




Bellaterra : 19th September, 2018
Report N° : 18/31705614
Reference of the petitioner : **GLOBAL IMEXPRO, SL**
Pol. Industrial Vallveric
C/ dels Remences,118-B, nave 6
08304 MATARÓ
(BARCELONA)

And on its behalf, Mr. Jaume Caldas

TEST REPORT

MATERIAL RECIBIDO

On 03rd July, 2018, safety tape and samples of cardboard boxes referenced according to the documentation of the petitioner were received.

Sample Reference	
	Security tape for cardboard boxes ref. KBEDICH®
	White cardboard boxes
	Recycled brown cardboard boxes

.Remarks: The sampling of the material received was performed by the petitioner .

DATE AT WHICH THE TESTS WERE PERFORMED: From 10.07.18 to 19.09.18

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This document consists of 11 pages, of which -- are annexes, being this 1.

TEST REQUESTED BY THE PETITIONER

- 1- Checking the marking of the legend when manually removing the tape immediately after being applied.
- 2.-Checking the marking of the legend when manually removing the tape after storage at high temperature (T=80°C).
- 3.- Checking the marking of the legend when manually removing the tape after storage at low temperature (T=-30°C).
- 4- Checking the marking of the legend when manually removing the tape after the accelerated artificial aging (UV) s/n UNE EN ISO 4892/2.
- 5- Determination of the adhesive strength of the tape to the cardboard substrate.
 - 5.1 Immediately after being applied.
 - 5.2 After 8 hours applied in environmental conditions.
 - 5.3 After 24 hours applied in environmental conditions.

PROCEDURES

1.- PROCEDURE OF ALL APPLICATIONS

Metology:

The tape is applied under environmental conditions on cardboard substrates and a roller of the same width of the tape and weight 100 g is passed 2 times, to control with the minimum pressure the correct stuck.



2.-PROCEDURE OF THE MANUAL REMOVE OF THE TAPE FOR ALL TESTS

Metology:

The tape is removed manually with a normal speed and with an angle approximately 180° in all cases.

3.- STORAGE AT HIGH TEMPERATURES

Storage conditions:

Equipment: MEMMERT stove

Temperature: **(80±2) °C**

Duration: 72 hours

After storage, it is conditioned under ambient conditions and the tape is removed manually.

4.- STORAGE AT LOW TEMPERATURES

Storage conditions:

Equipment: Bunker refrigerator

Temperature: **(-30±2) °C**

Duration: 72 hours

After storage, it is conditioned under ambient conditions and the tape is removed manually.

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5- ACCELERATED ARTIFICIAL AGING (UV)

Test method according to standard s/n UNE EN ISO 4892/2 "Plastics: Methodes of exposure to laboratory Light sources. Xenon-arc lamps".

Test conditions:

- Equipment used: Wheather-Ometer with Xenon lamp (ATLAS)
- Irradiance (300-400 nm): $(60 \pm 2) \text{ W / m}^2$
- Exterior and interior filters: Borosilicate (outdoor conditions)
- Black standard temperature: $(65 \pm 3) \text{ }^\circ\text{C}$
- Chamber temperatura: $(38 \pm 3) \text{ }^\circ\text{C}$
- Relative humidity: $(50 \pm 10)\%$

Duration of the exposure: 150 hours

After storage, it is conditioned under ambient conditions and the tape is remove manually.

6-DETERMINATION OF THE STRENGTH OF ADHESION OF THE TAPE ON THE CARDBOARD

Equipment used: Traction machine (INSTRON dynamometer), constant value of displacement of jaws

Methodology:

Jaw separation speed: $(100 \pm 10) \text{ mm/min}$

The tape is removed at 180° angle

Test temperature: $(23 \pm 2) \text{ }^\circ\text{C}$



Nº of test samples: 5

Expression of results: Average adhesion force, expressed in N/ cm.

ALL TESTS WERE PERFORMED ON THE WHITE CARDBOARD AND RECYCLED CARDBOARD

RESULTS

1- CHECKING THE MARKING OF THE LEGEND WHEN MANUALLY REMOVING THE TAPE IMMEDIATELY AFTER BEING APPLIED

On white cardboard



When removing the tape the legend is observed

On recycled cardboard



When removing the tape the legend is observed

2- CHECKING THE MARKING OF THE LEGEND WHEN MANUALLY REMOVING THE TAPE AFTER STORAGE AT HIGHT TEMPERATURES

On white cardboard



When removing the tape the legend is observed or part of the substrate is removed

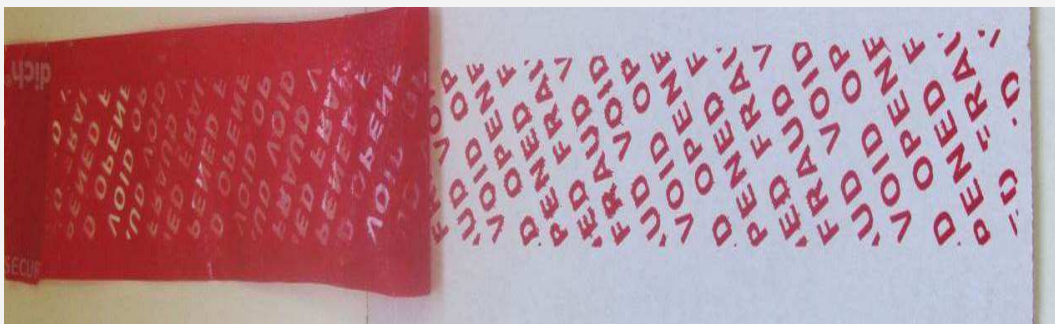
On recycled cardboard



When removing the tape the legend is observed or part of the substrate is removed

3- CHECKING THE MARKING OF THE LEGEND WHEN MANUALLY REMOVING THE TAPE AFTER STORAGE AT LOW TEMPERATURES

On white cardboard



When removing the tape the legend is observed

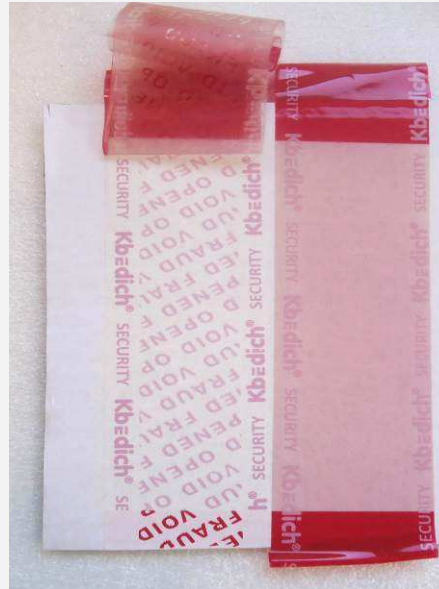
On recycled cardboard



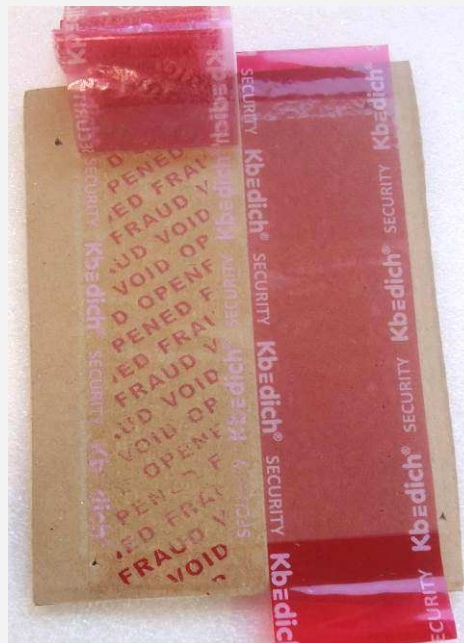
When removing the tape the legend is observed

4- CHECKING THE MARKING OF THE LEGEND WHEN MANUALLY REMOVING THE TAPE AFTER THE ACCELERATED ARTIFICIAL AGING (UV)

On white cardboard



When removing the tape the legend is observed although there is loss of color compared to that is observed before aging..



When removing the tape the legend is observed although there is loss of color compared to that is observed before aging .

5.- DETERMINATION OF THE OF THE TAPE ON THE CARDBOARD SUBSTRATE

5.1 IMMEDIATELY AFTER BEING APPLIED

On white cardboard

Results:

Test sample	ADHESIVE STRENGTH (N/cm)
1	1,6
2	1,5
3	1,5
4	1,6
5	1,8
Average value	1,6

On recycled cardboard

Results:

Test sample	ADHESIVE STRENGTH (N/cm)
1	1,0
2	1,1
3	0,9
4	1,2
5	1,1
Average value	1,1

5.2 AFTER 8 HOURS APPLIED IN ENVIRONMENTAL CONDITIONS

On white cardboard

Results::

Test sample	ADHESIVE STRENGTH (N/cm)
1	1,9
2	1,9
3	1,9
4	1,9
5	1,8
Average value	1,9

On recycled cardboard

Results:

Test sample	ADHESIVE STRENGTH (N/cm)
1	1,0
2	1,3
3	1,6
4	1,3
5	1,3
Valor medio	1,3

5.3 AFTER 24 HOURS APPLIED IN ENVIRONMENTAL CONDITIONS

On white cardboard

Results:

Test sample	ADHESIVE STRENGTH (N/cm)
1	1,8
2	2,1
3	1,8
4	2,0
5	1,9
Average value	1,9

On recycled cardboard

Results:

Test sample	ADHESIVE STRENGTH (N/cm)
1	1,3
2	1,3
3	1,4
4	1,3
5	1,4
Average value	1,3

IPE Technical Manager
Transport, Energy & Telecom B.U
LGAI Technological Center S.A

The results refer exclusively to the sample, product or materials delivered to the laboratory, as indicated in the corresponding section of the description of the material received, and tested in the conditions described in this test report.

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In the framework of our improvement programme, we would appreciate any comments you may deem appropriate. These should be addressed to the manager who signs this document, or to the Quality Director of Applus+ at the following address: satisfaccion.cliente@applus.com