



SLOVENSKI STANDARD
SIST EN 14401:2004
01-september-2004

Toge plastične posode - Metode preskušanja učinkovitosti zapiranja

Rigid plastics containers - Methods to test the effectiveness of closures

Formstabile Kunststoffbehälter - Verfahren zur Prüfung von Verschlüssen auf Dichtheit

Conteneurs en plastique rigide - Méthodes d'essai de l'efficacité des fermetures

Ta slovenski standard je istoveten z: EN 14401:2004

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ICS:

55.120

Pločevinke. Tube

Cans. Tins. Tubes

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en,fr,de

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 14401

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ICS 55.120

English version

Rigid plastics containers - Methods to test the effectiveness of closures

Conteneurs en plastique rigide - Méthodes d'essai de l'efficacité des fermetures

Formstabile Kunststoffbehälter - Verfahren zur Prüfung von Verschlüssen auf Dichtheit

This European Standard was approved by CEN on 16 April 2004.

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 Central Secretariat or to any CEN member.

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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Foreword

This document (EN 14401:2004) 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of an identical text or by endorsement, at the latest by December 2004, and conflicting national standards shall be withdrawn at the latest by December 2004.

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

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EN 14401:2004 (E)**1 Scope**

This European Standard specifies a method for testing the effectiveness of the seals of closures on plastic bottles and jars up to 5,0 l, of plastics canisters/jerricans with a nominal volume up to 20 l and of plastic pails with a nominal volume up to 60 l.

NOTE Plastics bottles, jars, canisters and jerricans are referred to as “containers” in this standard.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text, and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 13974:2002 *Rigid plastics containers — Specification of tolerance for dimensions, weight and volume.*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 13974:2002 (some of which are repeated below for convenience) and the following apply.

3.1 plastics bottle

rigid plastics container with shoulders and a small aperture, generally blow moulded

3.2 plastics jar

rigid plastics container of any base shape, with an aperture of area similar to that of the base

3.3 plastics canister/jerrican

rigid plastics container with mostly rectangular or circular section

NOTE An aperture on the top or side of the body and a carrying device is usual.

3.4 pail

rigid plastics container of any shape, the top of which is greater than or equal to the area of the bottom. The container has a lid with or without a leak proof seal and is generally nestable

3.5 hydrostatic force

force exerted on a defined area inside a container, by the weight of liquid above it

3.6 closure

system of one or more components which, when fitted to an opening of a container, prevents any contents of the container from escaping through the opening under defined conditions of test

3.7 effectiveness of a closure

ability of a closure to prevent any contents of a container from escaping through the opening to which it is fitted, under defined conditions of test

4 Principle

Applying pressure to the contents of a container, either by a hydrostatic force, or vacuum applied to the outside of the container to test for leakage past the closure.

5 Sampling

The test shall be performed on a predetermined number of containers which shall be representative of the consignment.

6 Testing fluid

6.1 Original content

Original liquid used to fill the container

6.2 Alternative testing liquid

An alternative testing liquid using the following mixture may be used:

- 1) 50 g non ionogen Tenside,
- 2) 950 ml distilled water
- 3) Rhodamin as colourant

7 Test procedure

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7.1 Method

Examination of tightness can be done by either or both of the methods described in 7.4.

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7.2 Filling

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Fill the containers to their nominal capacity with the liquid specified in 6.1 or 6.2 and fit the closure. Screw caps shall be closed to the torque specified, if any.

7.3 Conditioning

After filling, lay the containers on their side with the closure below the level of the liquid for 24 h at a temperature between 18 °C and 28 °C

NOTE Containers and closures should be tested not earlier than 72 h after production. Plastics containers can change their dimensions after production and in subsequent use.

7.4 Testing

7.4.1 Method 1

Place the containers upside down for 24 h at a temperature between 18 °C and 28 °C.

7.4.2 Method 2

Lay the containers on their side with the closure below the level of the liquid for 10 min at a temperature between 18 °C and 28 °C in a vacuum chamber, having a vacuum of 600 mbar.

7.5 Detection of leakage

The containers shall be placed on a surface of a type that will assist the observation of any leakage from the closure.

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NOTE White paper of suitable quality to resist any applied vacuum has been found suitable when using the liquid defined in 6.2.

7.6 Pass criteria

The closure is deemed to have passed the test if no leakage is detected.

8 Test report

The test report shall include the following information:

- a) a reference to this European Standard;
- b) a description of the container and closure system (i.e. design, name, supplier etc.) and type of plastics material; including conditioning status, if there is any conditioning requested for process and material used;
- c) a report of the sampling procedure used;
- d) date of the test;
- e) number of replicates tested;
- f) number of replicates that failed;
- g) number of replicates that passed;
- h) nominal capacity of the container;
- i) mould cavity number of the container and closure, if applicable;
- j) a calculation to ascertain whether the containers comply with the acceptance criteria, if any;
- k) name and signature of the person conducting the test;
- l) method(s) of test used;
- m) description of the testing liquid used.

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