

Double-coated adhesive tape for rubber fixing

VR-5311, VR-5321

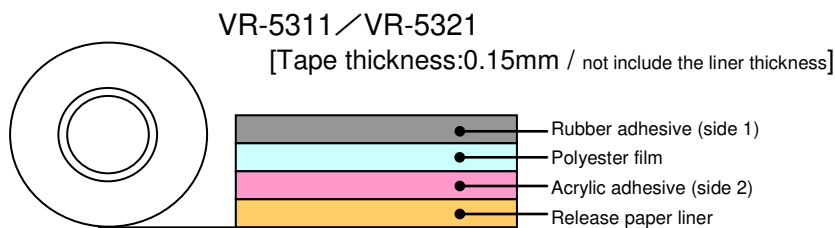

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1-800-773-0062

Outline

Nitto Denko VR-5311 and VR-5321 are double-coated adhesive tapes for rubber fixing. Both products consist combination of rubber adhesive on one side and acrylic adhesive on the other side with polyester carrier. Ideal for bonding rubber with metal or plastic.

Structure



Features

- Ideal for binding vulcanized rubber such as chloroprene or ethylene-propylene-terpolymer (EPT) to metal or plastic.
- Excellent bonding to vulcanized rubber without primer treatment and no seal rubber is required.
- VR-5311's special adhesive for rubber features superior cohesion.(High temp bonding suitability)
- VR-5321's special adhesive for rubber features superior initial adhesion (Low temp bonding suitability).
- Six restricted substances by RoHS are not contained.

Applications

- For bonding or temporary fixing of vulcanized rubber cushioning materials and packing materials for home appliances and office equipment.

Sizes

| Tape thickness (mm) | Width (mm) | Length (m) |
|---------------------|------------|------------|
| 0.15 | 3-1,200 | 50 |

For details, please contact us.

VR-5311/VR-5321 10-P-0018_E (1/7)

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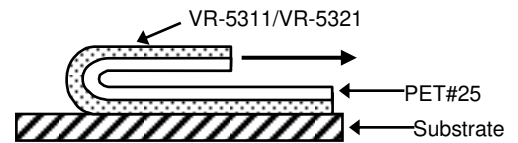
Properties

● 180 degree peeling adhesion for each substrate (Side 1)

| Substrate | VR-5311 | VR-5321 | VR-5311/VR-5321 (Side2) |
|------------|---------|---------|-------------------------|
| CR rubber | 17.0 | 12.0 | 3.5 |
| EPT rubber | 14.0 | 15.0 | 3.0 |
| NR rubber | 10.0 | 10.0 | 3.5 |
| Stainless | 20.5 | 20.4 | 11.5 |

(Unit: N/20 mm)

Tape area: 20mm width
Lining material: PET#25
Pretreatment: wiped with waste cloth
Pressing condition:
1 pass back and forth with 2-kg roller at 23 degree C/50%RH
Applying condition: 23 degree C/50%RH x 30min
Peeling speed: 300mm/min
Peeling angle: 180 degree
Measurement temperature: 23 degree C/50%RH

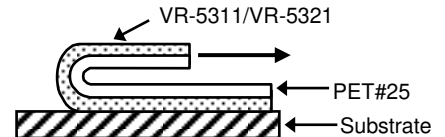


● 180 degree peeling adhesion for each substrate (Side 2)

| Substrate | VR-5311 | VR-5321 |
|-------------|---------|---------|
| Stainless | 11.5 | 11.5 |
| Aluminum | 14.0 | 14.0 |
| ABS | 12.5 | 12.5 |
| Acrylic | 16.0 | 16.0 |
| Polystyrene | 14.0 | 14.0 |

(Unit: N/20 mm)

Tape area: 20mm width
Lining material: PET#25
Pressing condition:
1 pass back and forth with 2-kg roller at 23 degree C/ 50%RH
Applying condition: 23 degree C/50%RH x 30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23 degree C/50%RH

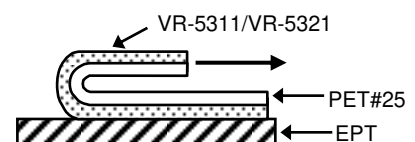


● 180 degree peeling adhesion/ Rubber surface treatment method and adhesive strength(Side 1)

| Surface Treatment | VR-5311 | VR-5321 | VR-5311/VR-5321 (Side2) |
|---------------------|---------|---------|-------------------------|
| Untreated | 10.0 | 11.0 | 2.0 |
| Wiped with cloth | 14.0 | 15.0 | 3.0 |
| Washed with toluene | 15.0 | 16.0 | 5.0 |
| Coated with primer | — | — | 11.0 |

(Unit: N/20 mm)

Tape area: 20mm width
Lining material: PET#25
Pressing condition: 1 pass back and forth with 2-kg roller at 23 degree C/50%RH
Applying condition: 23 degree C/50%RH x 30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23 degree C/50%RH



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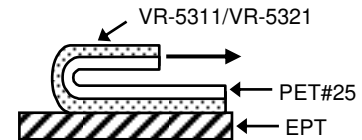
Properties

● 180 degree peeling adhesion for each Temperature (Side 1)

| Measurement Temp | VR-5311 | VR-5321 |
|------------------|---------|---------|
| 0 degree C | 15.5 | 20.5 |
| 23 degree C | 14.0 | 15.0 |
| 40 degree C | 12.0 | 13.0 |
| 60 degree C | 8.5 | 8.0 |
| 80 degree C | 7.0 | 6.5 |

(Unit: N/20 mm)

Tape area: 20mm width
Substrate: EPT
Lining material: PET#25
Pretreatment: wiped with waste cloth
Pressing condition:
1 pass back and forth with 2-kg roller at 23 degree C/50%RH
Applying condition: 23 degree C/ 50%RH x 30min
Peeling speed: 300mm/min
Peeling angle: 180 degree

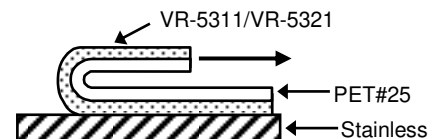


● 180 degree peeling adhesion for each Temperature (Side 2)

| Measurement Temp | VR-5311 | VR-5321 |
|------------------|---------|---------|
| 0 degree C | 14.8 | 14.8 |
| 23 degree C | 11.5 | 11.5 |
| 40 degree C | 10.7 | 10.7 |
| 60 degree C | 9.6 | 9.6 |
| 80 degree C | 9.2 | 9.2 |

(Unit: N/20 mm)

Tape area: 20mm width
Substrate: Stainless
Lining material: PET#25
Pressing condition:
1 pass back and forth with 2-kg roller at 23 degree C/50%RH
Applying condition: 23 degree C/50%RH x 30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23 degree C/50%RH

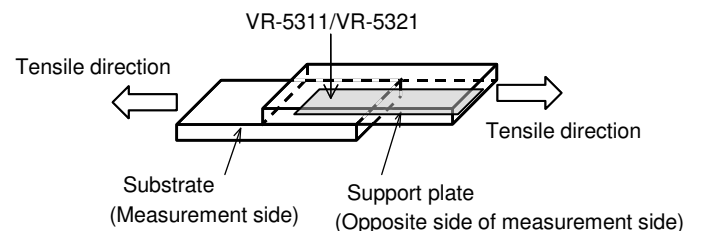


● Shear strength

| Substrate | VR-5311 | VR-5321 |
|------------------------|---------|---------|
| Side 1 (to PET rubber) | 105 | 75 |
| Side 2 (to stainless) | 240 | 240 |

(Unit: N/20 mm)

Tape area: 20mm width
Substrate: EPT rubber (Side 1), Stainless (Side 2)
Pressing condition:
1 pass back and forth with 5-kg roller at 23 degree C/50%RH
Applying condition: 23 degree C/50%RH x 30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23 degree C/50%RH



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Properties

● Holding power (Side 1)

| Sample | Holding power (min.) | | |
|---------|----------------------|-------------|-------------|
| | 40 degree C | 60 degree C | 80 degree C |
| VR-5311 | >120 | >120 | 30 |
| VR-5321 | >120 | 42 | 15 |

(Unit: min)

Tape area: 20mm x 10mm

Substrate: Phenol resin

Lining material: PET#25

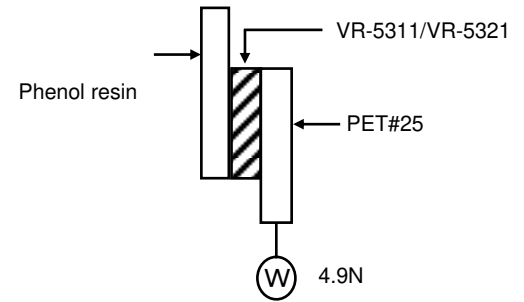
Applying condition: Each temperature for 30min

Load: 4.9N(500g)

Load time: 2h

Measurement temperature:

40 degree C, 60 degree C, 80 degree C



● 180 degree peeling adhesion for each application pressure (Side 1)

| Pressure | VR-5311 | VR-5321 |
|--------------|---------|---------|
| 0.1kg roller | 8.2 | 9.7 |
| 0.5kg roller | 11.8 | 13.2 |
| 2kg roller | 14.0 | 15.0 |
| 5kg roller | 14.3 | 15.5 |

(Unit: N/20 mm)

Tape area: 20mm width

Substrate: EPT rubber

Lining material: PET#25

Applying condition:

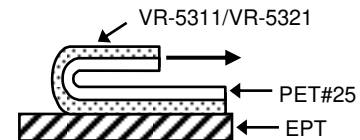
1 pass back and forth with 0.1kg, 0.5kg, 2kg, and 5kg at 23 degree C/50%RH

Applying condition: 23 degree C/50%RH x 30min

Peeling speed: 300 mm/min

Peeling angle: 180 degree

Measurement temperature: 23 degree C/50%RH



● 180 degree peeling adhesion for each substrate (Side 2)

| Pressure | VR-5311 | VR-5321 |
|--------------|---------|---------|
| 0.1kg roller | 7.3 | 7.3 |
| 0.5kg roller | 9.8 | 9.8 |
| 2kg roller | 11.5 | 11.5 |
| 5kg roller | 12.1 | 12.1 |

(Unit: N/20 mm)

Tape area: 20mm width

Substrate: Stainless

Lining material: PET#25

Applying condition:

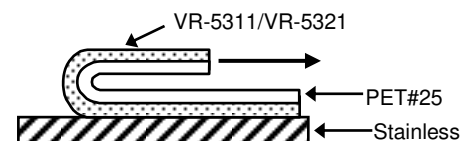
1 pass back and forth with 0.1kg, 0.5kg, 2kg, and 5kg at 23 degree C/50%RH

Applying condition: 23 degree C/50%RH x 30min

Peeling speed: 300 mm/min

Peeling angle: 180 degree

Measurement temperature: 23 degree C/50%RH



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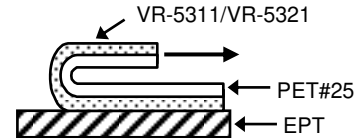
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Properties

- 180 degree peeling adhesion after applying (Side 1) -Initial increasing-

| Time | VR-5311 | VR-5321 |
|--------|---------|---------|
| 30 min | 14.0 | 15.0 |
| 4 hrs | 14.5 | 15.8 |
| 12 hrs | 15.1 | 16.4 |
| 24 hrs | 15.7 | 16.8 |
| 72 hrs | 15.8 | 17.0 |

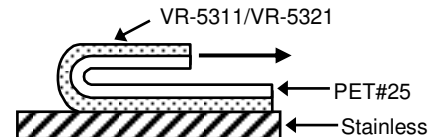
(Unit: N/20 mm)
Tape area: 20mm width
Substrate: EPT
Lining material: PET#25
Pressing condition:
1 pass back and forth with 2-kg roller
at 23 degree C/50%RH
Applying condition:
23 degree C/50%RH x 30min
Peeling speed: 300mm/min
Peeling angle: 180 degree
Measurement temperature:
23 degree C/50%RH



- 180 degree peeling adhesion after applying (Side 2) -Initial increasing-

| Time | VR-5311 | VR-5321 |
|--------|---------|---------|
| 30 min | 11.5 | 11.5 |
| 4 hrs | 12.0 | 12.0 |
| 12 hrs | 12.5 | 12.5 |
| 24 hrs | 12.9 | 12.9 |
| 72 hrs | 13.1 | 13.1 |

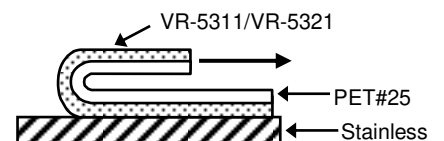
(Unit: N/20 mm)
Tape area: 20mm width
Substrate: Stainless
Lining material: PET#25
Pressing condition:
1 pass back and forth with 2-kg roller
at 23 degree C/ 50%RH
Applying condition:
23 degree C/50%RH x 30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature:
23 degree C/50%RH



- 180 degree peeling adhesion -Aging(durability) at each condition after applying (Side1)

| Condition | | VR-5311 | VR-5321 |
|---------------------------|---------|---------|---------|
| 23 degree C/50%RH x 30min | | 20.5 | 20.4 |
| 80 degree C | 1 day | 24.6 | 25.1 |
| | 7 days | 26.4 | 28.6 |
| | 14 days | 26.8 | 29.2 |
| | 30 days | 27.1 | 29.7 |
| -30 degree C x 30days | | 23.0 | 28.0 |
| 60 degree C/80%RHx30days | | 25.7 | 25.9 |
| Heat Shock [100 cycles]*1 | | 30.1 | 30.0 |
| Heat Shock [40 cycles]*2 | | 25.8 | 27.5 |

(Unit: N/20 mm)
Tape area: 20mm width
Substrate: Stainless
Lining material: PET#25
Pressing condition:
1 pass back and forth with 2-kg roller
at 23 degree C/50%RH
Applying condition:
23 degree C/50%RH x 30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature:
23 degree C/50%RH



*1:Heatshock condition: [-40 degree C x 30min <-> 90 degree C x 30min] x 100 cycles
*2:Heatshock condition: [-20 degree C x 6hr->(1hr)-> 60 degree C/95%RH x 6hr->(1hr)->] x 40 cycles

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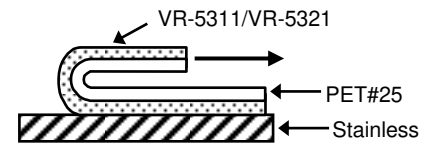
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Properties

● 180 degree peeling adhesion / Adhesive changing after applying (Side 2)

| Condition | | VR-5311 | VR-5321 |
|---------------------------------------|---------|---------|---------|
| 23 degree C/50%RH x 30min | | 11.5 | 11.5 |
| 80 degree C | 1 day | 14.0 | 14.0 |
| | 7 days | 22.8 | 22.8 |
| | 14 days | 24.1 | 24.1 |
| | 30 days | 25.8 | 25.8 |
| -30 degree C x 30days | | 15.5 | 15.5 |
| 60 degree C/80%RHx30days | | 22.8 | 22.8 |
| Heat Shock [100 cycles]* ¹ | | 21.5 | 21.5 |
| Heat Shock [40 cycles]* ² | | 23.3 | 23.3 |

(Unit: N/20 mm)
Tape area: 20mm width
Lining material: PET#25
Substrate: Stainless
Pressing condition:
1 pass back and forth with 2-kg roller
at 23 degree C/50%RH
Applying condition:
23 degree C/50%RH x 30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature:
23 degree C/50%RH



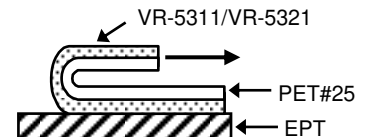
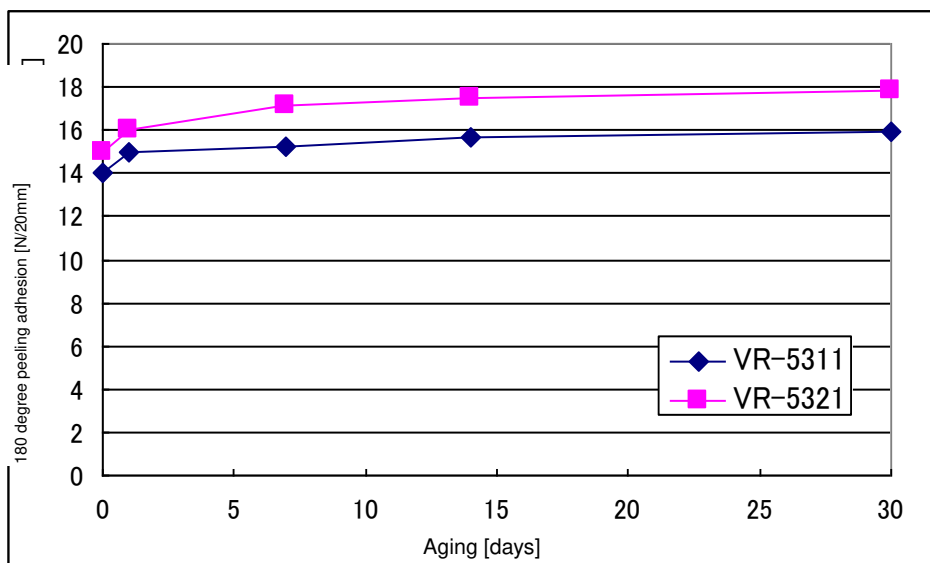
*1:Heatshock condition: [-40 degree C x 30min <->90 degree C x 30min] x 100 cycles

*2:Heatshock condition: [-20 degree C x 6h<->(1hr)-> 60 degree C/95%RH x 6hr->(1hr)->] x 40cycles

● 180 degree peeling adhesion / Adhesion changing at each condition after applying EPT(Side 1)

| Condition | | VR-5311 | VR-5321 |
|---------------------------|---------|---------|---------|
| 23 degree C/50%RH x 30min | | 14.0 | 15.0 |
| 60 degree C /80%RH | 1 day | 15.0 | 16.0 |
| | 7 days | 15.2 | 17.1 |
| | 14 days | 15.7 | 17.5 |
| | 30 days | 15.9 | 17.8 |

(Unit: N/20 mm)
Tape area: 20mm width
Lining material: PET#25
Substrate: EPT
Pretreatment: Wiped with waste cloth
Pressing condition:
1 pass back and forth with 2-kg roller
at 23 degree C/50%RH
Applying condition:
23 degree C/50%RH x 30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature:
23 degree C/50%RH



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Precautions when using

- Remove all oil, moisture and dirt from the surface of the substrate before applying.
- The tape employs pressure-sensitive adhesive. Be sure to apply pressure with a roller or press when applying. Failure to do so could affect properties or appearance.
- The tape may not adhere well to significantly uneven or distorted surfaces. Level off the surface as much as possible before applying.
- It takes some time before the tape exhibits its full adhesive strength. Allow the tape to set for several hours before placing in a position or using in a manner that places stress on the tape.
- Depending on a rubber material, there may be a risk of affecting adhesive property over time due to migration of component from rubber material. Please conduct a thorough evaluation in advance, on initial adhesive strength and its change over time.
- This product uses a rubber adhesive, which is easily affected by heat and oxygen compared to acrylic adhesive. Please conduct a thorough evaluation in advance on initial adhesive properties and its change over time, to determine application area and usage.

Precautions when storing

- Be sure to keep the tape in its box when not using.
- Keep in a cool dark place not exposed to direct sunlight.

Safety precautions

| |
|---|
|  WARNING |
| <ul style="list-style-type: none">● 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 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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