BS EN 15186:2024

BSI Standards Publication

Furniture — Assessment of the surface resistance to scratching

Documents
Document Sharing Hub

Full document details: BS EN 15186:2024

National foreword

This British Standard is the UK implementation of EN 15186:2024. It supersedes BS EN 15186:2012, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee FW/0, Furniture.

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

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2024
Published by BSI Standards Limited 2024

ISBN 978 0 539 20971 6

ICS 97.140

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 2024.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 15186

March 2024

ICS 97.140

Supersedes EN 15186:2012

English Version

Furniture - Assessment of the surface resistance to scratching

Ameublement - Evaluation de la résistance de la surface à la rayure

Möbel - Bewertung der Kratzfestigkeit von Oberflächen

This European Standard was approved by CEN on 8 January 2024.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2024 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN 15186:2024 E

Documents
Document Sharing Hub

Full document details: BS EN 15186:2024

Contents

Page

European foreword ... 3
1 Scope ... 4
2 Normative references ... 4
3 Terms and definitions ... 4
4 Linear method (method A) ... 5
4.1 Principle ... 5
4.2 Apparatus and materials ... 6
4.2.1 Test apparatus ... 6
4.2.2 Equipment parameters ... 6
4.2.3 Scratching tip ... 6
4.2.4 Optical measurement equipment ... 7
4.2.5 Suitable illumination ... 7
4.2.6 Conditioning chamber ... 7
4.2.7 Cleaning cloth ... 7
4.3 Preparation and conditioning ... 7
4.3.1 Conditioning ... 7
4.3.2 Test surface ... 7
4.3.3 Checking of the tip's geometry ... 7
4.4 Test procedure ... 8
4.4.1 General ... 8
4.4.2 Scratching of test area ... 8
4.4.3 Determination of scratching resistance ... 8
4.5 Assessment of results ... 10
5 Circular method (method B) ... 10
5.1 Principle ... 10
5.2 Apparatus and materials ... 10
5.2.1 Test apparatus ... 10
5.2.2 Viewing cabinet ... 12
5.2.3 Template ... 13
5.2.4 Conditioning chamber ... 14
5.2.5 Cleaning cloth ... 14
5.3 Preparation and conditioning ... 14
5.3.1 Conditioning ... 14
5.3.2 Test surface ... 14
5.4 Test procedure ... 15
5.5 Assessment of results ... 15
5.6 Expression of results ... 16
6 Test report ... 16
Annex A (informative) Checking of the tip, calculation of final results and example of protocol to record the results ... 18
A.1 Checking of the tip ... 18
A.2 Calculation of final result ... 18
A.3 Example of protocol to record the results ... 20
Bibliography ... 21

Documents
Document Sharing Hub
Full document details: BS EN 15186:2024

European foreword

This document (EN 15186:2024) 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 September 2024, and conflicting national standards shall be withdrawn at the latest by September 2024.

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

This document supersedes EN 15186:2012.

Compared with EN 15186:2012, the following modifications have been made:

a) subclauses of Clause 4, Linear method (method A), revised;

b) subclauses of Clause 5, Circular method (method B), revised;

c) Annex B deleted; the significant changes in the revised edition are now given in the European foreword;

d) Bibliography updated.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

AVA Documents
Document Sharing Hub

Full document details: BS EN 15186:2024

1 Scope

This document specifies a method for the assessment of the surface resistance to different kinds of visible scratches. It relates to the rigid surfaces of all finished products, regardless of their material.

It does not apply to finishes on leather and fabrics.

Method A is suitable for all types of surface coatings and coverings except for melamine faced boards (according to EN 14322) and HPL (according to EN 438-1). It simulates measurable penetrating and/or deforming scratches.

Method B is suitable for all types of surfaces. It simulates first visible traces (e.g. scratches, marks) that can also be a change in the gloss.

The test is intended to be carried out on a part of finished furniture. It can, however, 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.

It is essential that the test be carried out on unused surfaces.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN ISO 1518-1, *Paints and varnishes — Determination of scratch resistance — Part 1: Constant-loading method (ISO 1518-1)*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at https://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
test surface
part of the test panel

3.2
test panel
panel including the test surface

Note 1 to entry: The panel 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.

3.3
test area
part of the test surface under the equipment, where the measurement is carried out

Documents
Document Sharing Hub
Full document details: BS EN 15186:2024

3.4
scratching tip
tool with a point of defined geometry

Note 1 to entry: See 4.2.3 for method A.

Note 2 to entry: See 5.2.1.6 for method B.

3.5

scratching trace

3.5.1
method A
visible and measurable scratch on the tested surface which is produced under the specified load of the scratching tip; the shapes of the traces' edges can be different depending on the substrate and coating type as shown in Table 2

3.5.2
method B
first visible traces on the tested surface (e.g. scratches, marks) which may also be a change in the gloss

3.6

scratching resistance

3.6.1
method A
minimum load, in N, applied to the scratching tip, which produces a measurable trace of the width (W) of ≥ 0,30 mm

3.6.2
method B
minimum load, in N, applied to the scratching tip, which produces a continuous visible trace in at least six of eight slots of the template

3.7
preliminary assessments of scratching resistance (method A)
assessment of minimum load causing the specified width of scratch on test surface

3.8
intermediate assessment of scratching resistance (method A)
mean value of preliminary assessments of test surface

3.9
final result of scratching resistance (method A)
mean value of intermediate assessments of three test surfaces

Note 1 to entry: See Figure A.2 in the informative Annex A.

4 Linear method (method A)

4.1 Principle

Surface scratching resistance is defined as the minimum load in N (Newton) applied to the tip with specified geometry, which produces a specified scratch width (see 4.4.2).

Documents
Document Sharing Hub
Full document details: BS EN 15186:2024

The width of the scratching trace is the result of the assessment of the series of scratches produced by the tip.

4.2 Apparatus and materials

4.2.1 Test apparatus

4.2.1.1 Equipment for linear, without hand movement of the scratching tip or the test surface, according to the principle of EN ISO 1518-1.

4.2.2 Equipment parameters

Technical parameters of the apparatus shall be as specified in Table 1.

Table 1 — Technical parameters

Parameter	Description/values
Tip/test surface movement	Linear
Load range (N)	1,0 to 20,0
Increment of load (N)	1,0 ± 0,1
Speed of the tip's/test surface movement (mm/s)	20 ± 10
Travel length of the tip or test surface (mm)	Minimum 20

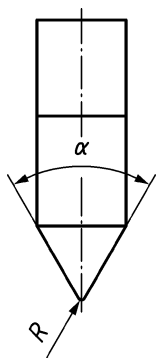
4.2.3 Scratching tip

Scratching tip made of diamond, with a radius (R) of (0,30 ± 0,01) mm.

The coupling between the spherical part of the tool and the truncated cone section shall allow the width of the trace produced by the tool on the test area to be higher than 0,30 mm, without disturbing this truncated cone section.

An example of this tool is shown in Figure 1.

The tip shall be mounted in the holder with the flat part on the leading side of the shank facing the working direction.



Key

α tip's angle α = (60,0 ± 1,0)°

R radius of tip's rounded part R = (0,30 ± 0,01) mm

Figure 1 — Scratching tip of the cone type

Documents
Document Sharing Hub
Full document details: BS EN 15186:2024