

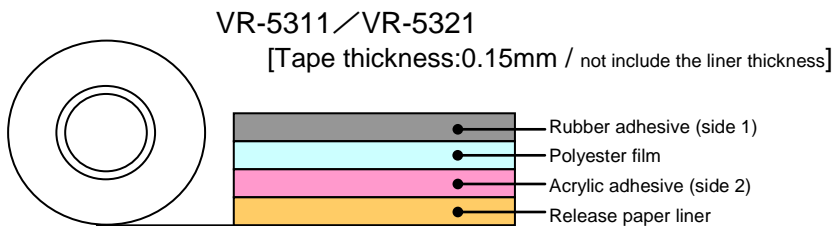
Double-coated adhesive tape for rubber fixing

## VR-5311, VR-5321

### 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.

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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:

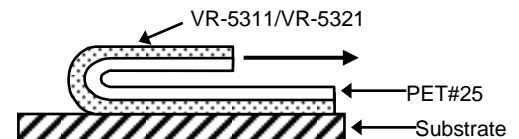
1 pass back and forth with 2-kg roller  
at 23 degree C/50%RH

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:

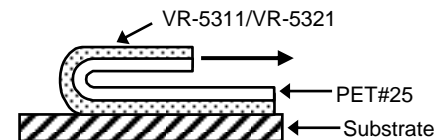
1 pass back and forth with 2-kg roller  
at 23 degree C/ 50%RH

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

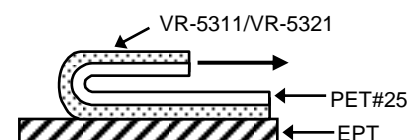
with 2-kg roller at 23 degree C/50%RH

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

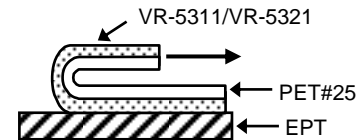
Pressing condition:

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:

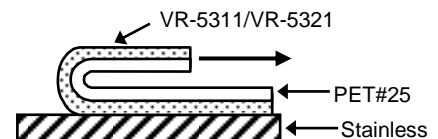
1 pass back and forth with 2-kg roller  
at 23 degree C/50%RH

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:

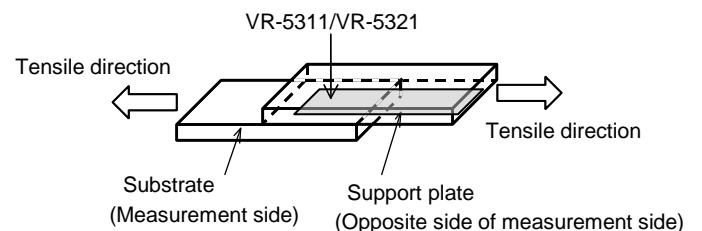
1 pass back and forth with 5-kg roller  
at 23 degree C/50%RH

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

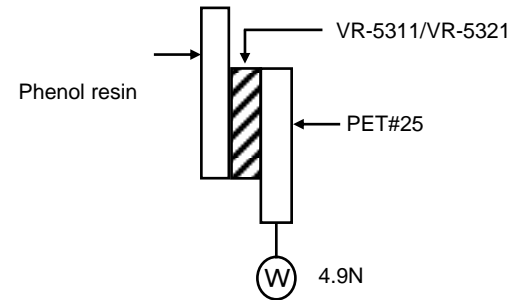
Applying condition: Each temperature for 30min

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:

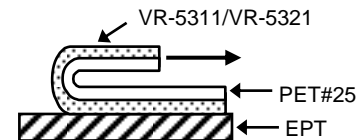
1 pass back and forth with 0.1kg, 0.5kg, 2kg, and 5kg at 23 degree C/50%RH

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:

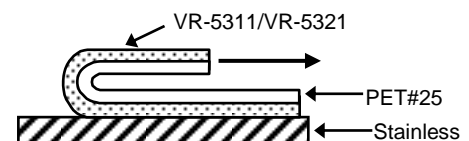
1 pass back and forth with 0.1kg, 0.5kg, 2kg, and 5kg at 23 degree C/50%RH

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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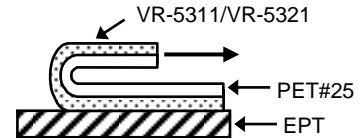
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## Properties

- 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

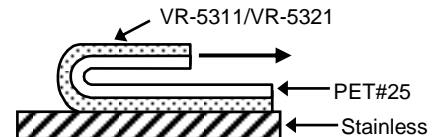
(Unit: N/20 mm)  
 Tape area: 20mm width  
 Substrate: EPT  
 Lining material: PET#25  
 Pressing condition:  
 1 pass back and forth with 2-kg roller  
 at 23 degree C/50%RH  
 Applying condition:  
 23 degree C/50%RH x 30min  
 Peeling speed: 300mm/min  
 Peeling angle: 180 degree  
 Measurement temperature: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

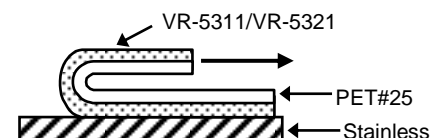
(Unit: N/20 mm)  
 Tape area: 20mm width  
 Substrate: Stainless  
 Lining material: PET#25  
 Pressing condition:  
 1 pass back and forth with 2-kg roller  
 at 23 degree C/ 50%RH  
 Applying condition:  
 23 degree C/50%RH x 30min  
 Peeling speed: 300 mm/min  
 Peeling angle: 180 degree  
 Measurement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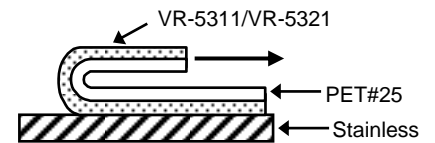
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## Properties

### ● 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]* <sup>1</sup>		21.5	21.5
Heat Shock [40 cycles]* <sup>2</sup>		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



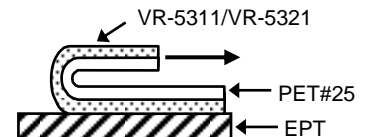
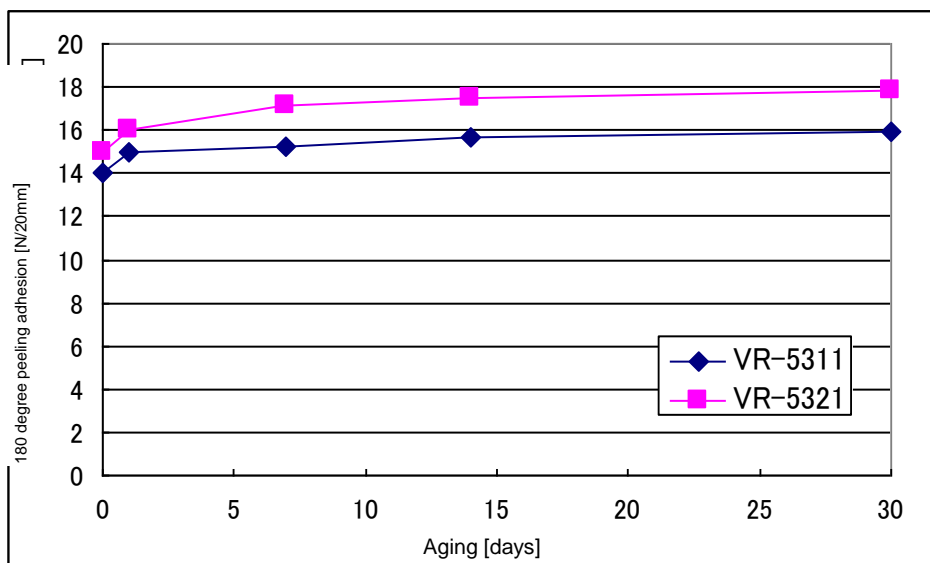
\*1:Heatshock condition: [-40 degree C x 30min <->90 degree C x 30min] x 100 cycles

\*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

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- 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

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- 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

 <b>WARNING</b>
<ul style="list-style-type: none"><li>● 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 or conditions under which it is applied.</li><li>● Use in combination with another method of joining if there is possibility of an accident.</li></ul>

Published in 24 December 2015

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