SLOVENSKI STANDARD

oSIST prEN 15552:2006

01-oktober-2006

Embalaģa ï Celovita, napolnjena transportna embalaģa in tovorne enote ï Oblikovanje preskusnega naļ rta za obiļ ajno potroģniģko verigo

Packaging - Complete, filled transport packages and unit loads - Performance testing schedules for common distribution chains

Verpackung - Versandfertige Packstücke und Ladeeinheiten - Prüfpläne für gewöhnliche Transportketten

Emballage - Emballages d'expédition complets et pleins et charges unitaires - Programmes d'essai de performance pour circuits de distribution courants

Ta slovenski standard je istoveten z: **prEN 15552**

ICS:

55.180.40	Celovita, napolnjena transportna embalaža	Complete, filled transport packages

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EUROPEAN STANDARD

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ICS

English Version

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Foreword

This document (prEN 15552:2006) has been prepared by Technical Committee CEN/TC 261 “Packaging”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

Introduction

Packagings are designed for many functions in the distribution of goods like packing, handling, storage, transport, information, promotion, tamper proofing, easy opening, etc.

This European Standard is intended to assess the protection of goods through handling, storage and transport of packages.

The objective is also to check whether the packagings are just sufficient to the level of stresses, but without excess.

Alternatives are sometimes proposed to better cover actual likely hazards.

The specified testing schedules cross-reference well recognized international testing methods.

EN 13011 defines a system for the declaration of performance conditions within goods transport chains.

1 Scope

This European Standard specifies methods of deriving schedules for testing completed, filled transport packages and unit loads, representative of current distribution chains within Europe.

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 revision 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 or the publication referred to applies including amendments.

EN 14149, *Packaging – Completed, filled transport packages and unit loads – Impact test by rotational drop.*

EN XXXXX[1], *Packaging – Completed, filled transport packages and unit loads – Programmed horizontal impact test.*

ISO 2206, *Packaging – Completed, filled transport packages – Identification of parts when testing.*

ISO 2233, *Packaging – Completed, filled transport packages and unit loads – Conditioning for testing.*

ISO 2234, *Packaging – Completed, filled transport packages and unit loads – Stacking tests using a static load.*

ISO 2244, *Packaging – Completed, filled transport packages and unit loads – Horizontal impact tests.*

ISO 2247, *Packaging – Completed, filled transport packages and unit loads – Vibration tests at fixed low frequency.*

ISO 2248, *Packaging – Completed, filled transport packages – Vertical impact test by dropping.*

ISO 8768, *Packaging – Completed, filled transport packages – Toppling test.*

ISO 12048, *Packaging – Completed, filled transport packages – Compression and stacking tests using a compression tester.*

ISO 13355, *Packaging – Completed, filled transport packages and unit loads – Vertical random vibration test.*

3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply

3.1
test item
complete, filled transport package or unit load

3.2
single testing
specific test intended to check the reaction of a complete, filled transport package or unit load to a predetermined stress

[1] At draft stage.

3.3
test schedule
succession of single testings, carried out in a predetermined order on the same complete, filled transport package or unit load, in predetermined climatic conditions

4 Distribution chains and categorized shipped packages

4.1 Parcels delivery

Covers single packages intended for delivery either by express service (normally within 24 hours) such as overnight postal service, or by parcel services (generally over 48 hours).

4.2 Packages with intended shipping position

Covers packages fitted with integrated down bearers for easy handling by forklift equipments (i.e. platform, skids) and packages of products with known shipping position (i.e. refrigerator).

4.3 Palletized loads

Covers all structured stacks of packages on pallets, together with possible stability fittings (interleaves, corner posts, shrink/stretch films, etc).

4.4 Packages in maritime containers

Covers the maritime shipping of structured stacks of packages in containers, including connected road transportations.

5 Relevant single testings and options

5.1 Climatic conditioning

To reproduce the ambient climates encountered in distribution chains.

Options and rationales are given in table 1.

Table 1 — Climatic Conditioning in accordance with ISO 2233

Condition (Table 1 ISO 2233)	Temperature / Relative humidity	Rationale
7	+ 23°C / 50% r.h.	dry environment
5	+ 20°C / 65% r.h.	standard
8	+ 30°C / 85% r.h.	moist environment
4	+ 5 °C / 85% r.h.	cold products Note : Avoid dew point when not occurring during distribution.

5.2 Stacking Test

To investigate the effects of the compression stresses under static load.

The reference load is the static force exerted by the vertical loads on the lower base tier, as for storage.

Options and rationales are given in table 2.

Table 2 — Stacking tests

Testing mode	Rationale
Compressive force applied through a fixed platens type compression machine	To quickly check packaging systems known from experience.
Application of a static unguided dead load	To test packaging systems of unknown reaction.

NOTE Depending on the nature of the packaging under test, the results from guided and unguided tests might not be comparable.

5.3 Vibration Test

To investigate the effects of bouncing of packages, dynamic stressing of unit loads, and all collateral effects, induced by vibrations during transport.

Options and rationales are given in table 3.

The reference testing times of table 6 for the random vibration option may be increased at the same level to evidence particular effects.

Table 3 — Vibration tests

Testing mode	Rationale
Fixed Low Frequency according to ISO 2247	Addresses the mechanical resistance of packaging. However may overlook collateral damages not due to dynamic stressing, like abrasion. May necessitate the addition of horizontal component taking care not compromising stability during test. NOTE : Test method first published as an ISO standard in 1972.
Random vibration according to ISO 13355	Most realistic means to reproduce vibration stresses of transport, all in one. NOTE : Test method first published as an ISO standard in 2001.

5.4 Horizontal Impact Test

To investigate the effects of the dynamic horizontal impact hazards of sudden stops in transportations.

The horizontal plane and the inclined plane are equal alternative testing modes.

Test levels specified for testing packages with intended shipping position :

Level 1 : standard level;

Level 2 : reduced level when justified by experience or better distribution control.

NOTE ISO 2244 and EN XXXXX are proposed as alternative testing modes. However the testing mode of EN XXXXX is less damaging for the impact equipment.

5.5 Stability Test

To check the stability of unit loads to sudden stops during handling or transport.

The test is carried out with the horizontal impact testers.

The horizontal plane, and the inclined plane when levelled to the horizontal, are equal alternative testing modes.

See also note in 5.4.

5.6 Drop Test

To investigate the effects of the vertical impact hazards on the contents and on the integrity of the packaging.

Options and rationale are given in table 4.

Table 4 — Drop Tests

Testing mode	Rationale
Vertical drop according to ISO 2248	Addresses the hazards of handling of parcels and single packages.
Rotational drop according to EN 14149	Addresses the hazards of handling of palletized loads or assimilated cases.

Vertical drop heights of parcels with deliveries at least 48 hours are classified according to -Volume x Weight- combinations as given in table 5.

Table 5 — Classes of parcels for deliveries of at least 48 H

Class	Volume (V) Weight (W)	Vertical Drop Height (cm)
A	$V \leq 72\ dm^3$ or/and $W \leq 20\ kg$	80
B	$V > 72\ dm^3$ or/and $W > 20\ kg$	50

5.7 Toppling Test

To investigate the effects of the impact hazards incurred to goods in packages unstable on their base.

Included only when a relevant actual hazard.