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

No.5000NS

Outline

Nitto No.5000NS is a double-coated adhesive tape consisting of a strong, flexible non-woven fabric impregnated with acrylic adhesive that is applicable to a wide variety of substrates. No. 5000NS offers high tensile strength so it doesn’t tear when peeled and leaves minimal adhesive residue on the substrate to which it was applied even if it remains applied for a long time. The tape can be re-peeled and is ideally suited for applications that require recycling.

Structure

No.5000NS
[Tape thickness: 0.16mm (excluding release liner)]

- Acrylic adhesive
- Non-woven fabric
- Acrylic adhesive
- Release liner (No. 5000NS printed [purple])

Double release liner type, "No.5000NSWH" is also available.

* "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".

Features

- Tape is strong so it doesn’t tear when peeled, thereby making it easier to work with.
- Leaves minimal adhesive residue; can be re-peeled.
- Offers wide range of usage and service temperatures as well as superior repulsion properties.
- 6 restricted substances by RoHS are not contained.
- No.5000NS, No.5000NSU & No.5000NSWH are UL approved products. [UL File No. MH13557] [The appearance and properties of both No.5000NSU and No.5000NS are identical.]

Applications

- Bonding of metal plates, plastic plates and foam
- Bonding of cushioning and sealing materials in:
  - Printers, Copiers, Televisions, Other office equipment and home appliances.
- Applications requiring re-peeling

Sizes

<table>
<thead>
<tr>
<th>Tape thickness (mm)</th>
<th>Width (mm)</th>
<th>Length (M)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.16</td>
<td>3-1, 200</td>
<td>50</td>
</tr>
</tbody>
</table>

For details contact the department in charge of the product in question.
## Properties

- **Re-peeling properties**

<table>
<thead>
<tr>
<th>Substrate</th>
<th>No.5000NS</th>
<th>Conventional product</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Peeling properties</td>
<td>Adhesive residue</td>
</tr>
<tr>
<td>Stainless steel plate</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Aluminum plate</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>PP plate</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>ABS plate</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Acrylic plate</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>PCABS plate</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>PST plate</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>PC plate</td>
<td>○</td>
<td>△</td>
</tr>
<tr>
<td>PVC plate</td>
<td>○</td>
<td>△</td>
</tr>
<tr>
<td>PET plate</td>
<td>○</td>
<td>○</td>
</tr>
<tr>
<td>Glass plate</td>
<td>○</td>
<td>○</td>
</tr>
</tbody>
</table>

#### Peeling properties

- ○: Peels without tearing
- ×: Tears when peeled

#### Adhesive residue

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

### [Peeling properties test method]
- Lining material: 5-mm thick urethane foam
- Tape thickness: 3 mm
- Curing condition: 60°C/90%RH x 15 days
- Peeling speed: 300 mm/min
- Peeling angle: 90 degree

### [Adhesive residue test method]
- Tape area: 20 mm
- Lining material: PET #25
- Curing condition: 60°C/90%RH x 15 days
- Peeling speed: 300 mm/min
- Peeling angle: 180 degree

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● 180 degree peeling adhesive strength for each substrate

(Unit: N/20mm)
Sample width: 20 mm
Backing material: PET#25
Application condition:
  1 pass back and forth with a 2kg roller
Bonding temperature: 23degreeC/50%RH
Curing condition: 23degreeC/50%RH x 30 min
Peeling speed: 300 mm/min
Peeling angle: 180degree
Measurement temperature: 23degreeC/50%RH

No.5000NS
Conventional product

<table>
<thead>
<tr>
<th>Substrate</th>
<th>No.5000NS</th>
<th>Conventional product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel plate</td>
<td>16.0</td>
<td>14.0</td>
</tr>
<tr>
<td>Aluminum plate</td>
<td>15.0</td>
<td>13.0</td>
</tr>
<tr>
<td>PP plate</td>
<td>14.5</td>
<td>10.0</td>
</tr>
<tr>
<td>ABS plate</td>
<td>15.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Acrylic plate</td>
<td>15.5</td>
<td>13.5</td>
</tr>
<tr>
<td>PCABS plate</td>
<td>15.5</td>
<td>14.0</td>
</tr>
<tr>
<td>PSt plate</td>
<td>16.0</td>
<td>12.5</td>
</tr>
<tr>
<td>PC plate</td>
<td>16.0</td>
<td>15.5</td>
</tr>
<tr>
<td>Rigid PVC plate</td>
<td>19.0</td>
<td>17.0</td>
</tr>
<tr>
<td>PET plate</td>
<td>15.0</td>
<td>13.0</td>
</tr>
<tr>
<td>Glass plate</td>
<td>14.5</td>
<td>14.0</td>
</tr>
<tr>
<td>Polyacetal plate</td>
<td>14.0</td>
<td>11.0</td>
</tr>
<tr>
<td>Foam (ester)</td>
<td>10.0</td>
<td>7.5</td>
</tr>
<tr>
<td>Foam (ether)</td>
<td>7.0</td>
<td>5.0</td>
</tr>
</tbody>
</table>

● Shearing adhesive strength for each substrate

(Unit: N/20mm x 20mm)
Sample: 20mm x 20mm
Pressure condition: 49N load x 10 sec
Bonding temperature: 23degreeC/50%RH
Curing condition: 23degreeC/50%RH x 30 min
Measurement condition: 23degreeC/50% RH
Peeling speed: 50 mm/min

No.5000NS
Conventional product

<table>
<thead>
<tr>
<th>Substrate</th>
<th>No.5000NS</th>
<th>Conventional product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stainless steel plate</td>
<td>450</td>
<td>400</td>
</tr>
<tr>
<td>Aluminum plate</td>
<td>400</td>
<td>380</td>
</tr>
<tr>
<td>PP plate</td>
<td>350</td>
<td>250</td>
</tr>
<tr>
<td>ABS plate</td>
<td>350</td>
<td>320</td>
</tr>
<tr>
<td>Acrylic plate</td>
<td>360</td>
<td>350</td>
</tr>
<tr>
<td>PCABS plate</td>
<td>370</td>
<td>340</td>
</tr>
<tr>
<td>PSt plate</td>
<td>400</td>
<td>400</td>
</tr>
<tr>
<td>PC plate</td>
<td>410</td>
<td>400</td>
</tr>
<tr>
<td>Rigid PVC plate</td>
<td>500</td>
<td>500</td>
</tr>
<tr>
<td>PET plate</td>
<td>400</td>
<td>380</td>
</tr>
<tr>
<td>Glass plate</td>
<td>500</td>
<td>450</td>
</tr>
</tbody>
</table>

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• 180 degree peeling adhesive strength for each temperature

(Units: N/20mm)
Substrate: Stainless steel plate
Sample width: 20 mm
Backing material: PET#25
Application condition:
1 pass back and forth with a 2 kg roller
Bonding temperature: 23 degrees C/50%RH
Curing condition:
Measurement temperature x 30 min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature:
-30, -20, 0, 10, 23, 40, 60, 80, 100 degrees C

Propaties
No.5000NS
Conventional product
Good
Bad

• Holding power

(Units: mm/hr)
Substrate: Phenolic plate
Bonding temperature: 23 degrees C/50%RH
Curing condition:
Measurement temperature x 30 min
Measurement temperature: 40, 60, 80 degrees C
Application area: 20mm x 10mm
Load: 4.9N (500g)
Loading time: One hr

Propaties
No.5000NS
Conventional product
Good
Bad

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**Constant load peeling**

- **Graph:**
  - X-axis: Time [hr]
  - Y-axis: Peeling distance [mm]
  - Data points for No.5000NS and Conventional product.
  - Legend: No.5000NS (●), Conventional product (△)

**Properties**
- Bad
- Good

**Conditions:**
- Substrate: Stainless steel plate
- Sample width: 20 mm
- Backing material: PET#25
- Application condition: 8 pass back and forth with a 2 kg roller
- Bonding temperature: 23 degree C / 50% RH
- Curing condition: 23 degree C / 50% RH x 12 hrs
- Measurement temperature: 23 degree C / 50% RH
- Loading time: 12 hrs, 24 hrs

**Tape strength**

- **Bar graph:**
  - MD
  - TD
  - Units: N/10mm
  - Data points for No.5000NS and Conventional product.

**Conditions:**
- Tape width: 10mm
- Peeling speed: 100 mm/min
- Tape length: 100mm
- Measurement temperature: 23 degree C / 50% RH

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**180° peeling strength**

- Curing under each environment after application (Durability)

<table>
<thead>
<tr>
<th>Conditions</th>
<th>No.5000NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial (23degreeC/50%RH x 30 min)</td>
<td>16.0</td>
</tr>
<tr>
<td>- 30 degree C x 30 days</td>
<td>19.7</td>
</tr>
<tr>
<td>80 degree C</td>
<td></td>
</tr>
<tr>
<td>1 day</td>
<td>22.1</td>
</tr>
<tr>
<td>7 days</td>
<td>25.5</td>
</tr>
<tr>
<td>14 days</td>
<td>26.9</td>
</tr>
<tr>
<td>30 days</td>
<td>26.8</td>
</tr>
<tr>
<td>40 degree C/92%RH</td>
<td></td>
</tr>
<tr>
<td>14 days</td>
<td>19.6</td>
</tr>
<tr>
<td>30 days</td>
<td>19.5</td>
</tr>
<tr>
<td>60 degree C/90%RH x 30 days</td>
<td>27.0</td>
</tr>
<tr>
<td>Heat shock [100 cycles]*1</td>
<td>34.8</td>
</tr>
<tr>
<td>Heat cycle [40 cycles]*2</td>
<td>23.7</td>
</tr>
</tbody>
</table>

*(Unit: N/20mm)*

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

*1: Heat shock condition
[-40degreeC x 30min⇒90degreeC x 30min] x 100cycles

*2: Heat cycle condition
[-20degreeC x 6hrs⇒(1hr)⇒60degreeC/95%RH x 6hrs⇒(1hr)⇒] x 40 cycles

**180° peeling strength - Aging after application**

<table>
<thead>
<tr>
<th>Aging after application</th>
<th>No.5000NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 min later</td>
<td>13.0</td>
</tr>
<tr>
<td>30 min (Initial) later</td>
<td>16.0</td>
</tr>
<tr>
<td>1 hr later</td>
<td>16.1</td>
</tr>
<tr>
<td>4 hrs later</td>
<td>16.5</td>
</tr>
<tr>
<td>8 hrs later</td>
<td>16.8</td>
</tr>
<tr>
<td>24 hrs later</td>
<td>17.5</td>
</tr>
<tr>
<td>72 hrs later</td>
<td>17.8</td>
</tr>
</tbody>
</table>

*(Unit: N/20mm)*

Substrate: Stainless steel plate
Sample width: 20mm
Backign material: PET#25
Application condition:
1 pass back and forth with a 2 kg roller
Bonding temperature: 23degree C/50%RH
Curing condition: 23degreeC/50%RH x
1min, 30min, 1hr, 4hrs, 8hrs, 24hrs, 72hrs
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23degreeC/50%RH

**180° peeling strength for each application pressure**

<table>
<thead>
<tr>
<th>Application</th>
<th>No.5000NS</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1 kg roller</td>
<td>13.3</td>
</tr>
<tr>
<td>0.5 kg roller</td>
<td>14.8</td>
</tr>
<tr>
<td>2 kg roller</td>
<td>16.0</td>
</tr>
<tr>
<td>5 kg roller</td>
<td>16.1</td>
</tr>
</tbody>
</table>

*(Unit: N/20mm)*

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

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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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