SLOVENSKI STANDARD

SIST EN 15386:2008

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Embalaģa - Proģne laminatne in plastiļ ne tube - Preskusna metoda za ugotavljanje adhezije

Packaging - Flexible laminate and plastic tubes - Test method to determine the print adhesion

Verpackung - Laminat- und Kunststofftuben - Prüfverfahren zur Bestimmung der Haftfestigkeit der Bedruckung

Emballage - Tubes souples plastiques et tubes souples laminés - Méthode d'essai pour déterminer l'adhérence de l'impression

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EUROPEAN STANDARD

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English Version

Packaging - Flexible laminate and plastic tubes - Test method to determine the print adhesion

Emballage - Tubes souples plastiques et tubes souples laminés - Méthode d'essai pour déterminer l'adhérence de l'impression

Packmittel - Laminat- und Kunststofftuben - Prüfverfahren zur Bestimmung der Haftfestigkeit der Bedruckung

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Foreword

This document (EN 15386:2007) has been prepared by Technical Committee CEN/TC 261 “Packaging”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by May 2008, and conflicting national standards shall be withdrawn at the latest by May 2008.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This standard is based on the professional recommendations of the European Tube Manufacturers Association (etma).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This standard specifies a method for the determination of the print adhesion on flexible laminate and plastic tubes.

It is applicable to flexible laminate and plastic tubes used for packing pharmaceutical, cosmetic, hygiene, food and other household products.

2 Principle

The adhesive tape test serves to gauge the adhesion properties of printing ink films on flexible laminate and plastic tubes.

The printing ink film is tested by rapidly tearing-off a previously applied adhesive tape. After the tape has been torn off, the divided surfaces are judged by pre-established criteria.

3 Apparatus

An adhesive tape of commercial quality equipped with an upper surface made of tear-proof plastic and a pressure sensitive adhesive coating, of which the adhesive power is: minimum 5 N/25 mm and maximum 7 N/25 mm, tested according to Annex A against a glass testing surface.

4 Procedure

Place the printed sample on an even surface. Apply the adhesive tape on the sample and press it on manually across the length of the decoration. It is important that there is full contact with the surface over the whole area and that no air bubbles remain between adhesive tape and sample surface.

Approximately 10 s to 30 s after pressing-on, manually tear off the free end of the adhesive tape in one go from the surface at an angle of about 150 °. Examine the divided surfaces (printing surface and reverse side of the adhesive tape).

Analyse the divided surfaces according to Table 1.

Table 1 — Evaluation of test results

Appearance of the divided surfaces	Assessment	Category
No damage of the print or the printing material, pure adhesion fracture	Adhesive tape resistant	Pass
Damage to the print and printing material.	Not adhesive tape resistant	Fail

The severity of the failure mode should be defined between customer and supplier.

5 Test report

If not otherwise agreed between supplier and customer the test report shall contain the following information:

a) Reference to this standard and if necessary a specification for the method of sampling and acceptance of the batch,

b) Complete identification of the batch and of the tubes checked,

c) Date of printing,

d) Number of tubes checked,

e) Number of defects,

f) Test result,

g) All factors which could have affected the results or all operating details not specified in this standard,

h) Date, place of test and name of tester.

Annex A
(normative)

Peel adhesion (180 °) at 300 mm/min

A.1 Scope

This test method is designed to quantify the permanence of adhesion or peel ability of self-adhesive, pressure sensitive materials

A.2 Definition

Peel adhesion is defined as the force required to remove pressure sensitive coated material, which has been applied to a standard test plate under specified conditions from the plate at a specified angle and speed. Adhesion is measured at 20 min after the application and 24 h after application, the latter being considered as the ultimate adhesion.

A.3 Apparatus and reagents

A tensile tester or similar machine, capable of peeling a laminate through an angle of 180 ° with a jaw separation rate of 300 mm/min with an accuracy of 2 %.

Test plates made of float glass or similar plate glass.

A 2 kg roller.

NOTE 1 The standard FINAT test roller is recommended for this purpose[1].

The test plates shall be thoroughly cleaned so that no trace of adhesive, grease, silicone or moisture is left on the surface. The following solvents can be used to clean the test plates:

— Diacetone alcohol non-residual, technical grade or better

— Methyl Ethyl Ketone (MEK)

— Acetone

— Methanol 95 %

— n-Heptane

— Ethyl Acetate

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[1] Information on how to obtain a FINAT hand roller is available from FINAT,Laan Copes van Cattenburch 79, 2585 EW The Hague, Netherlands, e-mail: info@finat.com URL:www.finat.com [1]. The FINAT test roller is an example of a suitable product available commercially. This information is given for the convenience of users of this European Standard and does not constitute an endorsement by CEN of this product.

The cleaning material shall be absorbent, e.g. surgical gauze, cotton wool or tissue. To be suitable, materials shall be lint-free during use, absorbent, contain no additives that are soluble in the solvents listed above, and made exclusively from virgin materials.

Dispense one of the solvents listed above onto the panel, wiping it to dryness with fresh absorbent cleaning material. Repeat for a total of three washes with the solvent. Final wipe shall be with MEK or acetone.

Alternative methods that remove contamination properly can be adopted, e.g. ultrasonic cleaning. Prior to use, the cleaned plates should be left for 4 hours under standard test conditions. Care should be taken to handle clean plates by the edge only.

Alternative surfaces to plate glass can be used such as stainless steel aluminium or polyester film, but this must be clearly stated alongside the results.

If adhesion values are required when paper tear has occurred, then this test can be conducted at lower jaw separation rates quoting the latter against the results.

NOTE 2 Conversion 1 Kgf = 9,81 N.

A.4 Test Pieces

These should be strips taken from a representative sample of material. The strips should be 25 mm wide and have a minimum length of 175 mm in the machine direction. The cuts should be clean and straight. At least three strips should be taken from each material sample.

A.5 Conditioning

Temperature 23 °C ± 2 °C, 50 % RH ± 5% RH. The test sample or test strips should be conditioned for not less than 4 h before testing.

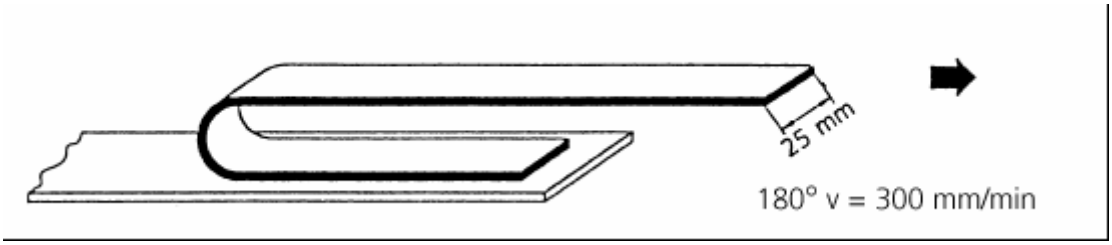

Figure A.1 — Test strips

A.6 Procedure

Remove the backing material from each strip and place the adhesive coated facing material, adhesive side down, on to a clean test plate using light finger pressure. Roll twice in each direction with the roller at a speed of approximately 10 mm/s to obtain intimate contact between the adhesive mass and the surface. After applying the strips to the test plate, leave for a period of 20 min before testing. Repeat the procedure with a second set of strips and leave for a period of 24 h before testing. Fix the test plate and strip in the machine so that the angle of peel is 180 °. Set the machine at 300 mm/min jaw separation rate. Carry out the test taking at least five readings at 10 mm intervals from the centre section of each test strip. Average the five or more readings for each strip.