Double-coated adhesive tape for oily surfaces

OW-5016

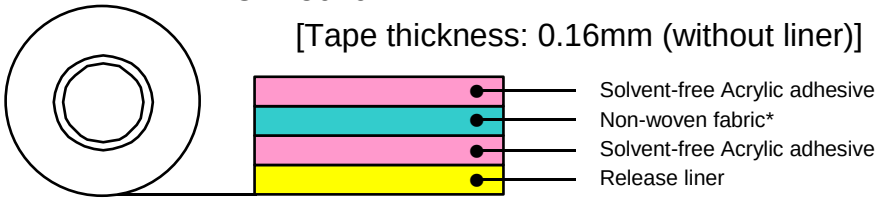
Outline

Nitto OW-5016 is a double-coated adhesive tape that uses solvent-free acrylic adhesive to reduce the amount of VOC emitted. 14 restricted substances by the Ministry of Health, Labor and Welfare are not contained. OW-5016 can be used on a wide variety of substrates including metal plates, plastics and foam materials. In addition, it has the potential to be used on oily surfaces.

Structure

OW-5016

[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

- Low (*) VOCs double-coated adhesive tape (*) : Volatile Organic Compounds.
- Organic solvents, for example toluene, xylene, ethyl acetate, are not contained.
- Offers excellent adhesion to surfaces which some oil is remaining on.
- Suitable for attachment of metal plates, plastics and foam materials
- 10 restricted substances by RoHS are not contained.

Applications

- Bonding of metal plates and cushioning materials in automobile interior
- Bonding of plastic plates and films or cushioning materials in OA equipments or home appliances.

Sizes

Tape thickness (mm)	Widths (mm)	Lengths (m)
0.16	3-1,050	20, 50

For more information, please contact us.

Properties

● VOC emission measurement values

Measurement material	Guideline value [micro g/m3]	OW-5016
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

ND: Not detected

<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)

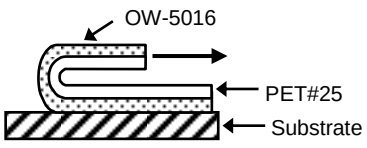
※All VOC emission measurement values of OW-5016 are under quantitative limit value.

●180 degree peeling adhesion for each substrate

Substrate	OW-5016
Stainless steel plate	15.5
Aluminum plate	13.0
ABS plate	14.5
PP plate	11.0
Acrylic plate	16.5
Glass plate	11.0
Ether urethane foam	2.5
Ester urethane foam	9.3
Non-flaming nonwoven fabric	3.0
Wool felt	3.5

(Unit: N/20mm)
Tape width: 20mm
Backing material: PET#25
Application method:
1 pass back and forth with 2-kg roller
Application temperature: 23 degree C/50%RH
Aging condition: 23 degree C/50%RHx30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23 degree C/50%RH

<Test method>



Properties

●180 degree peeling adhesion for each oily substrate

Oil type	OW-5016	Conventional product
No oil	12.3	11.4
Rust preventive oil	6.2	1.5
Cutting oil	4.1	0.2
Machine oil	9.0	7.0
Press forming oil	2.0	1.2
Grease	1.0	0.2

(Unit: N/20mm)
Substrate: SUS304BA
Amount of coating oil: 5g/m^2
Tape width: 20mm
Backing material: PET#25
Application method:
1 pass back and forth with 2-kg roller
Application temperature: 23 degree C/50%RH
Aging condition: 23 degree C/50%RHx30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23 degree C/50%RH

●180 degree peeling adhesion for each oily substrate –various aging time-

Condition		OW-5016
Initial(23℃/50%RH×30min)		6.2
23℃/50%RH	2 hours	9.5
	24 hours	11.4
50℃	7 days	13.0
	14 days	15.5
	30 days	21.3
	60 days	22.0

(Unit: N/20mm)
Substrate: SUS304BA
Oil type: Rust preventive oil
Amount of coating oil: 5g/m^2
Tape width: 20mm
Backing material: PET#25
Application method:
1 pass back and forth with 2-kg roller
Application temperature: 23 degree C/50%RH
Aging condition: See the left table
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature: 23 degree C/50%RH

●180 degree peeling adhesion at different temperatures

Temperature	OW-5016
-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
Backing material: PET#25
Application method:
1 pass back and forth with 2-kg roller
Application temperature: 23 degree C/50%RH
Aging condition:
Measurement tempetaturex30min
Peeling speed: 300 mm/min
Peeling angle: 180 degree
Measurement temperature:
-20, 0, 23, 40, 60, 80, 100 degree C

Properties

●180 degrees peeling strength -various aging time-

Aging time	OW-5016
1 minute later	14.9
30 minutes later (Initial)	15.5
12 hours later	15.8
24 hours later	16.1
72 hours later	16.2

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

●180 degrees peeling strength by each application pressure

Pressure	OW-5016
0.1kg roller	14.5
0.5kg roller	14.8
2.0kg roller	15.5
5.0kg roller	16.0

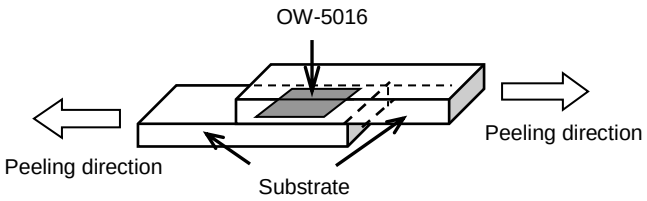
(Unit: N/20mm)
Substrate: Stainless steel plate
Tape width: 20mm
Backing material: PET#25
Application method:
1 pass back and forth with a 0.1 kg, 0.5 kg,
2 kg, 5 kg roller.
Application temperature: 23 degree C/50%RH
Aging condition: 23 degree C/50%RH x 30 min
Peeling speed: 300 mm/min
Peeling angle: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

●Shearing adhesive strength for each substrate

Substrate	OW-5016
Stainless steel plate	480
Aluminum plate	390
ABS plate	370
Polypropylene plate	250

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

<Test method>



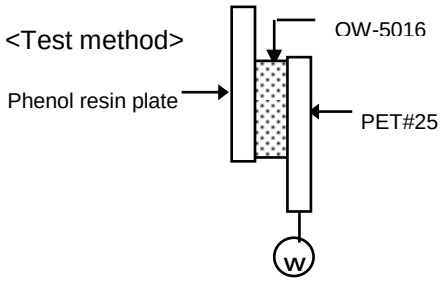
Properties

● Holding power

Temperature	OW-5016
23℃	0.5
40℃	0.8
60℃	0.9

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

<Test method>

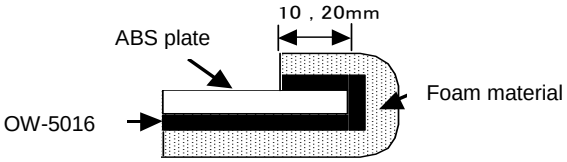


● Resistance to repulsion to foam

Foam	Bending length	OW-5016
Ether urethane foam	10mm	2.0
	20mm	0.0
Ester urethane foam	10mm	1.5
	20mm	0.0

(Unite: mm) -Lifting distance
Foam thickness: 10mm
Tape width: 10mm
Bending length: 10mm, 20mm
Application method:
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 then 70 degree Cx2hrs. Measure the lifting distance

<Test method>



●180 degrees peeling strength

-Aging under each environment after application (Durability)

Condition		OW-5016
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
Tape width: 20mm
Backing material: PET#25
Application method:
1 pass back and forth with a 2 kg roller
Aging 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 → 23 degree C/50%RH x 24hrs

Precautions when using

- To get stable adhesion, 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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