



SLOVENSKI STANDARD SIST EN 13117-2:2001

01-februar-2001

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Transport packaging - Reusable, rigid plastics distribution boxes - Part 2: General specifications for testing

Transportverpackung - Starre Mehrwegtransport- und Lagerkästen aus Kunststoff - Teil 2: Prüfverfahren

Emballages de transport - Bacs de distribution en plastique, rigide, réutilisables - Partie 2: Spécifications générales concernant les essais

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Ta slovenski standard je istoveten z: EN 13117-2:2000

ICS:

55.160 Zaa[bZ\ ae^Ü|ae ä } ä Cases. Boxes. Crates
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13117-2

May 2000

ICS 55.160

English version

**Transport packaging - Reusable, rigid plastics distribution boxes
- Part 2: General specifications for testing**

Emballages de transport - Bacs de distribution en plastique,
rigide, réutilisables - Partie 2: Spécifications générales
concernant les essais

Transportverpackung - Starre Mehrwegtransport- und
Lagerkästen aus Kunststoff - Teil 2: Prüfverfahren

This European Standard was approved by CEN on 22 April 2000.

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.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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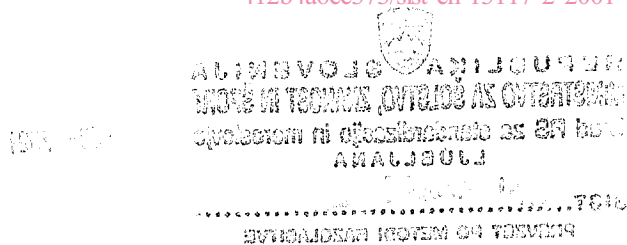
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Foreword

This European Standard 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 November 2000, and conflicting national standards shall be withdrawn at the latest by November 2000.

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

No existing European standard is superseded by this standard.

This draft standard is part of a series of standards for transport packaging, the other part of which is as follows:

- Part 1: General purpose application

Introduction

Standardization of reusable containers, especially for consumer goods, is a basic condition for economically and ecologically suitable goods traffic in Europe. An important subject is the use by any pool organization of reusable container systems which are thereby able to meet the following requirements:

- a) reduction of empty runs;
- b) improvement of transport space utilization;
- c) optimization of transport flows.

The last point will be influenced by legislation in the coming years. The EC Directive on Packaging and Packaging Waste includes the reuse of packaging as part of the strategy to reduce packaging waste. All systems concerning reusable containers therefore should operate within the framework provided by pool organizations because of synergetic effects throughout the transportation chain.

1 Scope

This standard specifies minimum performance requirements and methods of test for reusable rigid plastics transport packaging as specified in EN 13117-1.

Special applications such as heavy loads, low or high operating temperatures will require an agreement to be made between the supplier and the user to supply a box to satisfy his requirements.

EXAMPLE:

- Heavy loads
- Metal components
- low temperatures below - 20 °C
- high temperatures above + 30 °C

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 13117-1

Transport packaging – Reusable, rigid plastics distribution boxes – Part 1: General purpose application

EN 22206

Packaging – Complete, filled transport packages – Identification of parts when testing (ISO 2206:1987)

EN ISO 2233

Packaging – Complete, filled transport packages – Conditioning for testing (ISO 2233:1994)

EN 22234

Packaging – Complete, filled transport packages – Stacking tests using static load (ISO 2234:1985)

EN 22248

Packaging – Complete, filled transport packages – Vertical impact test by dropping (ISO 2248:1985)

ISO 3394

Dimensions of rigid rectangular packages – Transport packages

3 Terms and definitions

For the purposes of this standard the terms and definitions given in EN 13117-1 apply.

4 Performance requirements

4.1 Surfaces

The box shall be free from foreign bodies, blowholes, cracks and burrs and granules which have not melted, as well as from other defects. Minor unevenness or sunken areas produced in processing are permissible provided that fitness for use is not adversely affected.

4.2 Dimensions

Tolerances on nominal sizes shall be not greater than $\pm 0,5\%$.

The plan view sizes shall not exceed the modular sizes as given in ISO 3394.

Tolerances on nominal tare weight shall not exceed $\pm 3\%$.

4.3 Shape stability

When tested in accordance with 6.2, boxes shall exhibit no visible change or damage such as cracks or embedding. No deformation which reduces the functions of the box shall be acceptable.

4.4 Stacking stability

When tested in accordance with 6.1, stacks of three boxes shall keep their equilibrium during and after the test.

The reduction of the height of the stack under load shall be less than 2 % of the first measurement (taken between the first and second measurement).

The residual reduction of the height of the stack shall be less than 1 % of the first measurement (taken between the first and third measurement).

4.5 Base deflection

When tested in accordance with 6.3, the deflection under load shall be less than 3 % of the actual base diagonal length (taken between the first and second measurement).

The residual deflection shall be less than 1 % of the actual base diagonal length (taken between the first and third measurement).

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5 Requirements before testing

5.1 General

All tests shall be conducted on new and unused boxes.

Tests shall be conducted not earlier than 72 h after the manufacture of the box.

The boxes to be tested shall be selected at random throughout a production batch.

The surfaces of the boxes to be tested shall be identified in accordance with EN 22206.

5.2 Conditioning

Unless otherwise specified, all samples shall be preconditioned for 24 h at $(23 \pm 2) ^\circ\text{C}$ before testing in accordance with EN ISO 2233.

5.3 Dimensions and weight

The overall length, width, height and tare weight shall be determined before the commencement of testing but after conditioning as the mean of 5 samples.

5.4 Test load

The test load shall be calculated by multiplying the maximum load to be contained in or supported by the box by a safety factor of at least 1,5.

5.4.1 Test load inside the box

Unless otherwise specified, the test load inside the box shall be uniformly spread and shall occupy more than 80 % of the capacity of the box. It shall be composed either of fabric or plastics film bags containing 500 g of plastics granules (type A) or steel balls (type B), or the products which have been chosen to be transported in the box.

Where both types of bags are used in a box, type B bags shall be placed in the base of the box with type A bags above.

Empty type A bags shall have flat dimensions of 150 mm × 200 mm and shall be able to contain 500 g of plastic granules.

Empty type B bags shall have flat dimensions of 100 mm × 100 mm and shall be able to contain 500 g of steel balls measuring 5 mm to 8 mm in diameter.

5.4.2 Test load on top of the box

Test load on top of the box shall be applied via a flat and rigid surface on the top box (see figure 1).

6 Test methods **iTeh STANDARD PREVIEW** (standards.iteh.ai)

6.1 Stacking test using static load

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6.1.1 Test parameters

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The following parameters shall be used:

- | | |
|-------------------------|------------------------------------------------------------|
| a) Temperature of test: | (23 ± 2) °C |
| b) Number of samples: | 3 tests using 3 new boxes per test (total number: 9 boxes) |
| c) Loading: | 1st: 10 % of the test load
2nd: 100 % of the test load |

6.1.2 Test method

The test shall be carried out in accordance with EN 22234 and the chosen test method shall be recorded.

Stack three empty boxes.

Place a test load via a flat and rigid surface on the top box (see figure 1).

Take measurements, expressed in mm, at every corner of the stack between the placement level and the surface of application of the test load:

- 1st measurement with 10 % of the test load at (23 ± 2) °C;
- 2nd measurement with 100 % of the test load after 96 h at (23 ± 2) °C;
- relaxation: the test load is removed and the box is placed at (23 ± 2) °C for 24 h;
- 3rd measurement with 10 % of the test load at (23 ± 2) °C.

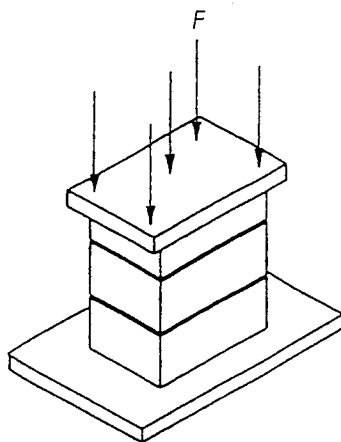


Figure 1 - Stacking test using static load

6.2 Drop test

6.2.1 General

The test shall be performed in accordance with EN 22248, using the test parameters given in 6.2.2 and 6.2.3 (see figure 2).

6.2.2 Drop test 1

- | | |
|----------------------|----------------------------------------------------------------------|
| a) Conditioning: | (-18 ± 2) °C, 4 h minimum |
| b) Test temperature: | (23 ± 2) °C |
| c) Test load: | none |
| d) Height: | 0,75 m |
| e) Number of tests: | 5, using new boxes for each sequence of drops (total number 5 boxes) |

When the test procedure exceeds 4 min, the boxes shall be reconditioned for a minimum period of 30 min.

6.2.3 Drop test 2

- | | |
|----------------------|----------------------------------------------------------------------|
| a) Conditioning: | (23 ± 2) °C, 4 h minimum |
| b) Test temperature: | (23 ± 2) °C |
| c) Test load: | none |
| d) Height: | 2,0 m |
| e) Number of tests: | 5, using new boxes for each sequence of drops (total number 5 boxes) |

6.2.4 Sequence

The sequence of drops for every test shall be:

- Impact on to whole box base;
- Impact on to lower longitudinal edge;
- Impact on to lower lateral edge;
- Impact on to one lower corner to lower diagonal line of the box base.

The box shall be positioned as if suspended from the opposite corner, edge or side to be tested (see figure 2).