SLOVENSKI STANDARD
SIST EN 13048:2023

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Nadomešča:
SIST EN 13048:2009

Embalaža - Prožne aluminijaste tube - Metoda za merjenje debeline notranje plasti laka

Packaging - Flexible aluminium tubes - Internal lacquer film thickness measurement method

Packmittel - Aluminiumtuben - Verfahren zur Bestimmung der Dicke des Innenschutzlackes

Emballage - Tubes souples en aluminium - Méthode de détermination de l'épaisseur de vernis intérieur

Ta slovenski standard je istoveten z: **EN 13048:2022**

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77.150.10	Aluminijski izdelki	Aluminium products

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English Version

Packaging - Flexible aluminium tubes - Internal lacquer film thickness measurement method

Emballage - Tubes souples en aluminium - Méthode de détermination de l'épaisseur de vernis intérieur

Packmittel - Aluminiumtuben - Verfahren zur Bestimmung der Dicke des Innenschutzlackes

This European Standard was approved by CEN on 22 August 2022.

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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 13048:2022) 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of an identical text or by endorsement, at the latest by April 2023, and conflicting national standards shall be withdrawn at the latest by April 2023.

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 supersedes EN 13048:2009.

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

— Clause 4 on eddy current test has been added;

— Clause 5 and Clause 6 have been redrafted with editorial modification.

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.

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1 Scope

This document specifies methods for the determination of the thickness of the lacquer film applied inside cylindrical and conical aluminium tubes. The methods are a reference. They can also be used as a reference when calibrating other electronic instruments suitable for determining coating weight thickness. It is applicable to aluminium tubes used for packing pharmaceutical, cosmetic, hygiene, food and other domestic products.

NOTE Although not specified in this document there are available suitable automatic film thickness measurement instruments that provide instantaneous results with good accuracy (<1µm).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 12374:2022, *Packaging — Flexible tubes — Terminology*

EN ISO 2360:2017, *Non-conductive coatings on non-magnetic electrically conductive base metals — Measurement of coating thickness — Amplitude-sensitive eddy-current method (ISO 2360:2017)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12374:2022 and EN ISO 2360:2017 apply.

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

- IEC Electropedia: available at http://www.electropedia.org/
- ISO Online browsing platform: available at http://www.iso.org/obp

4 Eddy current test

The eddy current test is explained in detail in EN ISO 2360:2017, Clause 4.

5 Chemical test

5.1 Principle

The measurement of the thickness of the lacquer film inside aluminium tubes with a micrometer or dial indicator after separation of the film from the aluminium tube and its enamel decoration by chemical means.

Through a chemical reaction the aluminium is dissolved and hydrogen gas is generated. The internal lacquer film remains intact.

5.2 Apparatus

5.2.1 Test measuring and other equipment

a) Micrometer or dial indicator giving a precision of 0,001 mm (1 µm);

b) Oven;

c) Extractor fan;

d) Glass container of a size capable of containing a tube cut as in Figure 1;

e) Scissors;

f) Tweezers;

g) Filter paper;

h) Protective clothing and glasses.

5.2.2 Chemical agents

a) Solvent capable of dissolving the external enamel of the tubes;

b) Sodium hydroxide with a concentration of 20 g of NaOH/100 ml.

Hydrochloric acid at a concentration of 10 g HCI/100 ml may be used instead of sodium hydroxide.

6 Method

6.1 Preliminary precautions

WARNING — The preparation of samples requires the handling and use of hazardous materials. This document does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this document to establish appropriate safety and health practices and to determine the applicability of regulatory limitations prior to use.

6.2 Preparation of samples

a) Cut the tubes with the scissors as shown in Figure 1 (all measurements in mm).

b) Dissolve the external enamel with the solvent.

c) Pour NaOH solution into the container in a quantity sufficient to cover the tube.

d) Place the container under the extract fan.

e) Immerse the tube in the NaOH solution.

f) With the tweezers, remove the lacquer film and rinse with water.

g) Dry the film between two sheets of filter paper. Then place the film in the oven for 1 h at 80 °C.