INDUSTRIAL-USE
DOUBLE-COATED ADHESIVE TAPE No. 501L

1. Outline

The Nitto's double-coated adhesive tape No. 501L is used to bond various foams (ether and ester urethane foams, etc.).
It ensures excellent adhesion to various foams and has excellent workability and processability, such as roll bonding ability and punchability.

2. Structure

Figure 1

3. Advantages

(1) The tape has excellent initial adhesion and ensures the stable performance on various foams.

(2) The tape has excellent low temperature adhesion, so that it affords the stable performance in winter.

(3) The tape has high repulsion resistance, so that it suppresses the lift of foam at the curved parts.

(4) After the tape is applied, its liner scarcely lifts.

4. Uses

(1) Bonding of foams

NITTO DENKO CORPORATION
Head Office: 1-1-2, Shimohozumi, Ibaraki, Osaka, Japan Phone: (0726)22-2981
Tokyo: Mori Bldg, -31, 5-7-2, Kojimachi, Chiyoda-ku, Tokyo, Japan Phone: (03)264-2101

5. Standard size

Table 1

Thickness (mm)		Width (mm)	Length (m)
Tape	Liner		
0.16	0.11	400, 500, 600 1,000, 1,030, 1,050	50

* Other sizes (width and length) are also available. Contact us.

6. Properties

6.1 Adhesive strength on foams

6.1.1 Adhesive strength on various foams

(1) Ether urethane foam

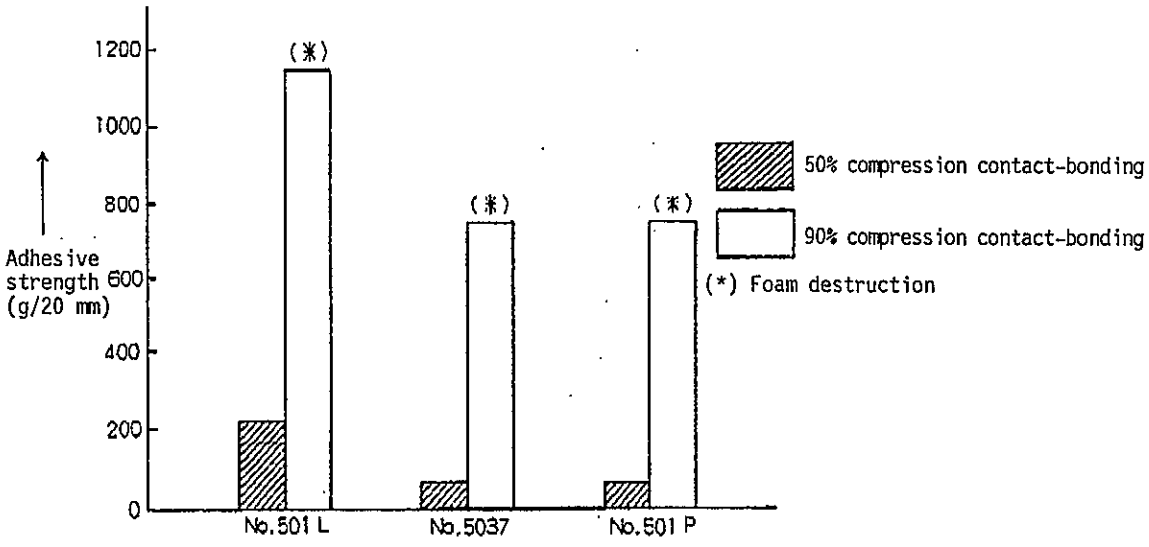


Figure 2

(2) Ester urethane foam

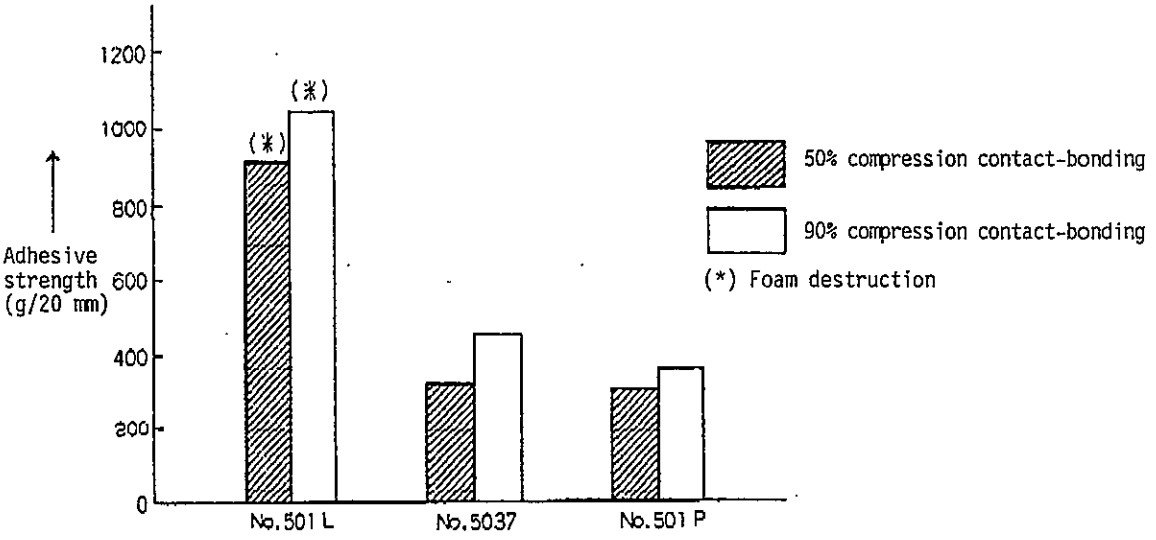


Figure 3

(3) Moltplain SK (made by Inoue TP)

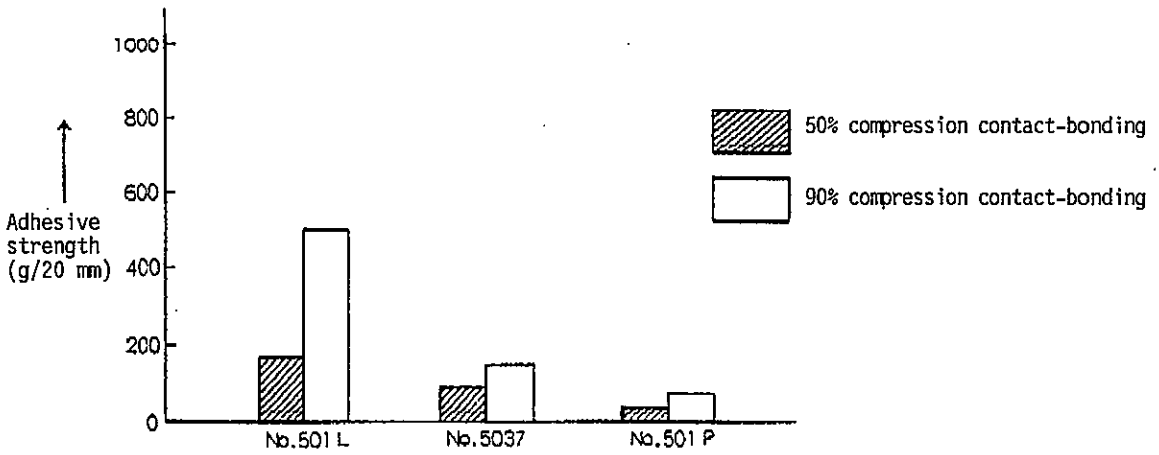


Figure 4

(4) Super-Seal SWB (made by NHK Spring Co., Ltd.)

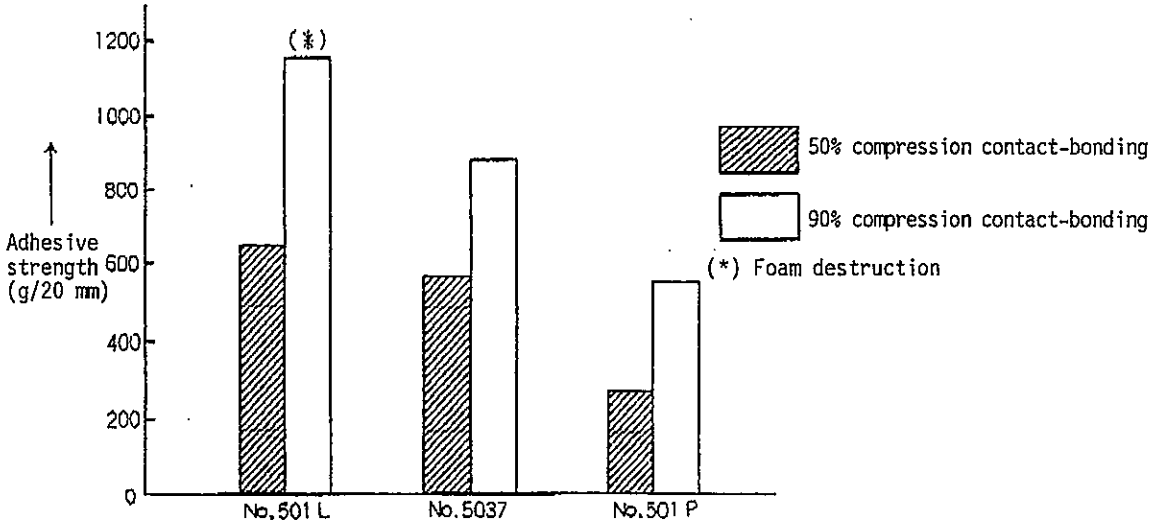


Figure 5

- Testing method

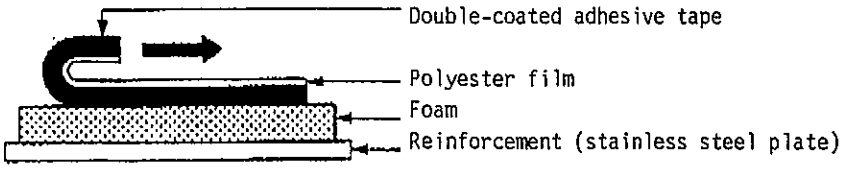
  Bond the specimen to the specific foam as shown below, hold it for 30 minutes, and then perform the 180° peeling test.

  Contact-bonding conditions:
  50% compression, 90% compression (compression ratio with respect to foam thickness)

  Contact-bonding/measurement temperature:
  20°C

  Stretching speed:
  300 mm/min

  Thickness of foam:
  5 mm



6.1.2 Dependence of adhesive strength upon temperature

(1) Ether urethane foam

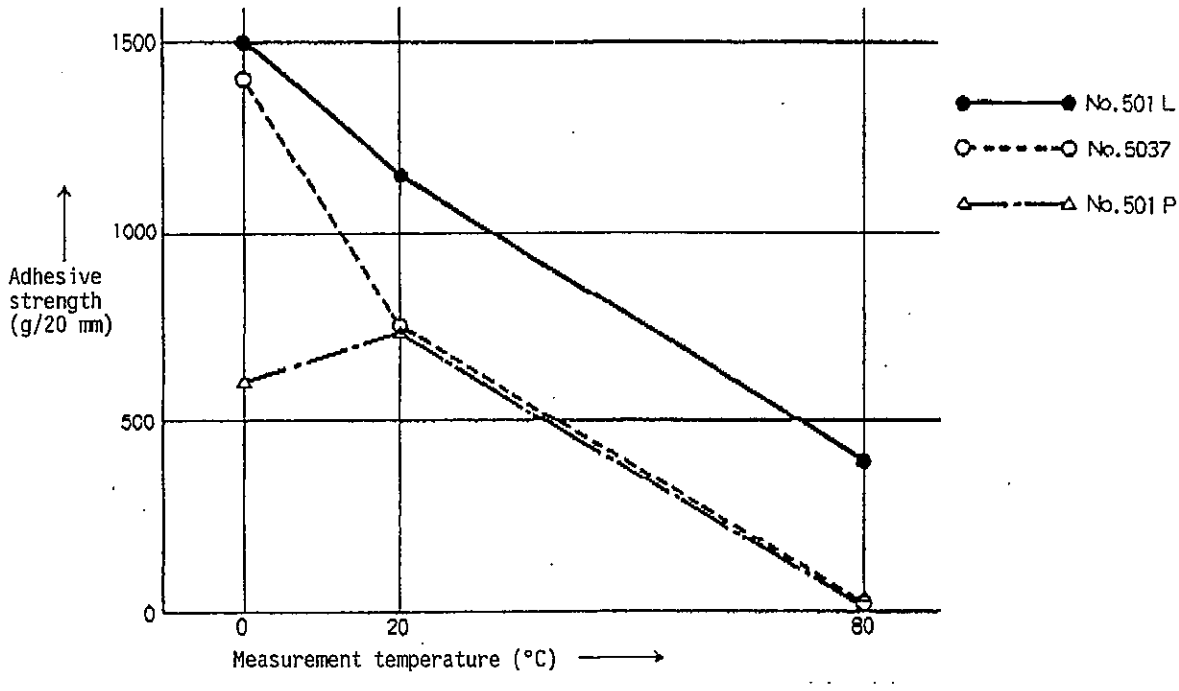


Figure 6

(2) Ester urethane foam

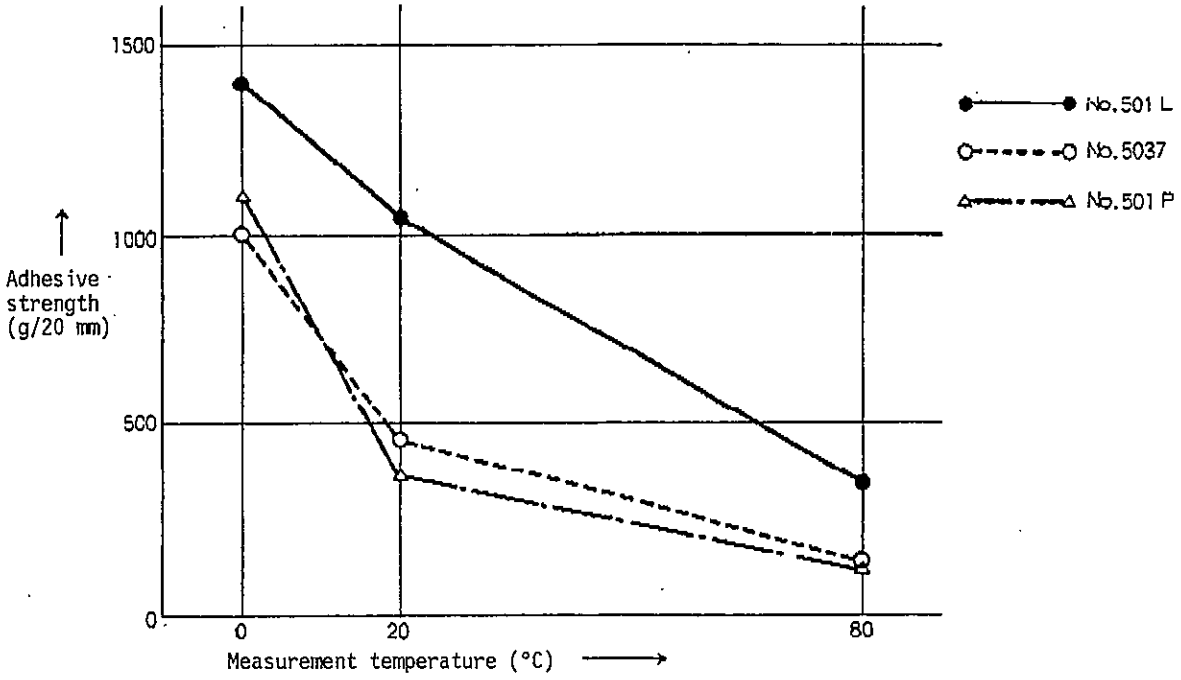


Figure 7

- Testing method

  The same as stated in item 6.1.1

  Contact-bonding conditions:
  90% compression(compression ratio with respect to foam thickness)

  Contact-bonding temperature:
  20°C

  Holding/measurement temperature:
  0°C, 20°C, 80°C

  Stretching speed:
  300 mm/min

  Thickness of foam:
  5 mm

6.2 Repulsion resistance

6.2.1 Repulsion resistance on various foams

Table 2

Measurement temperature	Specimen \ Foam / Substrate	Ether urethane foam		Ester urethane foam		Moltplain SK		Super-Seal SWB	
		ABS plate	PP plate	ABS plate	PP plate	ABS plate	PP plate	ABS plate	PP plate
20°C	No. 501L	o	o	o	o	o	o	o	o
	No. 5037	o	o	o	o	x	x	Δ	Δ
	No. 501P	Δ	Δ	o	Δ(*)	x	x	Δ	Δ
80°C	No. 501L	o	o	o	o	o	o	o	o
	No. 5037	x	x	o	x(*)	x	x	x	x
	No. 501P	x	x	o	x(*)	x	x	x	x

(*) Disbondment from substrate interface

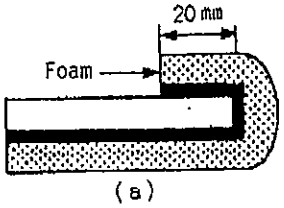
- Testing method

  Bond the specimen to the specific foam, applying the 90% compression pressure.
  After pressing it to the ABS plate and polypropylene (PP) plate, rolling a 500 g roller to and fro as shown in Figure (a) below, and then measure the time until the folding is unfolded upright (90°) spontaneously.

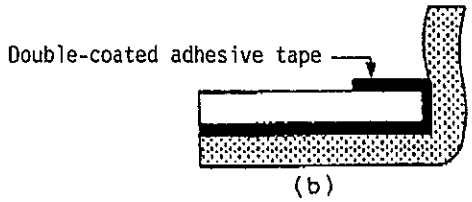
  Contact-bonding temperature: 20°C
  Measurement temperature: 20°C, 80°C
  Thickness of foam: 10 mm
  Tape width: 20 mm

- Evaluation

  o: 100 hrs. or more
  Δ: 50 hrs. or more, but less than 100 hrs.
  x: Less than 50 hrs.



(a)



(b)

6.2.2 Repulsion resistance under low pressure

Table 3

Specimen \ Foam / Substrate	Ether urethane foam		Ester urethane foam	
	ABS plate	PP plate	ABS plate	PP plate
No. 501L	o	o	o	o
No. 5037	x	x	x	x
No. 501P	x	x	x	x

- Testing method

  The same as stated in item 6.2.1
  However, the specimen-to-foam bonding conditions are as follows.
  50% compression (ratio with respect to foam thickness)
  Pressing to substrate with a 50 g roller

  Contact-bonding/measurement temperature:
  20°C

  Thickness of foam:
  10 mm

  Tape width:
  20 mm

- Evaluation

  The same as stated in item 6.2.1

6.3 Adhesive strength at low temperature (at 0°C)

Table 4

(g/20 mm)

Specimen \ Foam	Ether urethane foam	Ester urethane foam
No. 501L	1,030 (*)	1,000 (*)
No. 5037	420	300
No. 501P	280	100

- Testing method

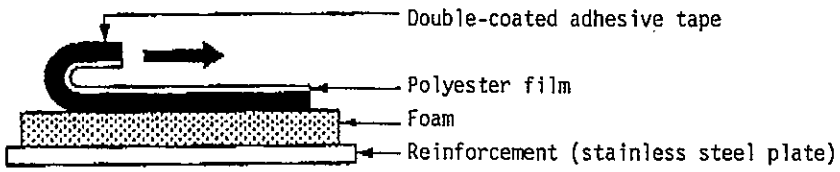
  Bond the specimen and foam which are held in the atmosphere of 0°C for 24 hrs. After 30 minutes perform the 180° peeling test.

  Contact-bonding conditions:
  90% compression (ratio with respect to foam thickness)

  Contact-bonding/measurement temperature:
  0°C

  Stretching speed:
  300 mm/min

  Thickness of foam:
  5 mm



6.4 Moisture and heat resistance (on ether urethane foam)

Table 5

(g/20 mm)

Specimen \ Measurement conditions	20°C	80°C	80°C x 90%RH
No. 501L	600 (*)	370 (*)	420 (*)
No. 5037	340	230	190
No. 501P	200	160	260

- Testing method

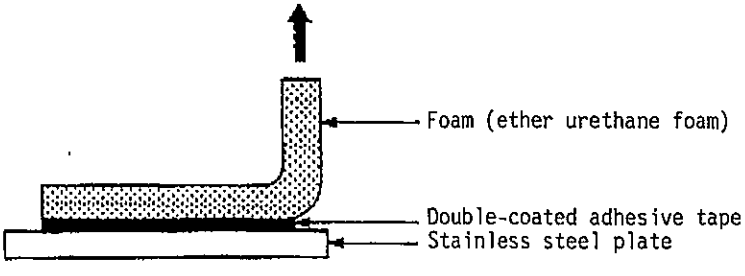
  Apply the specimen to the specific foam under 90% compression pressure (ratio with respect to foam thickness), press it to the stainless steel by rolling a 500 g roller to and fro, and then measure the adhesive strength in the following conditions.

  20°C:
  After holding the specimen in normal state for one day perform the 90° peeling test in the same atmosphere.

  80°C:
  After holding the specimen in normal state for one day, hold it in the 80°C atmosphere for one day, and then perform the 90° peeling test in the same atmosphere.

  80°C x 90%RH:
  After holding the specimen in normal state for one day, hold it in the atmosphere of 80°C x 90%RH for one day, and then perform the 90° peeling stet in the same atmosphere.

  Contact-bonding temperature: 20°C
  Stretching speed: 100 mm/min
  Thickness of foam: 5 mm



6.5 Adhesive strength on various substrates

Table 6

(g/20 mm)

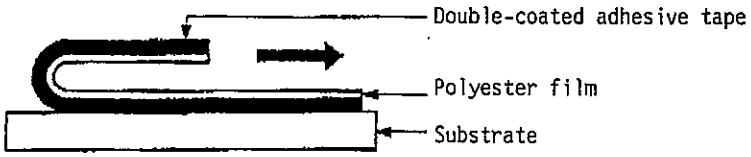
Specimen / Substrate	No. 501L	No. 5037	No. 501P
Stainless steel plate	1,050	1,300	850
Aluminum plate	1,200	980	1,000
ABS plate	950	860	770
Acryl plate	950	1,160	1,000
Polypropylene plate	600	650	550

- Testing method

  Apply the specimen to the specific substrate by rolling a 2 kg roller to and fro, hold it for 30 minutes, and then perform the 180° peeling test.

  Contact-bonding/measurement temperature:
  20°C

  Stretching speed:
  300 mm/min



7. Cares when using

(1) The pressure sensitive adhesive is used. When applying the tape, apply a sufficient pressure so as to ensure tight fit.

(2) Thoroughly remove the moisture, oil and dust from the surface of substrate.
It must be noted here that the mold release agent such as silicon may remain on the surface of foam.

(3) Never store the tape in the place where high temperature, high humidity or direct sunlight may affect.

8. Others

The data shown in this data sheet are measured data but not used for any specification purpose.