



## FIPAGO Product Standard

# Contents

<b>SEALING TAPES FIBER REINFORCED FROM KRAFTPAPER (DOUBLE PLY)</b>	<b>1</b>
<b>1. SCOPE</b>	<b>1</b>
<b>2. TERMS</b>	<b>1</b>
2.1 REINFORCED GUMMED TAPE (DOUBLE PLY)	1
2.2 KRAFTPAPER	1
2.3 GUMMED COIL	1
<b>3. REQUIREMENTS</b>	<b>1</b>
3.1 LAMINATION	3
3.2 REINFORCING MATERIAL	3
3.3 GUMMING ADHESIVE	3
<b>4. TEST</b>	<b>4</b>
4.1 SAMPLING AND NUMBER OF SAMPLES	4
4.2 CONDITIONING	4
4.3 TENSILE STRENGTH	4
4.4 BASIC WEIGHT OF THE PAPER PLIES AND WEIGHT OF THE FILAMENT YARN	4
4.5 ANCHORAGE OF THE REINFORCED MATERIAL IN MACHINE DIRECTION	5
4.6 WATER RESISTANCE (LAMINATION)	6
4.7 DELAMINATION TEST	6
4.8 MINIMUM ADHESION STRENGTH	7
<b>5. GUMMED COILS</b>	<b>8</b>
5.1 DIMENSIONS	8
5.2 PERFORMANCE - GENERAL REQUIREMENTS	8
5.3 WORKMANSHIP	9
5.4 PACKING AND STORAGE	9



## Sealing tapes fiber reinforced from kraftpaper (double ply)

### 1. Scope

This standard covers the specification and use of "laminated double ply paper tape reinforced with glass fibers".

The purpose of this standard is:

- the assessment of minimum requirements for quality and delivery specifications of gummed tapes;
- standardization of application equipment;
- reduction of stockkeeping;
- optimum conditions.

### 2. Terms

#### 2.1 Reinforced gummed tape (double ply)

Gummed sealing tape made of laminated double ply kraft- paper, reinforced with fibers and coated with an adhesive layer, which can be reactivated by water.

#### 2.2 Kraftpaper

Paper predominantly made from kraft pulp to which recycled kraft papers can be added.

#### 2.3 Gummed coil

Marketing form for gummed tapes.

### 3. Requirements

The requirements according to table 1 must be fulfilled by the arithmetic means of the test results of all samples.

The requirements according to sections 3.1, 3.2, 3.3 must be fulfilled by 90% of all tested samples. The tests according to the sections 4.5, 4.6, 4.7 must be fulfilled by 90% of all tested samples.

Table 1, see next page.

Table 1

Type	Fibro reinforced paper tape (double ply)		Tensile strength (guaranteed) kN/m (min)	MD	GD	Recommended width mm ±1	Intermediate layer from filament yarns				Weight of glass filament yarns per sqm of reinforced paper g	Remarks Mode of application
	Total weight of paper plies g/m2 ±4%	Machine direction MD					Gross machine or diagonal direction CD/DD*	min.	min.	quantity per 100 mm strip length		
L extra light	80	11,7	4,0	60	10	10	60	60	7	sealing tapes (2 strip closure) for boxes, simple application		
A light	80	11,7	5,7	60	10	0	60	60	12	sealing tapes (2 strip closure) for boxes up to 10 kg gross weight		
B me- dium	100	19,3	8,9	70	15	0	60	60	16	sealing tapes (2 strip closure) for boxes up to 30 kg gross weight		
C heavy	120	20,0	10,0	80	20	0	60	60	19	sealing tapes (2 strip closure) for boxes up to 75 kg gross weight		

\* in diagonal direction the quantity of intermediate filament yarns per 100 mm strip length will be added from both diagonal directions  
 \*\* 1 tex = 1 g/km

### 3.1 Lamination

The lamination between the two paper plies and the reinforcing yarns must be water-resistant. The softening points of the laminating material must be higher than 70 °C.

The delamination time should be 180 s (tests according to section 4.7).

### 3.2 Reinforcing material

Reinforcing material between the two paper plies is glass filament yarn the distance of which in machine or cross machine direction is maximum 12.5 mm. In the case of a diagonal layout (rhombic) the maximum distance is 25 mm.

With diagonal layout (rhombic) the acute angles produced by the filament yarn must be arranged in machine direction and should be minimum 45 °.

The reinforcing material must be firmly embedded in the laminating material. The anchoring for 30 mm length and the minimum tensile strength of the single fibers must be 30 N. The size of the filament yarn is according to table 1.

### 3.3 Gumming adhesive

There is no special recommendation for the type of adhesive used. The adhesive must not have an offensive odor and must be non-toxic. After a short setting time the evenly moistened adhesive film must give a strong and permanent joint on clean and unprepared board surfaces. (Prepared board surfaces are those which are waxed or coated with plastic material).

Commercially available moistening devices must evenly moisten the adhesive film of gummed tapes with a water temperature between 10 and 35 °C.

## 4. Test

### 4.1 Sampling and number of samples

The number of samples, which have to be taken, are listed in table 3. The tests must be carried out with each sample.

**Table 3**

Scope of delivery (gummed coils)	Number of samples to be tested (gummed coils)
800	5
801 - 1300	7
1301 - 3200	10
3201 - 8000	15
8001 and above	20

### 4.2 Conditioning

Before testing, the samples have to be conditioned according to ISO 187 (1977) in a test climate which has to be arranged. Recommended test climate is 23 °C, 50% R. H.

### 4.3 Tensile strength

The tensile strength has to be determined according to ISO 1924 (1976). The width of the tested samples is 60 mm. The free clamping length is 180 mm in MD and 25 mm in CD. The results are presented in kN/m.

### 4.4 Basic weight of the paper plies and weight of the filament yarn

The adhesive layer must be removed with water (temperature 60 - 70 °C).

After that the laminating agent must be removed by extraction with a suitable solvent. After drying and reconditioning the basis weight (grammage) of the paper plies is determined according to ISO 536(1976).

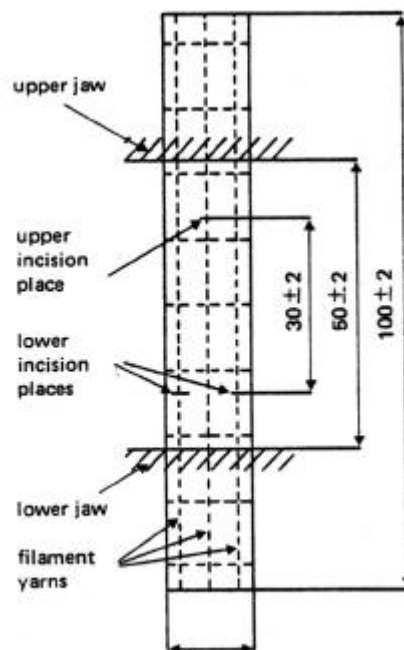
The weight of the filament yarn has to be determined by weighing and should be calculated for 1 sqm of reinforced paper.

#### 4.5 Anchorage of the reinforced material in Machine Direction

##### 4.5.1-Sample preparation-

As test specimen there will be a strip cut of such width that it contains 3 filament yarns. The length is 100 mm. The filament yarn to be tested is the middle one of the lengthwise direction. At the upper incision place the middle filament yarn and at the lower incision places the two outer filament yarns, together with the paper layers, are separated without any damage to the middle filament yarn (see picture 1).

Picture 1: Anchorage of filament yarn



#### 4.5.2 -Performance and interpretation-

The anchorage of the filament yarn will be tested in a tensile strength tester. The sample will be clamped in such a manner that both incisions have a distance of about 10 mm from the upper or lower clamping jaw. The maximum force in N, which leads to a fracture of the pulling apart of the filament yarn, will be determined. The result must be substantiated with comments concerning fracture or separation of the filament yarn.

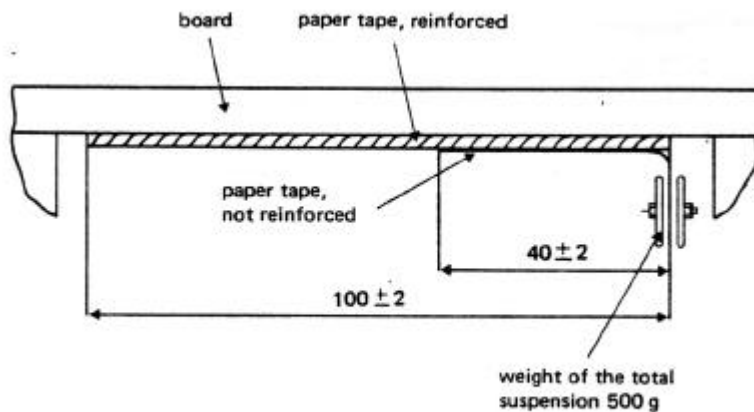
#### 4.6 *Water Resistance (lamination)*

A square of circular sample is inserted in water. The temperature of the test water must be that of the test climate. The sample should be completely immersed in the water. After two hours the sample will be removed and surplus water wiped off.

It will then be immediately tested to see if the two paper plies of the reinforced tape can be separated. A satisfactory result is achieved if the plies cannot be separated without fiber tear.

#### 4.7 *Delamination Test*

A strip of the reinforced tape to be tested 100 mm long and 50 mm wide will be completely stuck to a smooth board surface. On the upper surface of the test piece of paper a paper tape, not reinforced, 50 mm long and 50 mm wide, will be stuck in such a manner that 40 mm of the length of the strip is firmly fixed to the test piece and the remaining 10 mm will be bent by 90° and to it there will be attached a weight of 500 g (see picture 2). The test piece will be placed into a drying oven at a temperature of 60 °C. The time will be measured in seconds until a complete separation of the laminated plies occurs. It will be noticed if the specified minimum time of 180 s is reached.



Picture 2: Delamination test

#### 4.8 Minimum adhesion strength

The minimum adhesion strength is determined according to FIPAGO test method (3. draft 1982).

##### *Testing conditions:*

Real open time	3.0 s
Closed time	3.0 s
Water amount for moistening	18 - 20 g/m <sup>2</sup>
Pressure roller	1.500 g (spring loaded roller device)
Test climate	23 °C, 50% R. H.
Test surface	standard Fipago testing liner

Minimum adhesion strength: 400 mJ



## 5. Gummed coils

### 5.1 Dimensions

Traditionally, the roll widths used throughout the world by the paper manufacturing and processing industry have led to three different dimensional systems:

A: Germany + Northern Europe  
Sub-division by 10 mm steps  
50/60/70/80 etc.

B: France + Southern Europe  
Sub-division by 12 mm steps  
48/60/72/84 etc.

C: Anglo-Saxon countries and Asia  
Sub-division by inches  
2"/2.5"/3"/3.5" etc.

The use of recommended widths is intended to prevent the manufacture of intermediate widths. The widths category (A, B or C) to be manufactured should be agreed at the time of ordering.

**Table 4: Dimensions**

Series	Recommended width mm $\pm 1$			Inner diameter (min) mm	Length $\pm 2\%$
	A	B	C		
50	48	2" (51)	20	free	
60	60	2.5" (64)	with or	conditions	
70	72	3" (76)	without cores		
80	84	3.5" (89)			

### 5.2 Performance - general requirements

The tape must be evenly and tightly wound up with the *gummed side out*. The tape in each roll must consist of one continuous strip. The width of the hole in the center of the coil must not be less than 20 mm. If cores are used, they should have sufficient rigidity to prevent distortion of the roll under normal conditions of transportation and use. The end of the outer leaf of the tape must be attached securely to the next layer to prevent unwinding.



### 5.3 *Workmanship*

The tape should be free from any apparent defects that may affect its serviceability (clean, free from folds, sharp creases, tears, cuts, holes and without nicks or ragged edges). The adhesive should form a uniform coating layer covering the entire area of the side of the tape to which it is applied; when wetted with water it shall cause the tape to adhere immediately and firmly to clean, dry surfaces without wrinkling, curling, breaking or lifting.

### 5.4 *Packing and storage*

The tape must be packed in accordance with normal commercial practice to assure acceptance by a common carrier and to provide product protection against loss and damage during multiple shipments, handling and storage. The exterior of the package should be provided with a proper product identification.

The packing should protect the gummed coils against humidity. The packing material should be waterproof (waxed or bituminized papers, plastic coated papers or foils). The packing should be made in such a manner that easy taking out is possible.

The tape should be stored in the original package in a dry and cool location, not directly on the floor or near wet outer walls. It should not be stored in close proximity to steam pipes, radiators or other sources of heat or high humidity. The tape may not be exposed to direct sun radiation.