This is a free page sample. Access the full version online.

NSAI Standards

Irish Standard
I.S. EN ISO 23953-2:2005

Refrigerated display cabinets - Part 2: Classification, requirements and test conditions (ISO 23953-2:2005)

© NSAI 2005 No copying without NSAI permission except as permitted by copyright law.

This is a free page sample. Access the full version online.

I.S. EN ISO 23953-2:2005

Incorporating amendments/corrigenda/National Annexes issued since publication:
EN ISO 23953-2:2005/A1:2012

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 441-2:1994, EN 441-3:1994, EN 441-	EN ISO 23953-2:2005	15 October, 2005

This document was published under the authority of the NSAI and comes into effect on: 7 December, 2005	ICS number: 97.130.20

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

This is a free page sample. Access the full version online.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 23953-2:2005/A1

February 2012

ICS 97.130.20

English Version

Refrigerated display cabinets - Part 2: Classification, requirements and test conditions - Amendment 1 (ISO 23953-2:2005/Amd 1:2012)

Meubles frigorifiques de vente - Partie 2: Classification, exigences et méthodes d'essai - Amendement 1 (ISO 23953-2:2005/Amd 1:2012)

Verkaufskühlmöbel - Teil 2: Klassifizierung, Anforderungen und Prüfbedingungen - Änderung 1 (ISO 23953-2:2005/Amd 1:2012)

This amendment A1 modifies the European Standard EN ISO 23953-2:2005; it was approved by CEN on 14 February 2012.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This amendment 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-CENELEC 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, Turkey and United Kingdom.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2012 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN ISO 23953-2:2005/A1:2012: E

This is a free page sample. Access the full version online.

Contents

Page

Foreword.....3

This is a free page sample. Access the full version online.

Foreword

This document (EN ISO 23953-2:2005/A1:2012) has been prepared by Technical Committee CEN/TC 44 “Commercial refrigerated cabinets, catering refrigerating appliances and industrial refrigeration", the secretariat of which is held by UNI, in collaboration with Technical Committee ISO/TC 86 "Refrigeration and air-conditioning".

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 August 2012, and conflicting national standards shall be withdrawn at the latest by August 2012.

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.

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, Turkey and the United Kingdom.

This is a free page sample. Access the full version online.

I.S. EN ISO 23953-2:2005

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 23953-2

October 2005

ICS 97.130.20

Supersedes EN 441-2:1994, EN 441-3:1994, EN 441-4:1994, EN 441-5:1996, EN 441-6:1994, EN 441-7:1994, EN 441-8:1994, EN 441-9:1994, EN 441-10:1994, EN 441-11:1994, EN 441-12:1997.

English Version

Refrigerated display cabinets - Part 2: Classification, requirements and test conditions (ISO 23953-2:2005)

Meubles frigorifiques de vente - Partie 2: Classification, exigences et méthodes d'essai (ISO 23953-2:2005)

Verkaufskühlmöbel - Teil 2: Klassifizierung, Anforderungen und Prüfbedingungen (ISO 23953-2:2005)

This European Standard was approved by CEN on 26 September 2005.

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.

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

Management Centre: rue de Stassart, 36 B-1050 Brussels

© 2005 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN ISO 23953-2:2005: E

This is a free page sample. Access the full version online.

Foreword

This document (EN ISO 23953-2:2005) has been prepared by Technical Committee CEN/TC 44 "Household refrigerating appliances and commercial refrigeration equipment", the secretariat of which is held by UNI, in collaboration with Technical Committee ISO/TC 86 "Refrigeration and air-conditioning".

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 2006, and conflicting national standards shall be withdrawn at the latest by April 2006.

This document supersedes EN 441-2:1994, EN 441-3:1994, EN 441-4:1994, EN 441-5:1996, EN 441-6:1994, EN 441-7:1994, EN 441-8:1994, EN 441-9:1994, EN 441-10:1994, EN 441-11:1994, EN 441-12:1997.

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.

This is a free page sample. Access the full version online.

I.S. EN ISO 23953-2:2005

INTERNATIONAL STANDARD

ISO 23953-2

First edition
2005-10-15

Refrigerated display cabinets —

Part 2: Classification, requirements and test conditions

Meubles frigorifiques de vente —

Partie 2: Classification, exigences et méthodes d'essai

Reference number
ISO 23953-2:2005(E)

© ISO 2005

This is a free page sample. Access the full version online.

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 2005

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

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

This is a free page sample. Access the full version online.

Contents

Page

Foreword v

1 Scope 1

2 Normative references 1

3 Terms, definitions, symbols and abbreviated terms 1
3.1 General 2
3.2 Compression-type refrigeration systems 3
3.3 Indirect refrigeration-type systems 3

4 Requirements 4
4.1 Construction 4
4.1.1 General 4
4.1.2 Materials 5
4.1.3 Thermal insulation 6
4.1.4 Refrigerating system 6
4.1.5 Electrical components 7
4.1.6 Temperature display 7
4.2 Operating characteristics 9
4.2.1 Absence of odour and taste 9
4.2.2 Classification according to temperature 9
4.2.3 Defrosting 9
4.2.4 Water vapour condensation 10
4.2.5 Energy consumption 10

5 Tests 10
5.1 General 10
5.2 Tests outside test room 10
5.2.1 Seal test for doors and lids 10
5.2.2 Linear dimensions, areas and volumes 11
5.3 Tests inside test room 11
5.3.1 General conditions 11
5.3.2 Preparation of test cabinet and general test procedures 20
5.3.3 Temperature test 41
5.3.4 Water vapour condensation test 44
5.3.5 Electrical energy consumption test 45
5.3.6 Heat extraction rate measurement when condensing unit is remote from cabinet 45

6 Test report 54
6.1 General 54
6.2 Tests outside test room 54
6.2.1 Seal test of doors and lids 54
6.2.2 Linear dimensions, areas and volumes 55
6.2.3 Test for absence of odour and taste (if applicable) 55
6.3 Tests inside test room 55
6.3.1 General test conditions 55
6.3.2 Cabinet preparation 56
6.3.3 Temperature test 56
6.3.4 Water vapour condensation test 57
6.3.5 Electrical energy consumption test 57
6.3.6 Heat extraction rate measurement when the condensing unit is remote from the cabinet 58

7 Marking 59
7.1 Load limit 59
7.2 Marking plate 60

© ISO 2005 – All rights reserved

This is a free page sample. Access the full version online.

7.3 Information to be supplied by the manufacturer **60**

Annex A (normative) **Total display area (TDA)** **62**

Annex B (normative) **Visibility of products by Arc method (VPA)** **69**

Annex C (informative) **Comparison between laboratory and in-store conditions** **76**

Annex D (informative) **Test for absence of odour and taste** **77**

Bibliography **79**

© ISO 2005 – All rights reserved

This is a free page sample. Access the full version online.

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 23953-2 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 44, *Household refrigerating appliances and commercial refrigeration equipment*, in collaboration with Technical Committee ISO/TC 86, *Refrigeration and air-conditioning*, Subcommittee SC 7, *Testing and rating of commercial refrigerated display cabinets*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition of ISO 23953-2, together with the first edition of ISO 23953-1, cancels and replaces ISO 1992-1:1974, ISO 1992-4:1974, ISO 1992-5:1974, ISO 1992-6:1974, ISO 5160-1:1979 and ISO 5160-2:1980, of which it constitutes a technical revision.

ISO 23953 consists of the following parts, under the general title *Refrigerated display cabinets*:

— *Part 1: Vocabulary*

— *Part 2: Classification, requirements and test conditions*

© ISO 2005 – All rights reserved

This is a free page sample. Access the full version online.

This is a free page sample. Access the full version online.

Refrigerated display cabinets —

Part 2:
Classification, requirements and test conditions

1 Scope

This part of ISO 23953 specifies requirements for the construction, characteristics and performance of refrigerated display cabinets used in the sale and display of foodstuffs. It specifies test conditions and methods for checking that the requirements have been satisfied, as well as classification of the cabinets, their marking and the list of their characteristics to be declared by the manufacturer. It is not applicable to refrigerated vending machines or cabinets intended for use in catering or similar non-retail applications; nor does it cover the choice of the types of foodstuffs chosen to be displayed in the cabinets.

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 817, *Refrigerants — Designation system*

ISO 9050, *Glass in building — Determination of light transmittance, solar direct transmittance, total solar energy transmittance and ultraviolet transmittance, and related glazing factors*

ISO 23953-1:2005, *Refrigerated display cabinets — Part 1: Vocabulary*

IEC 60335-2:89, *Safety of household and similar electrical appliance — Part 2: Particular requirements for commercial refrigerating appliances with an incorporated or remote refrigerant condensing unit*

EN 378-2, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 2: Design, construction, testing, marking and documentation*

EN 60335-1, *Safety of household and similar electrical appliances — Part 1: General requirements*

3 Terms, definitions, symbols and abbreviated terms

For the purposes of this document, the terms and definitions given in ISO 23953-1 and the following symbols and abbreviated terms apply.

© ISO 2005 – All rights reserved

SAI GLOBAL

This is a free preview. Purchase the entire publication at the link below:

Product Page

Looking for additional Standards? Visit Intertek Inform Infostore

Learn about LexConnect, All Jurisdictions, Standards referenced in Australian legislation