International Standard

ISO 4211-1

First edition

# Furniture — Tests for surface finishes —

## Part 1: Assessment of resistance to cold liquids

*Ameublement — Essais des finitions de surface —*

*Partie 1: Évaluation de la résistance aux liquides froids*



**PROOF/ÉPREUVE**

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# Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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This document was prepared by Technical Committee ISO/TC 136, *Furniture*.



This first edition cancels and replaces ISO 4211:1979, which has been technically revised.

The main changes are as follows:



— addition of Clause 3;

— revision of parameters of diffuse light source;

— removal of direct light source from list of required equipment;

— deletion of information and figure regarding "viewing cabinet";

— addition of CAS Registry Numbers® (see 5.10);

— addition of Table 2;

— revision of Annex A;

— revision of Table A.1;

— addition of Annex B.

A list of all parts in the ISO 4211 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

# Furniture — Tests for surface finishes —

# Part 1:
# Assessment of resistance to cold liquids

## 1 Scope

This document specifies a method for the assessment of the resistance to cold liquids of all rigid furniture surfaces, regardless of materials.

It does not apply to leather and textile surfaces.

The test is intended to be carried out on a part of the 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.

Annex A includes a selection of suitable test liquids. Annex B provides an example for a testing matrix.

## 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.

ISO 105-E04:2013, *Textiles — Tests for colour fastness — Part E04: Colour fastness to perspiration*

## 3 Terms and definitions



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

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

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

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

**3.1**
**test panel**
panel including the *test surface* (3.2)

Note 1 to entry: It 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.

**3.2**
**test surface**
part of the *test panel* (3.1)

**3.3**
**test area**
part of the test surface under the glass Petri dish

## 4 Principle

Discs saturated with the test liquids are placed on the test surface and covered by a glass Petri dish. After a specified test period, the discs are removed and the test surface is left for 16 h to 24 h. Thereafter, the test surface is cleaned and examined for damages such as discolouration, change in gloss, change in colour, blistering and swelling. The test result is stated in a numerical rating code.

## 5 Apparatus and materials

The following apparatus and materials shall be used.

**5.1 Discs,** with a diameter of (25 ± 2) mm, of soft filter paper with a grammage of 400 g/m$^2$ to 500 g/m$^2$, without colouring agent and glue.

**5.2 Glass Petri dish,** ground edges and without lips, external diameter (40 ± 2) mm and height (25 ± 2) mm.

**5.3 Tweezers.**

**5.4 Absorbent paper or tissue.**

**5.5 Cleaning cloth,** white, soft absorbent.

**5.6 Diffuse light source,** providing evenly diffused light giving an illumination on the test surface of (1 200 ± 400) lx. This may either be diffused daylight or diffused artificial daylight.

The daylight can be unaffected by surrounding trees, buildings, etc. When artificial daylight is used, it is recommended that it can have a correlated colour temperature of (6 500 ± 200) K and an Ra greater than 92, by using a colour matching booth in accordance with ISO 3668.

**5.7 Test liquid,** which shall be taken from the list of suitable test liquids given in Annex A. Test liquids shall have a temperature of (23 ± 2) °C.

**5.8 Deionized or distilled water**, of a temperature of (23 ± 2) °C.

**5.9 Cleansing solution**, containing 15 ml/l of the cleansing agent (5.10) in water (5.8). This solution shall be discharged after one day.

**5.10 Cleansing agent**, of the following composition:

— a mass fraction of 12,5 % sodium dodecylbenzenesulfonate (CAS Registry Number®[1)] 25155-30-0);

— a mass fraction of 12,5 % polyoxyethylene(20)sorbitan monostearate (CAS RN® 9005-67-8);

— a mass fraction of 5,0 % ethanol (96 %);

— a mass fraction of 70 % water (5.8).

The cleansing agent shall be stored in a glass bottle in a cool, dark place. It shall be used within one year of the day of preparation.

1) CAS Registry Number® is a trademark of the American Chemical Society (ACS). This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of the product named. Equivalent products may be used if they can be shown to lead to the same results.