

Furniture — Assessment of surface resistance to cold liquids

ICS 97.140

National foreword

This British Standard is the UK implementation of EN 12720:2009+A1:2013. It supersedes BS EN 12720:2009 which is withdrawn.

The start and finish of text introduced or altered by amendment is indicated in the text by tags. Tags indicating changes to CEN text carry the number of the CEN amendment. For example, text altered by CEN amendment A1 is indicated by A1 A1.

The UK participation in its preparation was entrusted by Technical Committee FW/0, Furniture, to Subcommittee FW/0/1 Common Test Methods for Furniture.

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 March 2009

© The British Standards Institution 2014. Published by BSI Standards Limited 2014

Amendments/corrigenda issued since publication

Date	Comments
28 February 2014	Implementation of CEN amendment A1:2013

English Version

Furniture - Assessment of surface resistance to cold liquids

Meubles - Évaluation de la résistance de la surface aux
liquides froids

Möbel - Bewertung der Beständigkeit von Oberflächen
gegen kalte Flüssigkeiten

This European Standard was approved by CEN on 3 January 2009 and includes Amendment 1 approved by CEN on 3 September 2013.

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-CENELEC 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-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, Former Yugoslav Republic of Macedonia, 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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions	4
4 Principle.....	5
5 Apparatus and materials.....	5
5.1 Discs	5
5.2 Glass Petri dish	5
5.3 Tweezers.....	5
5.4 Absorbent paper or tissue	5
5.5 Cleaning cloth	5
5.6 Diffuse light source.....	5
5.7 Test liquid.....	5
5.8 Deionized or distilled water	5
5.9 Cleansing solution	5
5.10 Cleansing agent	5
6 Preparation and conditioning	6
6.1 Conditioning.....	6
6.2 Test surface.....	6
7 Test procedure	6
7.1 Testing.....	6
7.2 Test periods.....	7
8 Examination of the test panel.....	7
9 Assessment of results	8
10 Test report	8
Annex A (normative) Liquids for testing surface.....	10
A.1 General	10
A.2 Liquids.....	10
Annex B (informative) Significant technical changes in revised edition of this standard	13
Bibliography.....	14

Tables

Table 1 — Test periods.....	7
Table 2 — Descriptive numerical rating code.....	8
Table A.1 — Liquids.....	10

A1 deleted text A1

Foreword

This document (EN 12720:2009+A1:2013) has been prepared by Technical Committee CEN/TC 207 “Furniture”, the secretariat of which is held by UNI.

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 2014, and conflicting national standards shall be withdrawn at the latest by April 2014.

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 includes Amendment 1 approved by CEN on 2013-09-03.

This document supersedes A1 EN 12720:2009 A1.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

Informative A1 Annex B A1 provides details of significant technical changes between this European Standard and the previous edition.

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, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, 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.

1 Scope

This European standard specifies a method for the assessment of the resistance to cold liquids of all rigid furniture surfaces regardless of materials.

It does not apply to leather and textile surfaces.

The test is intended to be carried out on a part of the finished furniture, but can be carried out on test panels of the same material, finished in an identical manner to the finished product, and of a size sufficient to meet the requirements of the test.

The test shall be carried out on unused surfaces.

The type and number of test liquids (Annex A) and the test periods (Table 1) shall be stated in requirement specifications or shall be agreed upon between purchaser and supplier or interested parties.

Annex A (normative) includes a selection of suitable test liquids. Other liquids can be used if required.

A1 deleted text **A1**

2 Normative references

A1 The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies. **A1**

EN ISO 105 – E04:1996, *Textiles – Tests for colour fastness – Part E04: Colour fastness to perspiration (ISO 105-E04:1994)*

ISO 1065:1991, *Non-ionic surface-active agents obtained from ethylene oxide and mixed non-ionic surface-active agents – Determination of cloud point*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

test panel

panel including the test surface

NOTE It may be cut from a finished item of furniture or it may be a separate panel produced in the same manner as the finished item of furniture.

3.2

test surface

part of the test panel

3.3

test area

part of the test surface under the glass Petri dish (5.2)

4 Principle

Discs saturated with the test liquids are placed on the test surface and covered by a glass Petri dish. After a specified test period, the discs are removed and the test surface is left for 16 h to 24 h. Thereafter, the test surface is cleaned and examined for damages such as discolouration, change in gloss, change in colour, blistering and swelling. The test result is stated in a numerical rating code.

5 Apparatus and materials

5.1 Discs

Discs with a diameter of (25 ± 2) mm, of soft filter paper with a grammage of 400 g/m² to 500 g/m², without colouring agent and glue.

5.2 Glass Petri dish

Glass Petri dish with ground edges and without lips, external diameter (40 ± 2) mm, and height (25 ± 2) mm.

5.3 Tweezers

5.4 Absorbent paper or tissue

5.5 Cleaning cloth

White soft absorbent cloth.

5.6 Diffuse light source

Light source providing evenly diffused light giving an illumination on the test surface of (1200 ± 400) lx. This may either be diffused daylight or be diffused artificial daylight.

NOTE The daylight should be unaffected by surrounding trees, etc. When artificial daylight is used it is recommended that it should have a correlated colour temperature of (6500 ± 50) K and an R_a greater than 92, by using a colour matching booth in accordance with EN ISO 3668:2001. [1]

5.7 Test liquid

Examples of the test liquids are given in Annex A (normative).

5.8 Deionized or distilled water

5.9 Cleansing solution

Solution containing 15 ml/l of the cleansing agent (5.10) in water (5.8). The solution shall be discarded after one day.

5.10 Cleansing agent

Cleansing agent of the following composition:

- a) 12,5% (m/m) of a sodium primary C₁₀ to C₁₄ polymer alkyl aryl sulphonate,

- b) 12,5% (m/m) polyethoxylated derivatives of primary or secondary C₈ to C₁₆ alcohols with 5 to 15 ethoxylated groups having a cloud point of 25 °C to 75 °C in 1% (m/m) aqueous solution (determination of cloud point is described in ISO 1065:1991),
- c) 5,0% (m/m) ethanol,
- d) 70% (m/m) water (5.8).

The cleansing agent shall be stored in a glass bottle in a cool dark place and shall be used within one year of the day of preparation.

6 Preparation and conditioning

6.1 Conditioning

Conditioning of test surface shall begin at least one week before testing and shall be carried out in air at a temperature of (23 ± 2) °C and relative humidity of (50 ± 5) %.

The conditioning time shall be stated in the test report.

6.2 Test surface

The test surface shall be substantially flat and of a size sufficient to meet the requirements of Clause 7 regarding the separation of the discs (5.1).

7 Test procedure

7.1 Testing

Immediately after conditioning, the test shall be carried out in a test atmosphere of (23 ± 2) °C.

The test surface shall be placed horizontally. It shall be tested with the chosen test liquids at points which shall be not less than 60 mm apart, from centre to centre, and if possible, with centres not less than 40 mm from any edge of the test surface. If there is any reason to suppose that the properties of the test surface may vary, two tests shall be carried out.

The test surface shall be lightly wiped with a cleaning cloth (5.5) before testing.

Use clean tweezers for each type of liquid.

Immerse a disc (5.1) into the test liquid (5.7) between 30 s and 60 s, lift with the tweezers (5.3) and quickly wipe off the edge of the disc once against the edge of the vessel. Quickly place it on the test surface and immediately cover with an inverted glass Petri dish (5.2). The filter paper shall not be in contact with the edge of the glass Petri dish.

Record the position of each test liquid.

After the test period, remove the glass Petri dish and lift off the disc with the tweezers. Do not remove fibres of paper adhering to the test surface. Soak up any remaining test liquid with the absorbent paper (5.4) without rubbing and leave the test surface undisturbed for 16 h to 24 h in the test atmosphere without covering it. The test surface shall be sufficiently protected against dust without limiting in any way the free access of air.

After the above 16 h to 24 h, wash the test surface by lightly rubbing it with the cleaning cloth (5.5) soaked first in cleansing solution (5.9) and then only water (5.8). Finally wipe the surface lightly with a dry cleaning cloth (5.5).

Leave the test surface undisturbed, without covering it, for 30 min in the test atmosphere.

7.2 Test periods

Test periods shall be selected from the Table 1. The periods have been chosen to simulate the range of times that may elapse before a liquid, applied to the surface of furniture, would be removed.

Table 1 — Test periods

Period	Examples under consideration
10 s	Immediate removal
2 min	Quick removal
10 min	After a short time
1 h	After a meal or similar
6 h	After work or other activity
16 h	As soon as possible next day
24 h	After one day
7 days	After one week
28 days	Long-term action

8 Examination of the test panel

Carefully examine the test surface using the light source (5.6), for changes caused by the test liquids, e. g. discoloration, change in gloss and colour, blistering, swelling and other defects. For this purpose illuminate the surface separately and examine from different angles, directions and planes, including angle combinations such that the light is reflected from the test surface and towards the observer's eye. The viewing distance shall be 0,25 m to 1,0 m.

Changes caused by the test liquids shall also be determined by touching the surface.

9 Assessment of results

Rate the test surfaces by comparing the test area with the area surrounding it for each liquid according to Table 2:

Table 2 — Descriptive numerical rating code

Numerical rating	Description
5	No change test area indistinguishable from adjacent surrounding area
4	Minor change test area distinguishable from adjacent surrounding area, only when the light source is mirrored on the test surface and is reflected towards the observer's eye, e. g. discoloration, change in gloss and colour no change in the surface structure, e.g. swelling, fibre raising, cracking, blistering
3	Moderate change test area distinguishable from adjacent surrounding area, visible in several viewing directions, e. g. discoloration, change in gloss and colour no change in the surface structure, e.g. swelling, fibre raising, cracking, blistering
2	Significant change test area clearly distinguishable from adjacent surrounding area, visible in all viewing directions, e. g. discoloration, change in gloss and colour, and / or structure of the surface slightly changed, e.g. swelling, fibre raising, cracking, blistering
1	Strong change the structure of the surface being distinctly changed and / or discoloration, change in gloss and colour, and / or the surface material being totally or partially removed, and / or the filter paper adhering to the surface

Each test surface shall be rated by an experienced observer.

In cases of doubt, three observers shall be required. All observers shall have good colour vision. In case of three observers, the reported rating for the test surface shall be the average to the nearest nominal value.

Duplicate tests shall be assessed and reported separately.

10 Test report

The test report shall include at least the following information:

- reference to this European Standard;
- description of the test panel (relevant data);
- the test liquid or liquids (relevant data);

- d) conditioning time;
- e) the test period or periods;
- f) the assessment of each test surface in accordance with Clause 9;
- g) if liquids (Table A.1) in *italic type* are used, source should be described;

A1 *deleted text* **A1**

- h) if applicable, additional information regarding type of damage;
- i) any deviations from this European standard;
- j) name and address of the test facility;
- k) date of the test.

Annex A (normative)

Liquids for testing surface

A.1 General

This annex gives examples of liquids, generally available in the home and places of work, which are suitable for assessment of the resistance to liquids of the surface of furniture. Any other agreed liquids may be used.

A.2 Liquids

The purity of the chemicals shall be at least equivalent to recognized analytical grade where available.

Deionized or distilled water shall be used for the preparation of aqueous solutions.

The test liquid shall be stored in a sealed glass bottle in a dark place and shall be conditioned in the test atmosphere prior to use.

Table A.1 — Liquids

Designation	No.	Description
Acetic acid	1.1	10% (<i>m/m</i>) aqueous solution
	1.2	4,4% (<i>m/m</i>) aqueous solution
Acetone	2	---
Ammonia solution ^a	3	10% (<i>m/m</i>) aqueous solution
Citric acid	4	10% (<i>m/m</i>) aqueous solution
Cleansing agent	5	See 5.11
Coffee ^b	6	40 g of instant coffee, freeze dried, in 1 l of boiling water
Disinfectant	7.1	Phenol derivatives, 0,5% aqueous solution, chlorinated alkyl, cycloalkyl, aryl phenols
	7.2	Chloramine-T, 2,5% aqueous solution of n-chlore-paratoluene sulfonamide sodium salt
Endorsing ink	8	---
Ethanol, non denatured	9.1	96% (V/V)
	9.2	48% aqueous solution (V/V)
Ethyl acetate and butyl acetate	10	Proportion 1:1 (V/V)
Milk, condensed ^c	11	10% fat content
Olive oil	12	---
Paraffin oil	13	Medical grade. <i>Paraffinum Liquidum</i>
Sodium carbonate	14.1	10% (<i>m/m</i>) aqueous solution

Table A.1 — Liquids

Designation	No.	Description
	14.2	0,5% (<i>m/m</i>) aqueous solution
Sodium chloride	15.1	15% (<i>m/m</i>) aqueous solution
	15.2	5% (<i>m/m</i>) aqueous solution
<i>Tea</i> ^d	16	10 g of tea leaves is infused with 1 l of boiling water. The tea is allowed to draw for 5 min without being stirred, after which it shall be decanted
Water	17	Deionized or distilled
Perspiration, acid	18	according to EN ISO 105-E04:1996
Perspiration, basic	19	according to EN ISO 105-E04:1996
NOTE Liquids in <i>italic type</i> cannot be chemically described		
^a The liquid shall be discarded after one month. ^{b d} The liquid shall be discarded after four hours. ^c The liquid shall be discarded after one day.		

A1 *deleted text* **A1**

Annex B (informative)

Significant technical changes in revised edition of this standard

Significant technical differences between this document and EN 12720:1997 are as follows:

a) change in the illumination of the diffuse light source; it is now (1200 ± 400) lx;

A1 *deleted text* A1

b) changes in the descriptive numerical rating code: new descriptions apply.

Bibliography

- [1] EN ISO 3668:2001, *Paints and varnishes – Visual comparison of the colour of paints (ISO 3668:1998)*

This page deliberately set blank

British Standards Institution (BSI)

BSI is the national body responsible for preparing British Standards and other standards-related publications, information and services.

BSI is incorporated by Royal Charter. British Standards and other standardization products are published by BSI Standards Limited.

About us

We bring together business, industry, government, consumers, innovators and others to shape their combined experience and expertise into standards-based solutions.

The knowledge embodied in our standards has been carefully assembled in a dependable format and refined through our open consultation process. Organizations of all sizes and across all sectors choose standards to help them achieve their goals.

Information on standards

We can provide you with the knowledge that your organization needs to succeed. Find out more about British Standards by visiting our website at bsigroup.com/standards or contacting our Customer Services team or Knowledge Centre.

Buying standards

You can buy and download PDF versions of BSI publications, including British and adopted European and international standards, through our website at bsigroup.com/shop, where hard copies can also be purchased.

If you need international and foreign standards from other Standards Development Organizations, hard copies can be ordered from our Customer Services team.

Subscriptions

Our range of subscription services are designed to make using standards easier for you. For further information on our subscription products go to bsigroup.com/subscriptions.

With **British Standards Online (BSOL)** you'll have instant access to over 55,000 British and adopted European and international standards from your desktop. It's available 24/7 and is refreshed daily so you'll always be up to date.

You can keep in touch with standards developments and receive substantial discounts on the purchase price of standards, both in single copy and subscription format, by becoming a **BSI Subscribing Member**.

PLUS is an updating service exclusive to BSI Subscribing Members. You will automatically receive the latest hard copy of your standards when they're revised or replaced.

To find out more about becoming a BSI Subscribing Member and the benefits of membership, please visit bsigroup.com/shop.

With a **Multi-User Network Licence (MUNL)** you are able to host standards publications on your intranet. Licences can cover as few or as many users as you wish. With updates supplied as soon as they're available, you can be sure your documentation is current. For further information, email bsmusales@bsigroup.com.

BSI Group Headquarters

389 Chiswick High Road London W4 4AL UK

Revisions

Our British Standards and other publications are updated by amendment or revision.

We continually improve the quality of our products and services to benefit your business. If you find an inaccuracy or ambiguity within a British Standard or other BSI publication please inform the Knowledge Centre.

Copyright

All the data, software and documentation set out in all British Standards and other BSI publications are the property of and copyrighted by BSI, or some person or entity that owns copyright in the information used (such as the international standardization bodies) and has formally licensed such information to BSI for commercial publication and use. Except as permitted under the Copyright, Designs and Patents Act 1988 no extract may be reproduced, stored in a retrieval system or transmitted in any form or by any means – electronic, photocopying, recording or otherwise – without prior written permission from BSI. Details and advice can be obtained from the Copyright & Licensing Department.

Useful Contacts:

Customer Services

Tel: +44 845 086 9001

Email (orders): orders@bsigroup.com

Email (enquiries): cservices@bsigroup.com

Subscriptions

Tel: +44 845 086 9001

Email: subscriptions@bsigroup.com

Knowledge Centre

Tel: +44 20 8996 7004

Email: knowledgecentre@bsigroup.com

Copyright & Licensing

Tel: +44 20 8996 7070

Email: copyright@bsigroup.com