

ICS 55.120

English Version

## Packaging - Flexible aluminium tubes - Determination of the adhesion of the internal and external protective lacquering

Emballage - Tubes souples en aluminium - Détermination  
de l'adhérence des vernis de protection intérieure et  
extérieure

Packmittel - Aluminiumtuben - Bestimmung der  
Haftfestigkeit des Innen- und Außenschutzlackes

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## Contents

Page

Foreword.....	3
1 Scope .....	4
2 Principle.....	4
3 Apparatus .....	4
4 Test conditions .....	6
5 Procedure .....	6
6 Test report.....	6
Bibliography .....	7

## Foreword

This document (EN 15421:2007) 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of an identical text or by endorsement, at the latest by May 2008, and conflicting national standards shall be withdrawn at the latest by May 2008.

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## 1 Scope

This standard specifies a method for the determination of the adhesion of the internal and external protective lacquer of aluminium tubes.

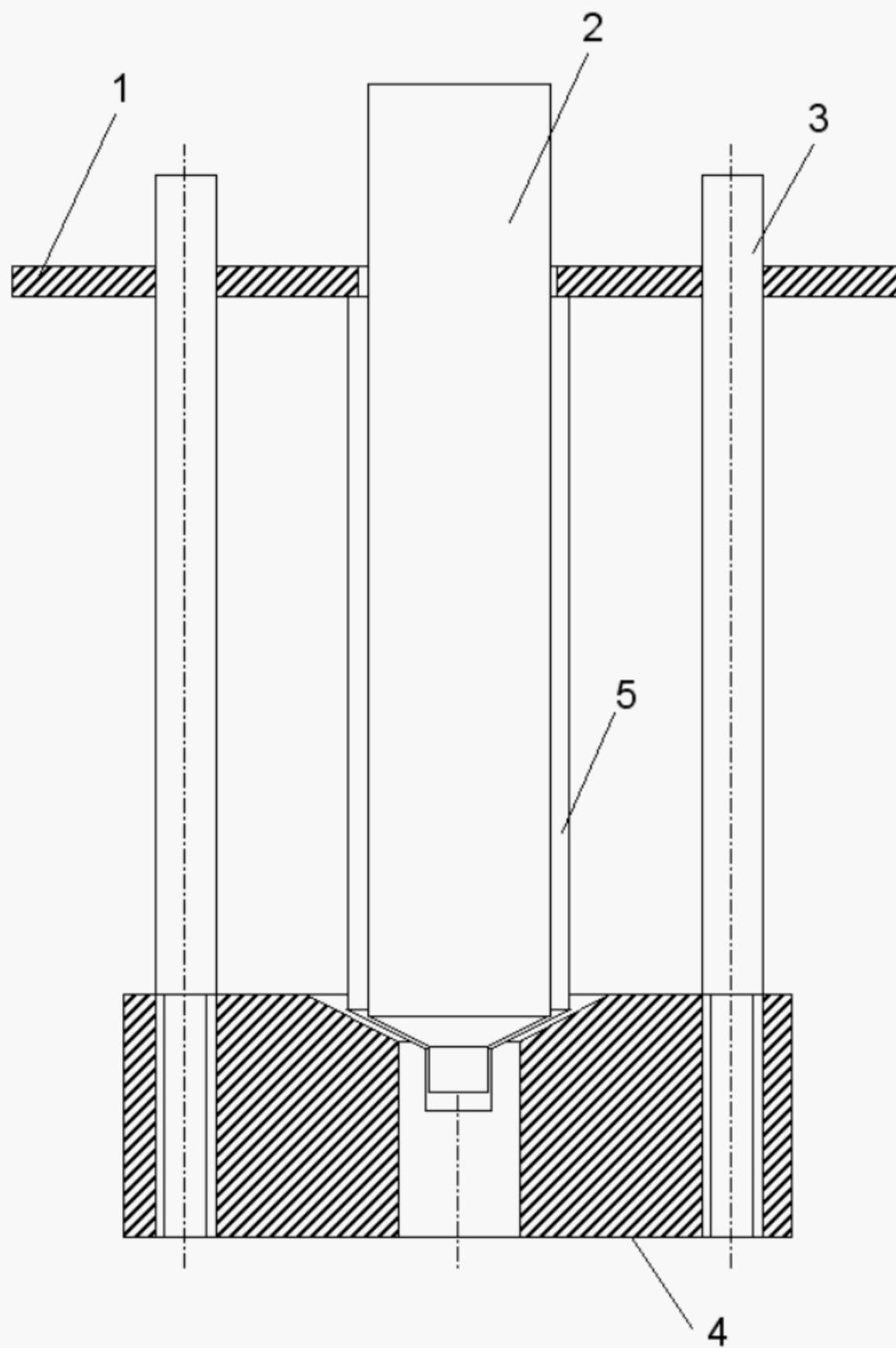
It is applicable to aluminium tubes that are coated with an internal or external protective lacquer and which are used for packing, e.g. pharmaceutical, cosmetic, hygiene, food and other household products.

## 2 Principle

By means of a compressing device the tube is compressed to a defined extent and under defined temperature conditions to create a standardized and sharp-edged deformation of the tube. The kinks are checked visually for any cracks and/ or delamination of internal or external lacquer.

## 3 Apparatus

Compressing device according to Figure 1 (example).

**Key**

- 1 Compressing clamp
- 2 Guide pin (for tubes diameter  $\leq 19$  mm =  $\varnothing$  8 mm, for tubes diameter  $> 19$  mm =  $\varnothing$  15 mm)
- 3 Guide bolt
- 4 Base plate
- 5 Tube

**Figure 1 – Test device**

## 4 Test conditions

The tests are carried out at a temperature between  $(23 \pm 5)$  °C.

For testing the adhesive strength of inner and outer protective lacquers of products stored or used under cold conditions,  $(5 \pm 3)$  °C, the samples have to be stored under the same conditions for at least 2 h prior to testing. The test has to be done immediately after taking the samples out of the refrigerator.

## 5 Procedure

Insert the tube in the compressing device. In order to keep the tube straight during compression an internal guide pin should be used.

Compress the tube until the tube body is reduced to  $(15 \pm 5)$  % of the original tube body length.

Remove the crushed tube from the compressing device and stretch it again in the axial direction.

Check the stretched tubes for cracked and detached lacquer parts of the inner and outer protective lacquering. If there are any cracks or detached lacquer parts, the samples have failed.

## 6 Test report

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) Description and the dimensions of the samples.
- d) Nature of the internal and external protective lacquering.
- e) Test temperature.
- f) Number of samples checked.
- g) Number and description of defects.
- h) If necessary, acceptance or refusal of the batch depending on the specifications.
- i) All factors which could have affected the results or all operating details not specified in this standard.
- j) Date, place of test and name of tester.

## Bibliography

- [1] EN 12374, *Packaging - Flexible tubes - Terminology*
- [2] EN 13046, *Packaging - Flexible cylindrical metallic tubes - Dimensions and tolerances*
- [3] EN 13047, *Packaging - Flexible conical metallic tubes - Dimensions and tolerances*