

English Version

Furniture - Assessment of the effect of light exposure

Ameublement - Evaluation de la tenue de la surface à la
lumière

Möbel - Bestimmung der Lichtbeständigkeit von
Oberflächen

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (FprEN 15187:2024) has been prepared by Technical Committee CEN/TC 207 “Furniture”, the secretariat of which is held by UNI.

This document is currently submitted to the CEN Formal Vote.

This document will supersede EN 15187:2006.

FprEN 15187:2024 includes the following significant technical changes with respect to EN 15187:2006:

- revised scope: surfaces that were not affected by light as additional specification for the test;
- normative references updated;
- revised Table 1 for general conditions for the apparatus with humidity control;
- revised Table 2 for general conditions for the apparatus without humidity control;
- added new Table 3 “Correlation between irradiation time and total irradiation amount at different intensity”
- new sub clauses: “Specimen holders”, “Deionized or distilled water”, “Cleansing solution”, “Cleansing agent” added to Clause 5;
- revision of 7.3 “Duration”;
- revision of Clause 9 “Test report”;
- document editorially revised in its entirety.

1 Scope

This document specifies a method for the assessment of the effects of light in indoor conditions, by exposure to artificial radiation and applies to rigid surfaces of all finished products regardless of material.

It does not apply to finishes on leather and fabrics.

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.

This document describes the most important parameters, such as the colour change when a surface is exposed and specifies the conditions to be used in the exposure apparatus.

The light resistance of a surface can be assessed by using two apparatus as specified in Clause 4, one as a reference test method, and the other for in-company testing.

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.

EN ISO 105-B02:2014, *Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light: Xenon arc fading lamp test (ISO 105-B02:2014)*

EN ISO 4892-1, *Plastics — Methods of exposure to laboratory light sources — Part 1: General guidance (ISO 4892-1)*

EN ISO 4892-2:2013/A1:2021, *Plastics — Methods of exposure to laboratory light sources — Part 2: Xenon-arc lamps — Amendment 1: Classification of daylight filters (ISO 4892-2:2013/Amd 1:2021)*

ISO 105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

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 (see 3.2)

Note 1 to entry: It can be cut from a finished item of furniture or it can be a separate panel produced in the same manner as the finished item of furniture.

3.2 test surface

part of the test panel including an exposed section as well as the control sections

Note 1 to entry: See Figure 1 and Figure 2.

4 Principle

4.1 General

Accelerated exposure to light of furniture surfaces to filtered xenon-arc radiation is carried out in order to assess the change of contrast and colour. The surface is assessed by comparing the exposed section with the masked control section or with the separated control section (see Clause 8) from the same test surface.

4.2 Choice of methods

The apparatus specified in 5.1 shall be used as a reference method in cases where the influence of humidity cannot be excluded.

The apparatus specified in 5.2 can be used for in-company testing in cases where the influence of humidity can be excluded.

5 Apparatus and materials

5.1 Apparatus with humidity control

A test device as specified in EN ISO 4892-1 and EN ISO 4892-2:2013/A1:2021 with xenon lamp using window glass filters according to method B in EN ISO 4892-2:2013/A1:2021, and test parameters, as specified in Table 1.

Table 1 — General conditions for the apparatus with humidity control

Irradiance		Black-standard temperature	Chamber temperature	Relative humidity
Broadband (300 nm to 400 nm)	Narrowband (420 nm)			
W/m²	W/(m² × nm)	°C ^a	°C	%
50 ± 2	1,10 ± 0,02	55 ± 3	38 ± 3	50 ± 10
^a A black-standard sensor according to EN ISO 4892-1 shall be used (with insulation on the backside of the black metal sheet).				

5.2 Apparatus without humidity control

A test device as specified in EN ISO 4892-1 and EN ISO 4892-2:2013/A1:2021 with xenon lamp using window glass filters according to method B in EN ISO 4892-2:2013/A1:2021, and test parameters as specified in Table 2.

Table 2 — General conditions for the apparatus without humidity control

Irradiance			Black-standard temperature	Chamber temperature	Relative humidity
Broadband (300 nm to 400 nm)	Narrowband (420 nm)	Wideband (300 nm to 800 nm)			
W/m²	W/(m² × nm)	W/m²	°C ^a	°C	% ^b
50 ± 2	1,10 ± 0,02	550 ± 55	55 ± 3	Not controlled	Not controlled
^a A black-standard sensor according to EN ISO 4892-1 shall be used (with insulation on the backside of the black metal sheet).					

Irradiance			Black-standard temperature	Chamber temperature	Relative humidity
Broadband (300 nm to 400 nm)	Narrowband (420 nm)	Wideband (300 nm to 800 nm)			
W/m ²	W/(m ² × nm)	W/m ²	° C ^a	° C	% ^b
^b For instruments without chamber air temperature or relative humidity control these parameter are allowed to find their own level.					

5.3 Specimen holders

Specimen holders can be in the form of an open frame or may provide the specimen with a solid backing as specified in EN ISO 4892-2:2013/A1:2021, 4.6. The backing used can affect the test results and shall be reported in the test report.

5.4 Conditioning chamber

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

5.5 Cleaning cloth

White soft absorbent cloth.

5.6 Deionized or distilled water

5.7 Cleansing solution

Solution containing 15 ml/l of the cleansing agent (5.8) in water (5.6). The solution shall be discarded after one day.

5.8 Cleansing agent

Cleansing agent of the following composition:

- 12,5 % (mass fraction) of a primary or polymeric sodium (C10 to C14) alkylaryl sulphonate [CAS 25155-30-0];
- 12,5 % (mass fraction) of a polyethoxylated primary or secondary (C8 to C16) alcohol derivative with 5 to 15 ethoxyl groups with a cloud point of 25 °C to 75 °C in 1 % (m/m) aqueous solution (the determination of the cloud point is specified in ISO 1065:1991) [CAS 9005-67-8];
- 5,0 % (mass fraction) of ethanol (96 % aqueous solution);
- 70 % (mass fraction) water (5.6).

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

5.9 Aluminium foil or stainless steel

Aluminium foil with a thickness of at least 0,03 mm or stainless steel (both up to 1 mm thickness).

5.10 Blue wool scale

Blue wool scale according to EN ISO 105-B02:2014, 4.3.

Fixed on a card board in an opened frame sample holder.