DC5091 – D04 – E 11/90

NITTO DOUBLE – COATED ADHESIVE TAPE NO.5091

1. Outline

NITTO Water – soluble Double – coated Adhesive Tape No.5091 is made of beatable nonwoven fabric saturated with a water – soluble pressure – sensitive adhesive. The adhesive has good water solubility and the backing is beatable into fibers. This is an ideal tape for splicing paper in the paper mill.

2. Construction

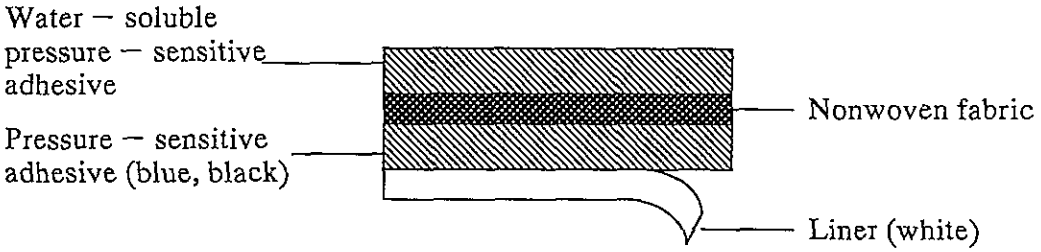

Fig. 1 Construction

3. Features

1) With this tape, splicing can be achieved easily and maintained surely.
2) The tape has excellent high temperature characteristics and does not cause adhesive oozing.
3) This tape satisfactorily withstands a high temperature ranging from 100 ℃ to 130 ℃.
4) The tape can resist water for several seconds, though it is designed to be water soluble.
5) The tape dissolves in water or water containing alkalis or acids by whipping when the liquid is at 5 ℃ or higher.

4. Uses

1) Splicing paper in rewinding or cutting and splicing the web.
2) Splicing paper in the supercalender running process.
3) Splicing paper in the resin coating process.
4) Splicing paper in the resin saturation process.

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5. Standard Sizes

Table 1

Tape thickness (mm)	Tape width (mm)	Length (m)
0.10	12, 19, 25	30

6. Properties

6.1 Adhesion

Test method: The test specimens shall be left for at least 4 hours at each measuring temperature. After that, a test sample shall be prepared according to JIS Z 1528 and the 180° peel strength shall be measured. Heavy glossy paper shall be used as a substrate.

Table 2 Adhesion (g/20mm)

Tape / Temperature	No.5091	No.509	No.509N	Competitive Item
5℃	1,510	780	1,180	1,050
20℃	650	850	850	590
40℃	670	500	730	520

6.2 Shear Strength

Test method: The test specimens shall be left at 20℃ for at least 4 hours. After that, a pair of heavy glossy paper shall be bonded with the test specimen, applying a 2kg rubber roller over the paper once in each direction (bond area: 20mmx20mm). After the lapse of 30min., the force required to cause shear failure shall be determined, using a universal testing machine at a rate of 300 mm/min. For testing at 100℃ and 130℃, the assembled samples shall be conditioned at 100℃ or 130℃ for 5min. before testing.

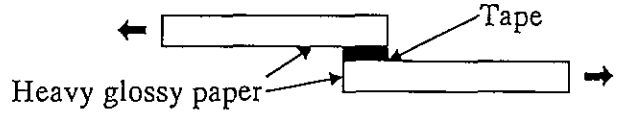

Fig. 2 Testing for Shear Strength

Table 3 Shear Strength (kg/20x20mm)

Tape / Temperature	No.5091	No.509	No.509N	Competitive Item
20℃	25.4*	24.9*	22.9	23.2
100℃	21.6*	17.6	6.6	19.0
130℃	19.8*	20.0*	5.8	16.3

* The substrate was broken.

6.3 Oozing Test

Test method: The test specimens shall be applied to a top quality paper and a low quality paper respectively. Then, they shall be left under the load of 400 g/c m^2 for 7 days in order to inspect occurrence of oozing.

Table 4 Oozing Test Result

Tape / Paper / Storage Condition	No.5091		No.509		No.509N		Competitive Item	
	Top	Low	Top	Low	Top	Low	Top	Low
40℃ 90%RH	N	N	O	O	N	N	N	N
20℃ 65%RH	N	N	N	N	N	N	N	N
10℃ 40%RH	N	N	N	N	N	N	N	N

N: not oozed, O: oozed

6.4 Water Solubility Test

Test method: A test specimen measuring 20mm x 200mm shall be put to a standard macerating machine prescribed by JIS – P – 8209 (Conditioning Method for Pulp Test), together with 1800m ℓ of water. After that, they shall be whipped at a rate of 3000 rpm for a pre – determined time. After filtration, the residual substance on the paper filter shall be observed.

Table 5 Water Solubility Test

Tape / Water Temp. / Whipping Time / pH		No.5091		No.509		No.509N		Competitive Item	
		3	12	3	12	3	12	3	12
5℃	0.5 min.	Z	F	Z	F	Z	F	Z	Z
	1.0 min.	F	E	Z	E	F	E	F	F
	1.5 min.	E	E	Z	E	E	E	E	E
20℃	0.5 min.	F	E	Z	E	F	E	F	F
	1.0 min.	E	E	Z	E	E	E	E	E
	1.5 min.	E	E	Z	E	E	E	E	E

E: completely dissolved, F: not completely dissolved, Z: not dissolved

7. Precautions

1) Occurrence of an adhesive ooze depends on the type of paper and application conditions. We suggets you to investigate carefully the suitability before actual use.

2) In the winter time, the adhesive properties are likely to be deteriorated. In this case, the use of an iron heated about 60 ℃ facilitates smooth application job and assures satisfactory adhesion.

3) Store the tape packed in the box. Once open the plastic wrap, please use up the tape very soon.

   The box should be placed so that the tape rolls are piled up on the cut surface, otherwise, tapes in the bottom layer are likely to be deformed due to the tape's own weight.

4) Store the tape in a cool and dark place away from the sun.

NOTE: Technical data figures herein presented are average and should not be used for any specification purposes.