



SLOVENSKI STANDARD
SIST EN 12720:1997

01-oktober-1997

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SIST ISO 4211:1995

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Furniture - Assessment of surface resistance to cold liquids (ISO 4211:1979 modified)

Möbel - Bewertung der Beständigkeit von Oberflächen gegen kalte Flüssigkeiten (ISO 4211:1979 modifiziert)

Meubles - Evaluation des surfaces (aux liquides froids) (ISO 4211:1979 modifiée)

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ICS:

97.140 Pohištvo Furniture

SIST EN 12720:1997 **en**

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EUROPEAN STANDARD

EN 12720

NORME EUROPÉENNE

EUROPÄISCHE NORM

August 1997

ICS 97.140

Descriptors: furnishings, furniture, surface conditions, tests, test to domestic products, liquids, inspection, appearance

English version

Furniture - Assessment of surface resistance to cold liquids (ISO 4211:1979 modified)

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

This European Standard has been prepared by Technical Committee CEN/TC 207 "Furniture", the secretariat of which is held by IBN.

The text is based on ISO 4211:1979.

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of an identical text or by endorsement, at the latest by February 1998, and conflicting national standards shall be withdrawn at the latest by February 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 SCOPE

This European Standard specifies a method of assessment of surface resistance to cold liquids and relates to the rigid surfaces of all finished products regardless of materials, except for finishes on leather and fabrics. The test is generally carried out on finished furniture but might 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 requirement of the test.

The type and number of test liquids and the test periods (selected from table 1 in clause 7) are stated in requirement specifications or are agreed upon between purchaser and supplier or interested parties.

A selection of suitable test liquids is given in annex A, but others can be used, if necessary.

2 NORMATIVE REFERENCES

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard, only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

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| ISO 3668 | Paints and varnishes - Visual comparison of the colour of paints |
| ISO 1065 | Non-ionic surface active agents obtained from ethylene oxide - Determination of cloud temperature (Cloud point) |

3 PRINCIPLE

Application of a liquid to a surface by means of saturated paper, covered by a glass Petri dish. After a specified period of time, removal of the paper, washing and drying of the surface and examination for damage (discoloration, change in gloss and colour, blistering, etc.) Assessment of the test results in terms of a descriptive numerical rating code.

4 DEFINITIONS

For the purposes of this standard the following definitions apply:

- 4.1 Test unit** finished item of furniture.
- 4.2 Test surface** part of the test unit, where the test area is included.
- 4.3 Test panel** panel produced in the same way as the test surface; it shall be used when it is not possible to carry out the test directly on the test surface.

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4.4 Test area area under the dish described in 5.2.

4.5 test atmosphere atmosphere where the test is carried out.

4.6 conditioning atmosphere atmosphere where the test unit is placed just one week before testing.

4.7 ageing atmosphere atmosphere where the test unit is placed at least four weeks before testing (conditioning could be included)

5 APPARATUS AND MATERIALS

5.1 Discs, diameter approximately 25mm, of soft filter paper with a grammage of 400 g/m² to 500 g/m².

5.2 Glass Petri dish with ground edges and without lips, external diameter approximately 40 mm, height approximately 25 mm.

5.3 Tweezers

5.4 Absorbent paper or tissue, with good absorbent properties .

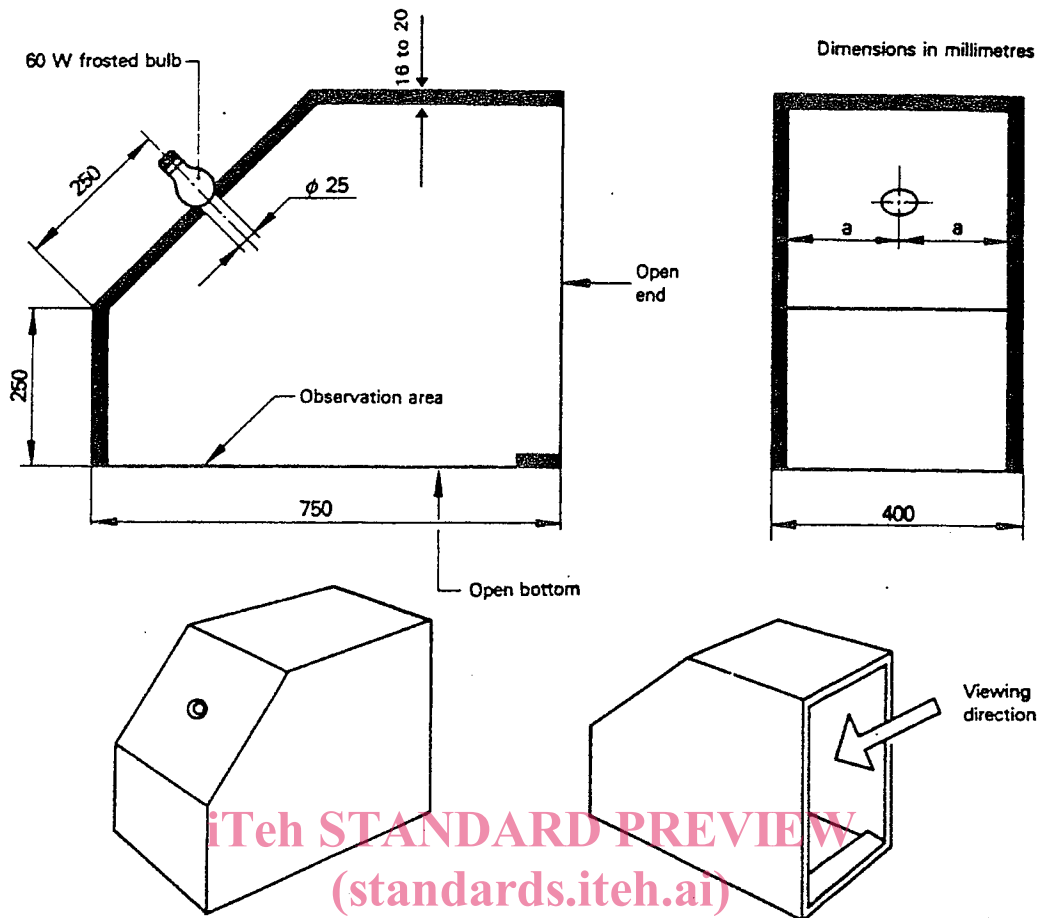
5.5 White soft, absorbent cloths.

5.6 Diffuse light source, providing evenly diffused light giving an illumination on the test area between 2.000 lx and 5.000 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 an R_a greater than 92, by using a colour matching booth in accordance with ISO 3668.

5.7 Direct light source: 60 W frosted bulb so screened that light reaches the test area only from the bulb and that the bulb is not in direct view of the tester. The angle between the horizontal and a line between the bulb and the area under examination shall be 30° to 60°.

NOTE: One way to perform the assessment is to use a viewing cabinet as shown in figure1.



NOTE — Interior surfaces are painted black.
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Figure 1 — Viewing cabinet
(All dimensions are approximate)

5.8 Test liquid, temperature of $(23 \pm 2)^{\circ}\text{C}$. Examples of the test liquids are given in annex A.

5.9 Deionized or distilled water, temperature $(23 \pm 2)^{\circ}\text{C}$.

5.10 Cleansing solution containing 15ml/l of the cleansing agent (5.11) in water (5.9). This solution shall be freshly prepared on each occasion.

5.11 Cleansing agent, of the following composition:

- 12,5% (m/m) of a sodium primary (C₁₀ - C₁₄) polymer alkyl aryl sulphonate;
- 12,5% (m/m) polyethoxylated derivatives of primary or secondary (C₈ - 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);
- 5,0% (m/m) ethanol;
- 70% (m/m) water (5.9).

The cleansing agent shall be stored in a glass bottle in a cool dark place and should be used within 1 year of the day of preparation.

6 PREPARATION AND CONDITIONING OF TEST UNITS

Unless otherwise agreed, the test unit shall be allowed to age and be conditioned.

For ageing, the unit shall be stored at a temperature not less than 15°C and not more than 30°C with free access of air. Ageing including conditioning before test shall be not less than four weeks.

Conditioning shall begin one week before testing and shall be carried out in air at a temperature of $(23 \pm 2)^{\circ}\text{C}$ and relative humidity of $(50 \pm 5)\%$.

The test surface shall be substantially flat and of a size sufficient to meet the requirements of clause 8 regarding the separation of the filter paper discs.

The test surface shall be carefully wiped with a dry cloth (5.5) before testing.

7 TEST PERIODS

Test periods shall be selected from the table 1 according to requirement specifications. The periods have been chosen to simulate the range of times that may elapse before a liquid, unintentionally applied to the surface of furniture, would be removed. Longer test periods can be used upon agreement.

Table 1: Test periods

Period	Examples under consideration
10 s	Immediate removal
2 min	Immediate 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 PROCEDURE

Immediately after conditioning, the test shall be carried out in a test atmosphere of $(23 \pm 2)^{\circ}\text{C}$.

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 identical tests shall be carried out simultaneously.

Immerse a disc of paper (5.1) into the test liquid (5.8) for 30 s, lift with the tweezers (5.3) and wipe off against the edge of the vessel. Quickly place it on the test area 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 paper with the tweezers. Do not remove fibres of paper adhering to the test area. Soak up any remaining test liquid with the absorbent paper (5.4) without rubbing and leave the test surface undisturbed for 16 to 24 h in the test atmosphere without covering it. The test area shall be sufficiently protected against dust without limiting in any way the free access of air.

After the 16 to 24 h, wash the test surface by lightly rubbing it with the absorbent cloth (5.5) soaked first in cleansing solution (5.10) and then only water (5.9). Finally wipe the surface carefully with a dry cloth (5.5).

At the same time, wash and dry one point (reference area) on the surface which has not been exposed to the test liquid in the same way.

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

9 EXAMINATION OF THE TEST UNIT

Carefully examine the test area for damage, e. g. discoloration, change in gloss and colour, blistering and other defects. For this purpose illuminate the surface separately using each of the two light sources (5.6) and (5.7) and examine from different angles, including angle combinations such that the light is reflected from the test surface and towards the observer's eye. Viewing distance shall be 0,25 m to 1,0 m.

Place the test surface in different positions with the light parallel and perpendicular to the direction of the grain, if any. In each position compare the test area with the surface of the reference area.

If agreed, another examination shall be made after a further specified period of time.

10 ASSESSMENT OF RESULTS

Rate the test areas by comparison with the reference area for each liquid according to the following descriptive numerical rating code:

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| 5 | No visible changes (no damage). |
| 4 | Slight change in gloss and colour visible only when the light source is mirrored in the test surface on or quite near the mark and is reflected towards the observer's eye, or a few isolated marks just visible. |
| 3 | Slight mark, visible in several viewing directions, for example almost complete disc or circle just visible. |
| 2 | Strong mark, the structure of the surface being however largely unchanged. |
| 1 | Strong mark, the structure of the surface being changed or the surface material being totally or partially removed or the filter paper adhering to the surface. |

It is recommended that each test area be rated by more than one observer experienced in this type of assessment. The reported rating for the test area shall be the largest rating value which is equalled, or exceeded, by the majority of observers, for example :

Individual ratings : 1, 2, 3, 3, 3
 Test area rating : 3
 Individual ratings : 1, 2, 2, 3, 3
 Test area rating : 2

The results obtained with the two light sources shall be reported.

Duplicate test areas shall be assessed and reported separately.

11 TEST REPORT

The test report shall include at least the following information :

- a) a reference to this European Standard;
- b) the unit or panel tested including relevant data (wherever possible the substrate and the finishing system shall be identified);
- c) the test liquid or liquids (relevant data);
- d) the test period or periods;
- e) the assessment of each test area in accordance with clause 10
- f) any deviations from this European Standard;
- g) the date of test;
- h) whether assessment under direct light source (5.7) was within viewing cabinet
- i) if required, additional information regarding type of damage.

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