NSAI Standards

Irish Standard
I.S. EN ISO 4180:2010

Packaging - Complete, filled transport packages - General rules for the compilation of performance test schedules (ISO 4180:2009)

I.S. EN ISO 4180:2010

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard – national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces:	*This document is based on:*	*Published:*
EN 24180-1:1992, EN 24180 -2:1992	EN ISO 4180:2010	8 September, 2010

This document was published under the authority of the NSAI and comes into effect on: 20 September, 2010	ICS number: 55.180.40

NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

I.S. EN ISO 4180:2010

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 4180

September 2010

ICS 55.180.40

Supersedes EN 24180-1:1992, EN 24180-2:1992

English Version

Packaging - Complete, filled transport packages - General rules for the compilation of performance test schedules (ISO 4180:2009)

Emballages - Emballages d'expédition complets et pleins - Règles générales pour l'établissement de programmes d'essais de performance (ISO 4180:2009)

Verpackung - Versandfertige Packstücke - Allgemeine Regeln für die Erstellung von Prüfplänen (ISO 4180:2009)

This European Standard was approved by CEN on 12 August 2010.

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 Management Centre 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 CEN Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN ISO 4180:2010: E

Contents

Page

Foreword.....3

Foreword

The text of ISO 4180:2009 has been prepared by Technical Committee ISO/TC 122 “Packaging” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 4180:2010 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 March 2011, and conflicting national standards shall be withdrawn at the latest by March 2011.

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

This document supersedes EN 24180-1:1992, EN 24180-2:1992.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 4180:2009 has been approved by CEN as a EN ISO 4180:2010 without any modification.

This page is intentionally left BLANK.

I.S. EN ISO 4180:2010

INTERNATIONAL STANDARD

ISO 4180

First edition
2009-02-15

Packaging — Complete, filled transport packages — General rules for the compilation of performance test schedules

Emballages — Emballages d'expédition complets et pleins — Règles générales pour l'établissement de programmes d'essais d'aptitude à l'emploi

Reference number
ISO 4180:2009(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword iv

1 Scope 1

2 Normative references 1

3 Terms and definitions 2

4 Distribution systems 2

5 Hazards 2

6 Tests 2
6.1 General 2
6.2 Appropriate application of tests 2
6.3 Levels of intensity 3

7 Determination of criteria for acceptance 3

8 Selection of package attitude 3

9 Compilation of test schedules 4
9.1 Case 1: distribution system well defined and intensity of hazards determined 4
9.2 Case 2: distribution system undefined and intensity of hazards unknown 4

10 Case 1 4
10.1 Preferred test sequence 4
10.2 Preferred test parameters 4
10.3 Atmospheric conditioning (performed in accordance with ISO 2233) 5
10.4 Low pressure tests (performed in accordance with ISO 2873) 5
10.5 Horizontal impact (performed in accordance with ISO 2244) 5
10.6 Vertical impact (performed in accordance with ISO 2248) 7
10.7 Random vibration tests (performed in accordance with ISO 13355) 9
10.7.1 Mounting of package on the test vibration table 9
10.7.2 Test power spectral densities (PSD) 9
10.8 Stacking 11
10.8.1 Stacking (performed in accordance with ISO 2234) 11
10.8.2 Stacking test using a compression tester (performed in accordance with ISO 12048) 11
10.9 Test simulating different hazards 12

11 Case 2 12

12 Documentation 15
12.1 Test specification 15
12.2 Test report 16

Annex A (informative) **Methods of quantifying damage to a package and/or its contents** 17

Bibliography 18

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 4180 was prepared by Technical Committee ISO/TC 122, *Packaging*, Subcommittee SC 3, *Performance requirements and tests for means of packaging, packages and unit loads (as required by ISO/TC 122)*.

This first edition of ISO 4180 cancels and replaces ISO 4180-1:1980 and ISO 4180-2:1980.

Packaging — Complete, filled transport packages — General rules for the compilation of performance test schedules

1 Scope

This International Standard establishes general rules to be used for the compilation of performance test schedules for complete, filled transport packages intended for use within any distribution system except for the packages used for dangerous goods.

For a known distribution environment with experimental data available (case 1), this International Standard provides guide lines for the compilation of appropriate test schedules.

For an unknown distribution environment (case 2), this International Standard provides test schedules in dependence of the test specimen mass and forecast destination.

This International Standard also gives the factors to be considered in assessing the criteria of acceptance of such packages after they have been subjected to a package performance test schedule.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 2206, *Packaging — Complete, filled transport packages — Identification of parts when testing*

ISO 2233, *Packaging — Complete, filled transport packages and unit loads — Conditioning for testing*

ISO 2234, *Packaging — Complete, filled transport packages and unit loads — Stacking tests using a static load*

ISO 2244, *Packaging — Complete, filled transport packages and unit loads — Horizontal impact tests*

ISO 2248, *Packaging — Complete, filled transport packages — Vertical impact test by dropping*

ISO 2873, *Packaging — Complete, filled transport packages and unit loads — Low pressure test*

ISO 4178, *Complete, filled transport packages — Distribution trials — Information to be recorded*

ISO 8318, *Packaging — Complete, filled transport packages and unit loads — Sinusoidal vibration tests using a variable frequency*

ISO 12048, *Packaging — Complete, filled transport packages — Compression and stacking tests using a compression tester*

ISO 13355:2001, *Packaging — Complete, filled transport packages and unit loads — Vertical random vibration test*

EN 14149, *Packaging — Complete, filled transport packages and unit loads — Impact test by rotational drop*