



SLOVENSKI STANDARD
SIST-TS CEN/TS 15185:2006

01-februar-2006

Pohištvo – Ugotavljanje odpornosti površine proti obrabi

Furniture - Assessment of the surface resistance to abrasion

Möbel - Bewertung der Abriebfestigkeit von Oberflächen

Ameublement - Evaluation de la résistance de la surface à l'abrasion

Ta slovenski standard je istoveten z: CEN/TS 15185:2005

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ICS:

97.140

Pohištvo

Furniture

SIST-TS CEN/TS 15185:2006

en,fr,de

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CEN/TS 15185

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ICS 97.140

English Version

Furniture - Assessment of the surface resistance to abrasion

Ameublement - Evaluation de la résistance de la surface à l'abrasion

Möbel - Bewertung der Abriebfestigkeit von Oberflächen

This Technical Specification (CEN/TS) was approved by CEN on 1 October 2005 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This Technical Specification (CEN/TS 15185:2005) has been prepared by Technical Committee CEN/TC 207 “Furniture”, the secretariat of which is held by UNI.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this CEN Technical Specification: 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.

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CEN/TS 15185:2005 (E)**1 Scope**

This Technical Specification specifies a method for the assessment of the abrasion resistance of foil, laminate and melanine faced boards, and clear of pigmented lacquers.

It does not apply to finishes on leather and fabrics.

It does not apply to writing boards, covered by EN 14434.

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

EN ISO 6506-1, *Metallic materials - Brinell hardness test - Part 1: Test method (ISO 6506-1:1999)*

ISO 9352, *Plastics - Determination of resistance to wear by abrasive wheels*

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3 Terms and definitions

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

3.1**test unit**

finished item of furniture

3.2**test surface**

part of the test unit, where the test area is included

3.3**test panel**

panel produced in the same way as the test surface; it should be used when it is not possible to carry out the test directly on the test surface

3.4**test area**

area under the wheels covered by the abrasion paper, see 5.3

3.5**test atmosphere**

atmosphere where the test is carried out

4 Principle

The test simulates the ability of the furniture surface under test, to resist abrasive wear-through. Abrasion is achieved by rotating a specimen in contact with a pair of loaded cylindrical wheels covered with abrasive paper. The wheels are positioned so that their cylindrical faces are equidistant from the specimen's axis of rotation but not tangential to it. As they are turned by the rotating specimen they abrade an annular track on the specimen's surface. The number of revolutions of the specimen required to cause one defined degree of abrasion, is used as measurement of resistance to surface wear.

5 Apparatus and materials

5.1 Cleaning cloth

White soft absorbent cloth.

5.2 Calibration plates

Taber S-34 or equivalent, having a thickness of $(0,8 \pm 0,1)$ mm and a Brinell hardness of (48 ± 2) when tested in accordance with EN ISO 6506-1, except that the ball diameter shall be 5 mm and the load 360 N.

5.3 Abrasion paper strips

Taber S-42 or equivalent, of width $(12,7 \pm 0,1)$ mm and length about 160 mm, according to the following specification:

- a) Paper of grammage from 70 g/m^2 to 100 g/m^2 ;
- b) open coated 180 grit powdered aluminium oxide (Al_2O_3) having a particle size such that it will pass through a sieve of aperture $100 \mu\text{m}$ and remain on a sieve having an aperture of $63 \mu\text{m}$;
- c) adhesive backing.

5.4 Test apparatus

As specified in ISO 9352 with following deviations:

NOTE 1 A suitable machine is available from Taber Acquisition Corp., Taber industries, 455 Bryant St P.O. Box 164, North Tonawanda, NY 14120, USA. ¹

- a) The wheels hardness shall be between 60 and 70 Shore A;

NOTE 2 The laboratories should measure the hardness periodically (at least once every 6 months).

- b) Every wheel shall apply a force $5,4 \text{ N} + / - 0,2 \text{ N}$ on the sample;
- c) Vacuum system: The distance between the vacuum suction nozzle (inlet vacuum system) and the test area shall be $(1,5 \pm 0,5)$ mm. The vacuum system shall remove practically all the dust.

5.5 Balance

The accuracy of the balance shall be 1 mg.

¹ This test machine is an example of a suitable machine available commercially. This information is given for the convenience of users of this Technical Specification and does not constitute an endorsement by CEN of the machine.

CEN/TS 15185:2005 (E)**5.6 Conditioning chamber**

A chamber with a standard atmosphere of (23 ± 2) °C, relative humidity (50 ± 5) %.

5.7 Diffuse light source

Providing evenly diffused light giving an illumination on the test area between 800 lx and 1.000 lx. This may either be diffused daylight or be diffused artificial light.

NOTE The daylight should be unaffected by surrounding trees, buildings, etc. When artificial light is used it is recommended that it should have a correlated colour temperature of $(6500 + 50)$ K and a Ra greater than 92, by using a colour matching booth in accordance with EN ISO 3668.

6 Preparation and conditioning**6.1 Storing and conditioning**

The test unit / test panel shall be stored for not less than four weeks at a temperature not less than 15 °C and not more than 30 °C with free access of air.

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

Condition the abrasion paper strips at least for one week in the conditioning atmosphere (23 ± 2) °C and (50 ± 5) % R.H., before testing, see 5.6.

NOTE The conditioning can be a part of the above four weeks.

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6.2 Test surface

The test surface shall be taken at least 20 mm from the edge.

Each test surface shall be a piece of the test unit or test panel, shaped to fit the type of clamping device used. It shall usually be a square of 100 mm x 100 mm, and including an appropriated hole drilled in the centre to place the test surface in the axis of the apparatus.

Three test surfaces shall be prepared.

The test surface shall be carefully wiped with a cleaning cloth, see 5.1, before the test.

The test surface shall be substantially flat.

6.3 Preparation of test surfaces and abrasive paper

Using a suitable marker pen, mark the surface of each test surface with two lines at right angles, diagonals, so that the surface area is divided into four quadrants, according to Figure 1.

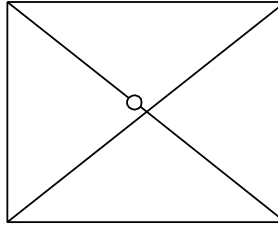


Figure 1 — Preparation of test surfaces and abrasive paper

7 Procedure

7.1 Preparation of abrasive wheels

Bond a strip of conditioned unused abrasive paper to each of the rubber covered wheels. Ensure that the cylindrical surface is completely covered, but without any overlapping of the abrasive paper.

7.2 Calibration of abrasive paper

Carry out this calibration three times for each box.

Prepare two abrasive wheels, in the correct hardness range, see 5.4, with conditioned unused strips of abrasive paper.

Clamp a zinc plate in the specimen holder, start the vacuum device, set the revolution-counter to zero, lower the wheels, ensuring that the arms are horizontal and the load on the zinc plate is $5,4 \text{ N} \pm 0,2 \text{ N}$, and abrade the zinc plate for 500 revolutions. Wipe the zinc plate clean and weigh to the nearest 1 mg. Replace the abrasive paper on the wheels with preconditioned unused strips from the same batch, clamp the same zinc plate in the specimen holder, lower the abrasive wheels and operate the suction device. Abrade the zinc plate for an additional 500 revolutions, then wipe it clean and reweigh it to the nearest 1 mg.

Any box containing abrasive paper which causes a loss in mass of the zinc plate which is outside (120 ± 20) mg, for any pair of calibrate strips, shall not be used for testing.

The result (mean value of the 3 calibrations / 120) shall be named "correction factor" and shall be included in the test report.

7.3 Abrasion of test area

Perform the test immediately after removal of the test surface and calibrated abrasive paper from the conditioning atmosphere.

Prepare two wheels, in the correct hardness range, with preconditioned unused abrasive paper from the same box previously approved by calibration. Fit the wheels to the machine and set the revolution counter to zero.

Clamp the test surface in the holder, ensuring that it is placed horizontally. Lower the abrasive wheels on to the specimen, ensuring that the arms are horizontal and the load on the samples is $5,4 \text{ N} \pm 0,2 \text{ N}$. Start the vacuum device for removing practically all the dust, and begin abrading the test area.

NOTE If the arms are not horizontal, then there are two possibilities: to modify appropriately the apparatus or to reduce appropriately the thickness of the test surface before the conditioning, see Clause 6.