



SLOVENSKI STANDARD SIST EN 15421:2022

01-januar-2022

Nadomešča:
SIST EN 15421:2008

Embalaža - Prožne aluminijaste tube - Ugotavljanje adhezije notranjih in zunanjih zaščitnih lakov

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

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

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

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Ta slovenski standard je istoveten z: EN 15421:2021

ICS:

55.120	Pločevinke. Tube	Cans. Tins. Tubes
77.150.10	Aluminijski izdelki	Aluminium products

SIST EN 15421:2022

en,fr,de

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EUROPEAN STANDARD

EN 15421

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 2021

ICS 55.120

Supersedes EN 15421:2007

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

This European Standard was approved by CEN on 30 August 2021.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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European foreword

This document (EN 15421:2021) 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 April 2022, and conflicting national standards shall be withdrawn at the latest by April 2022.

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

This document will supersede EN 15421:2007.

In comparison with the previous edition, the following technical modifications have been made:

— two types of compression devices have been considered.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

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EN 15421:2021 (E)

1 Scope

This document 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 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp/ui>

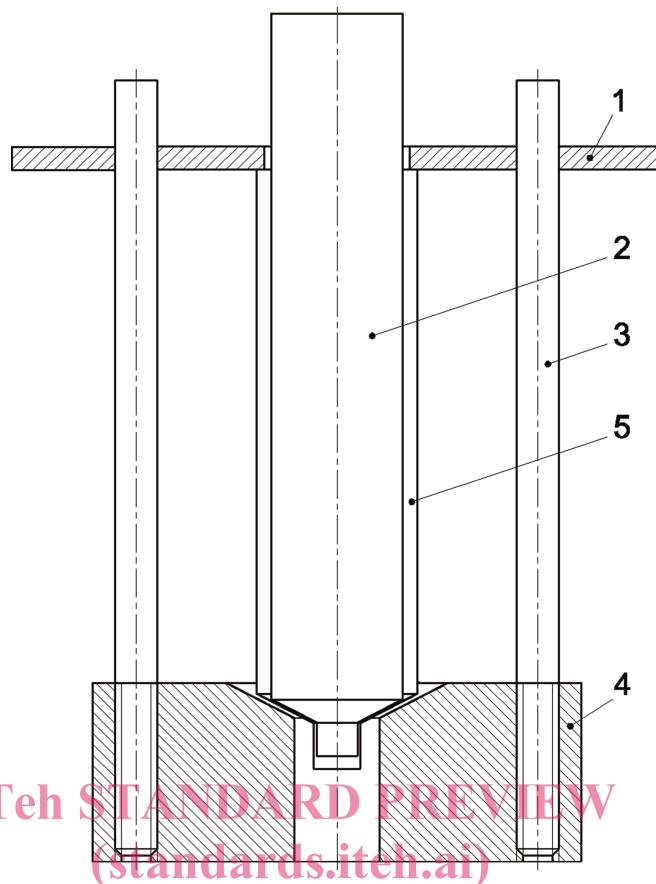
4 Principle

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.

5 Apparatus

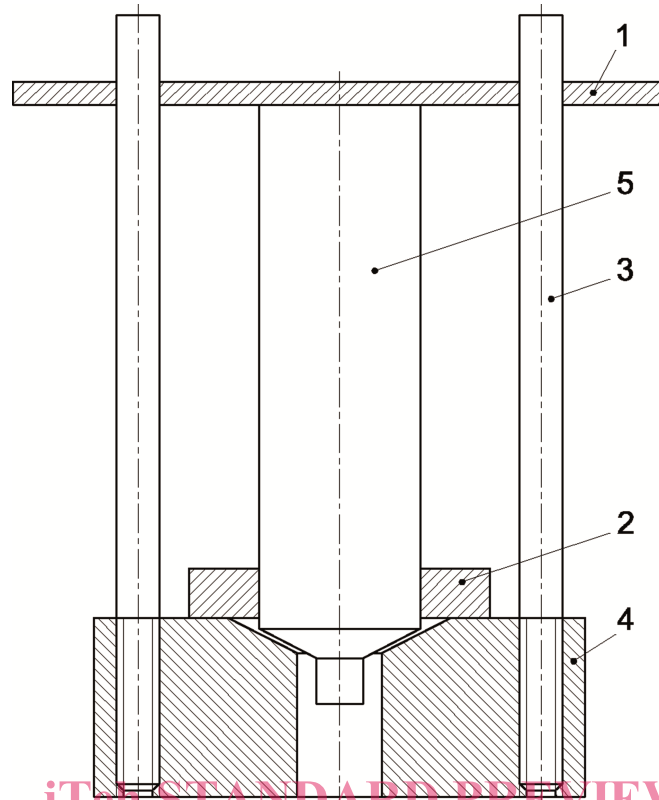
Two types of compressing device exist: [SIST EN 15421:2022
https://standards.iteh.ai/catalog/standards/sist/3ab6a72c-405b-4db4-a8c9-5994a4da7b7d/sist-en-15421-2022](https://standards.iteh.ai/catalog/standards/sist/3ab6a72c-405b-4db4-a8c9-5994a4da7b7d/sist-en-15421-2022)

- a) Type 1 (according to Figure 1);
- b) Type 2 (according to Figure 2).

**Key**

- 1 compressing clamp
- 2 guide pin (for tubes diameter ≤ 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 - Type 1

**Key**

- 1 compressing clamp
- 2 guide ring
- 3 guide bolt
- 4 base plate
- 5 tube

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Figure 2 — Test device - Type 2

6 Test conditions

The tests are carried out at a temperature between $(23 \pm 5) ^\circ\text{C}$.

For testing the adhesive strength of inner and outer protective lacquers of products stored or used under cold conditions, $(5 \pm 3) ^\circ\text{C}$, the samples shall be stored under the same conditions for at least 2 h prior to testing. The test shall be carried out immediately after removing the samples from the refrigerator.

7 Procedure

7.1 Type 1

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.

7.2 Type 2

Insert the tube in the compressing device. In order to keep the tube straight during compression, an external guide ring should be used.

Compress the tube until the tube body is reduced down to the ring.

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.

8 Test report

The test report shall contain the following information:

- a) a reference to this document (including publication date) and, if necessary, a specification for the method of sampling and acceptance of the batch;
- b) the complete identification of the batch and of the tubes checked;
- c) the description and the dimensions of the samples;
- d) the nature of the internal and external protective lacquering;
- e) the test temperature;
- f) the number of samples checked;
- g) the number and description of defects;
- h) if necessary, the 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 document;
- j) the date, place of test and name of the tester.

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