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Lesene talne obloge (vključno s parketom) – Preskusna metoda za ugotavljanje prožnosti in odpornosti proti obrabi

Wood flooring (including parquet) – Test method to determine elasticity and resistance to wear

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Wood Flooring (including parquet) - Test method to determine elasticity and resistance to wear

Planchers en bois (parquets compris) - Méthode d'essai pour déterminer l'élasticité et la résistance à l'abrasion

Holzfußböden (einschließlich Parkett) - Prüfverfahren zur Bestimmung der Elastizität und der Beständigkeit gegen Verschleiß

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Foreword

This document (prEN 13696:2006) has been prepared by Technical Committee CEN/TC 175 “Round and sawn timber”, the secretariat of which is held by AFNOR.

This document is currently submitted to the CEN Enquiry.

This document will supersede ENV 13696:2000.

This document is one of a series of standards specifying requirements and test methods for wood flooring (including parquet).

Introduction

The resistance to wear of floorings, lacquered or not (either by design or due to inappropriate maintenance), is one of the main factors to be evaluated. If the selection of any flooring is mainly determined by aesthetic considerations, the wear degrades not only the appearance but may also modify the slip resistance of the flooring and hence the safety conditions in use.

The evaluation of the wear of wood flooring and parquet cannot be compared easily with that of other materials because of the specific features of timber and its lacquer. This has led to the current situation where test methods and evaluation procedures differ from one country to another.

Anyway, the wear of flooring does happen in service. Surface or in depth treatments, the latter depending on the wood species, may reduce the wear (loss of material, change in appearance and modification of properties).

It involves the resistance of the flooring to wear and the elasticity of its lacquer.

This document comprises three parts:

— the first part deals with general items and common methods,

— the second part deals with wear of lacquered elements. The wear tests simulate wear in usual conditions. Two systems are defined:

  — the first one is the grit feeder TABER based on SIS 92 35 09,

  — the second one is the sand paper tape TABER based on EN 438-2,

— the third part deals with the elasticity of the lacquer.

Annex A (informative) deals with the wear of unlacquered elements.

NOTE A research programme will be started to improve our knowledge both on the correlation between the two systems and on the wear of unlacquered elements and other types of finish.

Annex B (informative) lists unpublished documents that are mentioned in this document and published documents that are only mentioned in an informative section of this document.

1 Scope

This document specifies two alternative test methods to determine the resistance to wear of lacquered wood floorings and one method to test the elasticity of the lacquer.

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 1534, *Wood flooring (including parquet) - Test method - Resistance to indentation (Brinell)*

EN 13756, *Wood flooring – Terminology*

ISO 48, *Rubber, vulcanized or thermoplastic - Determination of hardness (Hardness between 10 IRHD and 100 IRHD)*

3 Terms and definitions

For the purposes of this European document, the terms and definitions given in EN 13756 and the following apply.

3.1
lacquer
film making agent modifying surface layer properties.

NOTE It has a measurable thickness.

4 Common methods

For wear tests as well as for the evaluation of the elasticity of the lacquer, some common procedures are used.

4.1 Conditioning

4.1.1 Equipment

Enclosures with the following climatic conditions:

— climate A temperature of (20 ± 2) °C and relative humidity of (65 ± 5) % or

— climate B temperature of (23 ± 2) °C and relative humidity of (50 ± 5) %.

4.1.2 Procedure

The manufacturer shall specify either of the conditioning climates above.

Unless specified otherwise, all equipment and materials required for the test shall be stabilised and kept in an enclosure in the climate specified.

4.2 Measurement of the thickness of the lacquer

When required, the following method shall be applied.

4.2.1 Equipment

4.2.1.1 Optical instrument

An instrument with a resolution of at least (± 1) μm.

NOTE For instance a binocular microscope with a magnification of 100 to 200 and a built-in measuring scale in the field of view.

4.2.1.2 Contrast marking

A water-based felt tip pen.

4.2.2 Sampling

Choose the location from which the test pieces are taken, depending on the purpose of the measurement (either in an unworn area or in a worn area).

Test pieces with a size of about 10 mm x 10 mm and by the full thickness shall be cut out of one of the wear test pieces or area to be tested in elasticity.

The number of test pieces is specified in 5.3.3.4.1, 5.4.3.4.1 and 6.4.1.

4.2.3 Procedure

If needed, contrast mark the lacquered face with the felt-tip pen specified in 4.2.1.2.

Clear-cut with a razor blade the edge of the lacquered face to be inspected.

Mount the test piece, with the clear-cut edge facing the microscope. For each test piece make at least two measurements to the accuracy allowed by the resolution of the optical instrument.

Measurements of lacquer above open holes in the wood shall not be taken into account.

4.2.4 Expression of the results

When required, average the measurements made on each test piece.

If there are more than one test piece, calculate to one significant figure the mean value and the coefficient of variation (expressed as a percentage) of the results.

5 Wear

Two test methods are specified: grit feeder system and sand paper system.

5.1 Principle

The resistance to wear is evaluated by abrading the face of representative test pieces or specimens with a specified abrasive applied by means of two loaded wheels.

The number of rotations, necessary to reach a defined wear is used to evaluate the resistance to wear.

5.2 Test pieces

5.2.1 Dimensions

The test shall be carried out on a test piece.

A test piece shall have the shape of:

— either a square with a side of 120 mm, its corners being trimmed so as to have a diagonal length reduced to about 130 mm,

— or a disc with a diameter of about 130 mm.

Samples, from which it is intended to obtain a test piece, may be smaller than the above dimensions. In that case a test piece shall be produced by jointing two or more elements according to the manufacturer's specifications.

Bore a hole (6 ± 0,5) mm diameter and axis normal to the surface at the centre of the test piece.

5.2.2 Sampling

Three test pieces shall be cut. The clearance between two test pieces shall be at least 100 mm. For elements which have to be jointed, the three test species shall be made out of elements picked out at random.

NOTE This sampling gives an estimation of the property of the lot.

For the sand paper system only: when the lacquer is unknown, a fourth test piece shall be prepared to get an estimate of the resistance to wear in order to define the frequency of controls to be carried out during the test of the three pieces above.

5.2.3 Conditioning

The test pieces shall be conditioned to constant mass in one of the climates defined in 4.1.

Prior to testing, the lacquer shall be fully cured according to the manufacturer's instructions.

5.3 Grit feeder system

5.3.1 Principle

A specified loose abrasive is fed continuously on to the face of the test piece, in the track of the loaded wheels.

5.3.2 Test equipment and materials

5.3.2.1 Abrading equipment and materials

5.3.2.1.1 Abrader (see fig 1 as an example)

Supporting disc

It shall have a minimum diameter of 105 mm, rotating in the horizontal plane with a permitted deviation of ± 2 mm/m, at (60 ± 2) r.p.m, the test piece being tightly held flat by means of a suitable clamping device.

Abrading wheels

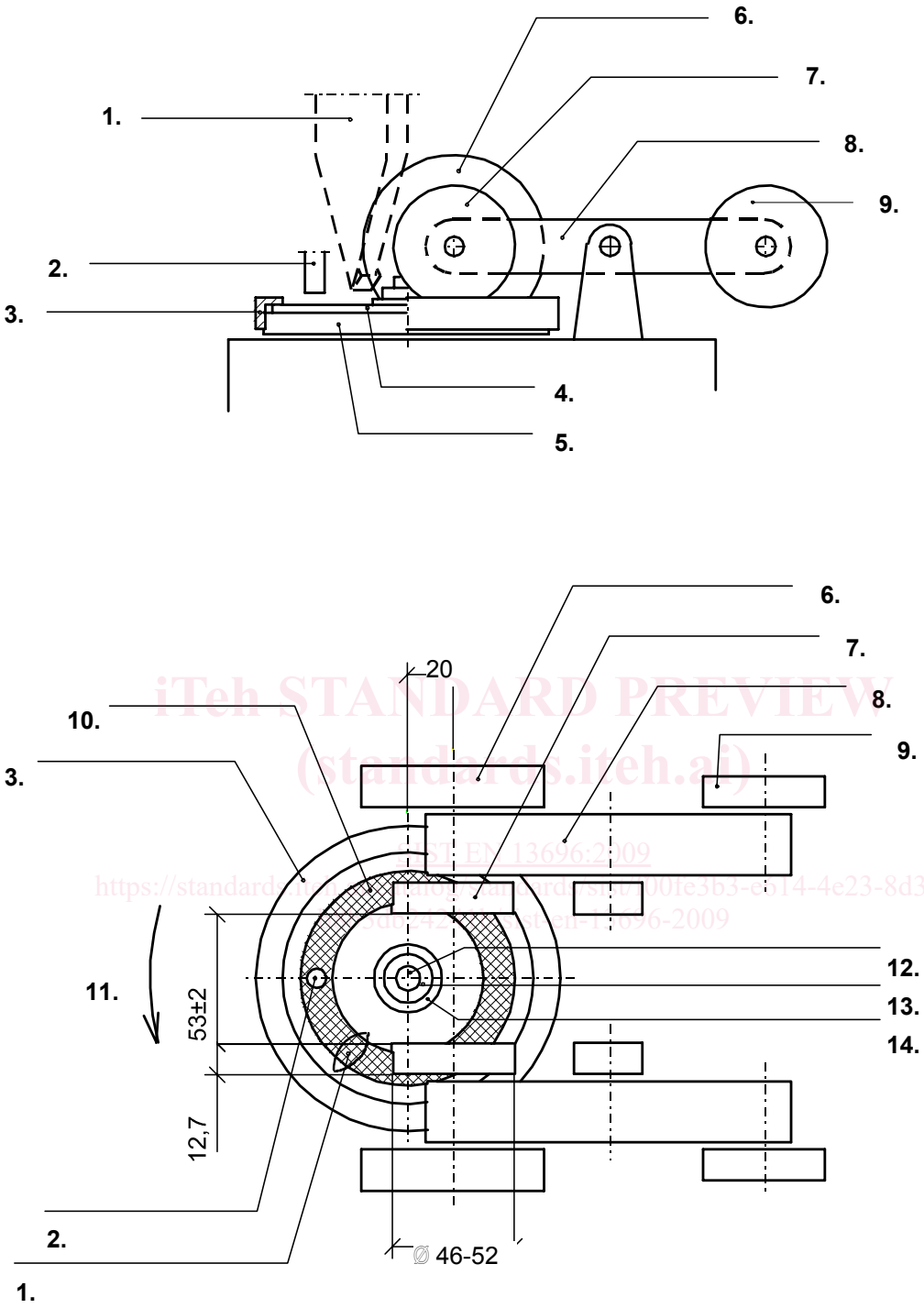
Two cylindrical wheels free to turn on their axis, balanced by lever and counterweight, with nominal diameter and width of respectively 44,4 mm and 12,7 mm. They are fitted with a leather strip having a width of (12,7 ± 0,1) mm and a minimum thickness of 1,5 mm. The overall diameter of the wheels, when fitted with leather strips shall not be less than 47,4 mm.

The distance between the internal faces of the wheels shall be (53 ± 2) mm, their common axis being set, by 20 mm nominally, off the axis of the test piece revolving support. The axis of rotation of the test piece shall be equidistant from the two wheels.

A device shall apply the abrading wheels on the test piece with a force of (10 ± 0,1) N by each wheel. The device shall be able to maintain the 20 mm eccentricity for all possible thicknesses of test pieces.

Revolution counter

To record the number of revolutions of the supporting disc.



Legend

1	Abrasive tank	9	Counterweight
2	Suction nozzle	10	Wearing surface
3	Clamping ring	11	Direction of rotation
4	Test piece	12	Screwed pin
5	Supporting disc	13	Nut
6	Testing weight	14	Plate
7	Abrading wheel		
8	Lever		

Figure 1 — Example of an abrader with grit feeder

Grit feeder

It shall have a capacity of about 200 g of grit. It shall be openable at the top and at the bottom. The bottom opening shall be (10 ± 1) mm above the face of the test piece and have a length of (16 ± 1) mm. The length of the bottom opening shall be installed radially to the supporting disc. To make sure of a regular flow, a device shall be provided in the grit feeder to ensure a regular flow. A further device ensuring an immediate stop of the feeding is also required.

Vacuum cleaning device

A single nozzle (3 ± 2) mm above the track to be worn, shall be installed in the axial vertical plane between the two wheels before the grit feeder (relative to the rotation direction) and shall provide a differential pressure of (2 ± 0,5) kPa.

NOTE Equipment of this type, Taber Abrader and Taber Grit Feeder, are made by TELEDYNE TABER.

5.3.2.1.2 Additional material or equipment

Weighing equipment

For calibrating the force applied by the abrading wheels on the test piece and for calibrating the grit flow.

It shall be accurate to ± 1 g.

Leather strip

For fitting on the perimeter of the abrading wheels.

Its hardness shall be suitable for the purpose. It is measured according to the procedure in prEN 1534 with the following deviations:

— a nominal load (10 ± 0,1) N (instead of 1 kN in 6.1);

— four measurements (instead of 50 in 5.2.2).

The hardness of the leather is suitable if all the results are contained within the range 0,06-0,10 HB.

Abrading plate (to calibrate the leather)

A plate fitted with a grinding paper with a grain of 240 (about 0,06 mm).

Abrading material

Pure Carborundum grit (di-aluminium tri-oxide) falling through a 240 meshes per inch sieve and retained on a 280 meshes per inch sieve (grade 240).

NOTE These sieves permit grit of 50 μm to 63 μm to fall through.

Stopwatch

A stopwatch accurate to ± 0,1 s.

A tank to recover the grit

A tank of known mass to recover the grit when calibrating the grit feeder.