SLOVENSKI STANDARD
kSIST FprEN 1096-3:2011

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Steklo v gradbeništvu - Steklo z nanosi - 3. del: Zahteve in preskusne metode za nanose razredov C in D

Glass in building - Coated glass - Part 3: Requirements and test methods for class C and D coatings

Glas im Bauwesen - Beschichtetes Glas - Teil 3: Anforderungen an und Prüfverfahren für Beschichtungen der Klassen C und D

Verre dans la construction - Verre à couche - Partie 3: Exigences et méthodes d'essai pour les couches C et D

Ta slovenski standard je istoveten z: **FprEN 1096-3**

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English Version

Glass in building - Coated glass - Part 3: Requirements and test methods for class C and D coatings

Verre dans la construction - Verre à couche - Partie 3: Exigences et méthodes d'essai pour les couches C et D

Glas im Bauwesen - Beschichtetes Glas - Teil 3: Anforderungen an und Prüfverfahren für Beschichtungen der Klassen C und D

This draft European Standard is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 129.

If this draft becomes a European Standard, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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Foreword

This document (FprEN 1096-3:2011) has been prepared by Technical Committee CEN/TC 129 “Glass in building”, the secretariat of which is held by NBN.

This document is currently submitted to the Unique Acceptance Procedure.

This document will supersede EN 1096-3:2001.

The main changes compared to the previous edition are:

— reference to the future EN 1096-5, *Test method and classification for the Self-cleaning performances of coated glass surfaces*;

— the introduction of a method to deal with toughenable / heat strengthenable and to be toughened / to be heat strengthened coated glass, see Annex A.

1 Scope

This European Standard specifies requirements and a test method related to resistance to solar radiation for coated glass for use in buildings.

This test is aimed at evaluating if the exposure to solar radiation over an extended period of time produces any appreciable change in light transmittance and solar transmittance of the coated glass as well as a reduction of the infrared reflectance in the case of low emissivity coatings.

This European Standard applies to Class C and D coatings as defined in EN 1096-1 and used in insulating glass units.

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 410, *Glass in Building — Determination of luminous and solar characteristics of glazing*

EN 572-1, *Glass in Building — Basic soda lime silicate glass products — Part 1: Definitions and general physical and mechanical properties*

EN 572-2, *Glass in Building — Basic soda lime silicate glass products — Part 2: Float glass*

EN 1096-1, *Glass in Building — Coated glass — Part 1: Definitions and classification*

EN 1096-2, *Glass in building — Coated glass — Part 2: Requirements and test methods for class A, B and S coatings*

EN 1279 (all parts), *Glass in Building — Insulating glass units*

EN 12150-1, *Glass in Building — Thermally toughened soda lime silicate safety glass — Part 1: Definitions and description*

EN 12898, *Glass in building — Determination of emissivity*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1096-1 and EN 1096-2 apply.

4 Requirements

The coated glass complying with this European Standard shall meet the requirements given in Table 1 as they relate to the characteristic resistance to solar radiation.

Table 1 — Requirements

Test piece	Visual inspection	Spectrophotometric measurements
Exposed test specimens	No additional defects on the coating are seen as compared to the unexposed double glass test specimens	No requirements
Exposed single coated glass test piece	No requirements	The transmittance values at 550 nm and 900 nm shall differ from the corresponding values of the unexposed single coated glass sample by no more than +/- 0,03 For a glass claimed to have a low emissivity coating, the reflectance at 8 µm shall decrease by no more than 0,02.

5 Samples, test pieces and test specimens

5.1 Test pieces

5.1.1 Coated annealed glass

A sample of 1000 mm x 500 mm is needed. Two square test pieces of minimum size 250 mm x 250 mm shall be cut from the sample.

5.1.2 Toughened or heat strengthened coated glass

For the thermally treated coated glass, defined in EN 1096-2, 3.3, as the test pieces cannot be cut from test samples, a special procedure has to be employed to obtain the test pieces (see annex A).

5.1.3 Coated toughened or heat strengthened glass

Use coated annealed glass samples for testing this type of coated glass.

5.2 Preparation of test specimens

Two insulating glass units shall be manufactured as test specimens. The insulating glass units shall consist of one of the test pieces, 12 mm airspace and a piece of 4 mm clear float glass (in compliance with EN 572-1 and EN 572-2). The dew point of the test specimens shall not be higher than - 25°C, when measured at (23 ± 5) °C, according to EN 1279-2, Annex A, or equivalent. The dew point is ensured when the insulating glass unit is manufactured in accordance with the EN 1279 series.

The edge area of the test specimens shall be covered with a reflecting aluminium foil (40 ± 5) mm wide as a means of protection for the sealant components.

6 Initial evaluation of the test pieces

The external surfaces of the test pieces shall be cleaned with a soft tissue using demineralised water, having a conductivity lower than 30 µS. Drying shall also be done with a soft tissue. If necessary this cleaning procedure can be repeated.

The test pieces shall be subjected to a visual inspection under an artificial sky according to EN 1096-1 at a distance of 600 mm. The examination shall be in both transmission and reflection. The test pieces shall be defect free, i.e. no visible scratches or pinholes shall be allowed.

7 Test methods for exposure to simulated solar radiation

Annex B gives criteria to demonstrate equivalence of coatings, i.e. an indication of whether or not the coated glass needs to be tested.

7.1 Radiation source

Radiation sources shall be used which emit radiation with a spectral distribution similar to the spectral solar global distribution as given in EN 410 and with percentages of UVB and UVA as given in Table 2. Such a spectral distribution can be obtained using different kinds of lamps (examples of test apparatus are given in Annex C).

Table 2 — Spectral characteristics of the lamps used for the test

Radiation	Range of wavelength (nm)	Percentage of total energy (%)
ultraviolet range UVB	280 to 315	1 to 4
ultraviolet range UVA	315 to 380	3 to 9
visible and infrared range	> 380	balance

7.2 Test conditions

The total irradiance level measured on the surface of the test pieces (surface facing the test lamps) shall be (900 ± 100) W/m².

NOTE Calibrated pyranometers with characteristics as reported in ISO 9060 and with a spectral sensitivity in the 305 mm to 2800 mm range should be used for the determination of the total irradiance level. Using these detectors, the measured irradiance level on the surface of the test pieces should be (730 ± 80) W/m².

The exposure time for the radiation test shall be:

— (1000 ± 24) h in the case of test apparatus given in C.1;

— (2000 ± 24) h in the case of test apparatus given in C.2.

The test specimen shall be placed with the coating orientated towards the radiation source. When tested, the coating shall be on surface 3. However, when the coating is only to be used on surface 2, then it shall be tested on surface 2.

Figures C.1 a) (planar array) or C.1 b) (circular array) show the arrangement of the test specimens and the reference glass piece.

The reference glass piece has a thermocouple placed on its surface facing the test lamps. The temperature of the reference glass piece shall be (56 ± 3) °C.