



SLOVENSKI STANDARD

SIST-TS CEN/TS 15186:2006

01-februar-2006

Pohištvo – Ugotavljanje odpornosti površine proti razenju

Furniture - Assessment of the surface resistance to scratching

Möbel - Bewertung der Kratzfestigkeit von Oberflächen

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

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Ta slovenski standard je istoveten z: **CEN/TS 15186:2005**

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ICS:

97.140

Pohištvo

Furniture

SIST-TS CEN/TS 15186:2006

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TECHNICAL SPECIFICATION
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CEN/TS 15186

November 2005

ICS 97.140

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 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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Foreword

This Technical Specification (CEN/TS 15186:2005) 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 15186:2005 (E)**1 Scope**

This Technical Specification specifies a method for the assessment of the surface resistance to penetrating and distinctive scratch marks and relates to rigid surfaces of all finished products regardless of materials.

It does not apply to finishes on leather and fabrics.

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 of a size sufficient to meet the requirements of the test.

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

It is not applicable for the determination of the surface resistance to insubstantial/light scratch.

NOTE The surface resistance to insubstantial/light scratch damage can be determined using the method in EN 438-2.

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 1518, *Paints and varnishes - Scratch test (ISO 1518:1992)*

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3 Terms and definitions

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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 equipment, where the measurement is carried out

3.5**test atmosphere**

atmosphere where the test is carried out

3.6**scratching tip**

needle with a point of defined geometry, see 5.3

3.7**scratching trace**

visible and measurable mark on the tested surface which is produced under the specified load of the scratching tip; the shapes of the traces can be different depending on the substrate and coating type as shown in Figures 3, 4, 5 and 6

3.8**scratching resistance**

minimum load, in N, applied to the scratching tip, which produces a measurable width trace (W) of $\geq 0,30$ mm (Method A) or $\geq 0,50$ mm (Method B)

3.9**preliminary assessments of the scratching resistance**

minimal load causing the specified trace on one test surface

3.10**intermediate assessment of scratching resistance**

mean value of preliminary assessments of the scratching resistance

3.11**final value of scratching resistance**

mean value of intermediate assessments of three test surfaces (see Figure A.2)

4 Principle

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

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

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5 Apparatus and materials**5.1 Test apparatus**

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

5.2 Equipment parameters

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

Table 1 — Technical parameters

Parameter	Description
Movement	Linear, without hand movement
Load range (N)	1-20
Increment of load (N)	$1,0 \pm 0,1$
Speed of the movement (mm/s)	20 ± 10
Scratching trace length (mm)	Minimum 22

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5.3 Scratching tip

5.3.1 Method A

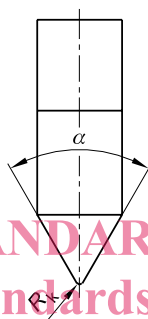
Scratching tip made of carbon carbide, with radius (R) of $(0,30 \pm 0,01)$ mm.

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

The tip shall be checked before using (see 6.3).



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Key

α tip's angle $\alpha = 60,0^\circ \pm 1,0^\circ$
 R_k radius of tip's rounded part $R_k = 0,30 \text{ mm} \pm 0,01 \text{ mm}$

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Figure 1 — Scratching tip

5.3.2 Method B

Scratching tip made of carbon carbide, with radius (R) of $(0,50 \pm 0,01)$ mm.

The coupling between the spherical part of the tool and the truncated cone section, shall allow that the width of the trace produced by the tool on the test area will be higher than 0,50 mm without the disturbing of this truncated cone section.

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

The tip shall be checked before use (see 6.3).

5.4 Optical measurement equipment

Any suitable equipment (e.g. microscope, magnifier with image analysis system) for measurement of trace's width with $\pm 0,01$ mm accuracy and for assessment of the scratching tip's geometry.

5.5 Suitable illumination

Suitable illumination for measurement of trace's width with $\pm 0,01$ mm accuracy.

5.6 Conditioning chamber

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

5.7 Cleaning cloth

White soft absorbent cloth.

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) %.

NOTE This week can be part of the four weeks storage.

6.2 Test surface

Three test surfaces shall be prepared.

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.

The test surface shall be carefully wiped with a cleaning cloth, see 5.7, before the test.

The test surface shall be substantially flat.

The surfaces of the three test surfaces will be homogenous (e.g. wood grain and structure).

6.3 Checking of the tip's geometry

The scratching tip, shall be inspected before each test with the use of the optical measurement equipment to obtain an accuracy of $\pm 0,01$ mm and ± 1 °.

If any flatness, holes, mass losses or other kind of damages are found, see Figure 2, the scratching tip shall be rejected and replaced by a new one.

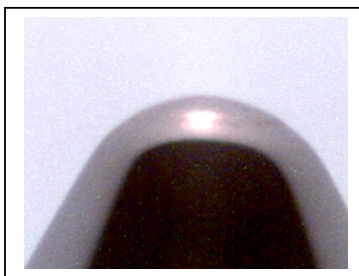


Figure 2 — Shape of the tip before use