adhesive residue
Stainless steel plate	○	○
Aluminum plate	○	○
PP plate	○	○
ABS plate	○	○
Acrylic plate	○	○
PCABS plate	○	○
PSt plate	○	○
PC plate	○	○
Glass plate	○	○

Peeling properties
○: Peeling without tearing
×: Tears when peeled

Adhesive residue
○: No adhesive residue
△: Some adhesive residue
×: Large amount of adhesive residue

[Peeling properties test method]
Lining material: 0.25mm thick non-woven cloth
Test piece: 10mm width
Applying conditions: 15 days at 40 degree C
Peeling speed: 5m/min
Peeling angle: 180 degree
Measurement temperature: 23 degree C, 50%RH

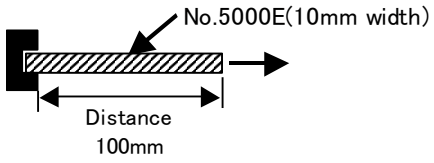
[Adhesive residue test method]
Lining material: PET#25
Test piece: 20mm width
Applying conditions: 15 days at 40 degree C
Peeling speed: 300mm/min
Peeling angle: 180 degree
Measurement temperature: 23 degree C, 50%RH

Properties

●Tape strength

Peeling direction	No.5000E
MD	23.0
TD	23.0

(Unit: N/10mm)
Tape width: 10mm
Distance: 100mm
Peeling speed: 100mm/min
Measurement direction: Machine/Traverse direction
Measurement temperature: 23 degree C/50%RH

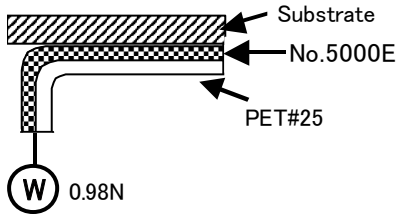


● Constant Load Peeling

Load time	No.5000E
12hr	2.0
24hr	2.8

(Unit: mm)
Substrate: stainless
Test piece: 20mm width
Lining material: PET#25
Application method: 2-kg roller x 8pass back
Application temperature: 23 degree C/50%RH
Applying conditions: 23 degree C/50%RH x 12hr
Measurement temperature: 23 degree C/50%RH
Load: 0.98N(100g)
Load time: 12hr, 24hr

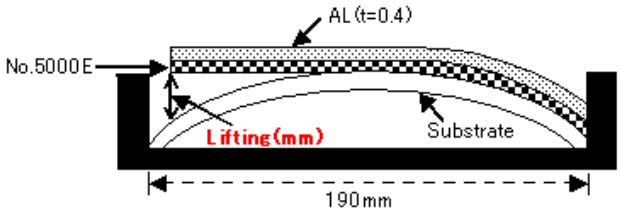
[Test method]



●Resistance to repulsion to plastic plates

Substrate	No.5000E
ABS plate	0.0
PP plate	0.0
PSt plate	0.0

Sample size: 20 mm width
Substrate: ABS, Polypropylene, Polystyrene [200-mm length]
Backing: AL (t=0.4mm)
Application:
Applied by 1 pass back and forth with 2kg roller at 23 degree C/ 50%RH.
The sample is kept for 24 hours at 23 degreeC/50%RH.
Measurement:
Sample is mounted on a tool for evaluation (190 mm length).
Lifting distance between AL and the substrate is measured after keeping for 24 hours at 23 degree C/50%RH and 3 days at 70 degree C.



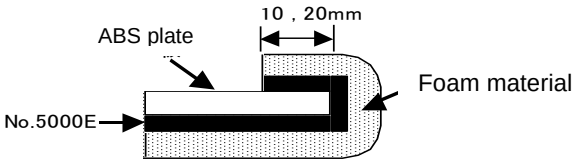
Properties

● Resistance to repulsion to foam

Foam	Bending length	23degC x 24hrs	70degC x 2hrs
Ether urethane foam	10mm	0.0	0.0
	20mm	0.0	0.0
Ester urethane foam	10mm	0.0	0.0
	20mm	0.0	0.0

Bonding temperature:
23 degree C/50%RH, 70 degree C
Foam thickness: 10mm
Tape width: 10mm
Bending length: 10mm, 20mm
Application:
Applied by 1 pass back and forth with 2kg roller
Substrate: ABS plate (2mm thickness)
Measurement:
Leave it at 23 degree C/50%RHx24hrs and confirm lifting, peeling off. Leave it at 70 degree Cx2hrs and confirm lifting, peeling off.

[Test method]



●180 degrees peeling strength - Aging after application

Aging after pressure	No.5000E
1 minute later	14.9
30 minutes later (Initial)	15.5
4 hours later	15.7
12 hours later	15.8
24 hours later	16.1
72 hours later	16.2

(Unit: N/20mm)
Substrate: Stainless steel plate
Sample width: 20mm
Backing material: PET#25
Applying condition:
1 pass back and forth with a 2 kg roller
Bonding temperature: 23degree C/50%RH
Curing condition: 23degree C/50%RH x
1min, 30min, 1hr, 4hrs, 12hrs, 24hrs, 72hrs
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23degree C/50%RH

●180 degrees peeling strength for each application pressure

Pressure	No.5000E
0.1kg roller	14.5
0.5kg roller	14.8
2.0kg roller	15.5
5.0kg roller	16.0

(Unit: N/20mm)
Substrate: Stainless steel plate
Backing material: PET#25
Applying condition:
1 pass back and forth with a 0.1 kg, 0.5 kg,
2 kg, 5 kg roller.
Bonding temperature: 23 degreeC/50%RH
Curing condition: 23 degreeC/50%RH x 30 min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23 degreeC/50%RH

Properties

●180 degrees peeling strength for each application pressure

-Curing under each environment after application (Durability)

Condition		No.5000E
Initial (23degreeC/50%RH×30min)		15.5
-30 degree C	1 day	15.8
80 degree C	1 day	20.0
	7 days	22.0
	14 days	24.3
	30 days	25.5
40 degree C /92%RH	14 days	15.3
	30 days	21.5
60 degree C/90%RH x 30 days		18.0
Heat shock [100 cycles]*1		23.0

(Unit: N/20mm)
Substrate: Stainless steel plate
Backing material: PET#25
Application condition:
1 pass back and forth with a 2 kg roller
Curing condition: See the left table
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23degreeC/50%RH

Heat shock condition
[-40degreeC x 30min⇔90degreeC x 30min]
x 100cycles

Precautions when using

- Remove all oil, moisture and dirt from the surface of the substrate before applying.
- Since the tape is pressure-sensitive adhesive, be sure to apply enough pressure with a roller or press when applying. Otherwise it might be affected to its properties and appearance.
- The tape may not adhere well to extremely uneven or distorted surfaces. Enough Leveling off the surface should be required before applying.
- It takes certain time to get full adhesive strength after applying, keep away the tape from any stress for a several hours after applying.

Precautions when storing

- Please be sure to keep the tape in its box when not using.
- Please keep in a cool and dark place away from direct sunlight.

Safety precautions

WARNING

- Make sure the product is suitable for the application (objective and conditions) before attempting to use. The tape may come off depending on the substrate to which it is applied or conditions under which it is applied.
- Use in combination with another method of joining if there is possibility of an accident.

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