SLOVENSKI STANDARD
SIST EN 13420:2011

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Nadomešča:
SIST ENV 13420:2001

Okna - Obnašanje med dvema različnima klimama - Preskusna metoda

Windows - Behaviour between different climates - Test method

Fenster - Differenzklima - Prüfverfahren

Fenêtres - Comportement entre climats différents - Méthode d'essai

Ta slovenski standard je istoveten z: EN 13420:2011

ICS:

91.060.50	Vrata in okna	Doors and windows

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EUROPEAN STANDARD

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English Version

Windows - Behaviour between different climates - Test method

Fenêtres - Comportement entre climats différents - Méthode d'essai

Fenster - Differenzklima - Prüfverfahren

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Foreword

This document (EN 13420:2011) has been prepared by Technical Committee CEN/TC 33 “Doors, windows, shutters, building hardware and curtain walling”, the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by October 2011, and conflicting national standards shall be withdrawn at the latest by October 2011.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes ENV 13420:2000.

The main modifications to ENV 13420:2000 are:

a) Status of document changed from ENV to EN;

b) The German title has been added among the titles of the standard;

c) The Contents have been updated respectively revised;

d) The description of test method 2 in Clause 1 has been rephrased;

e) The description of the annexes has been rephrased;

f) In 3.1 a reference to Annexes A and B has been integrated at the end;

g) In Clause 4 the description of the principle tests has been split into the test procedure vapour diffusion and stability;

h) In Clause 8 the reference to the values of EN 1121 has been deleted because the values given in Table 1 are completely different to those in EN 1121;

i) Tolerances have been integrated in Table 1;

j) The status of Annex B has been changed into a normative annex.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Through climatic loading of the windows it is possible in the case of unfavourable designs that the frames of windows manufactured of different materials may:

— decay through accumulation of moisture and may thus be damaged; this moisture may come from water vapour diffusion and condensation;

— be unable to fulfil their basic functions (serviceability, air permeability) because of unacceptable deformations.

1 Scope

This European Standard specifies the test methods for evaluating:

— the risks of decay of openable and fixed windows manufactured of different materials through increased moisture accumulation as a result of condensation or water vapour diffusion;

— the influence of deformation on basic performances of openable and fixed windows manufactured of different materials exposed to different climates between their external and internal faces.

Three test methods are to be differentiated. They take into account different cases of loadings.

— **Test method 1:** For designs with low resistance to water vapour diffusion (normally designs with water vapour equalization holes); the test procedure is to be used for cross-sections where the danger is given by the moisture accumulation as a result of the condensation of moisture between the planking and the timber (see Annex A (informative), Figure A.1).

— **Test method 2.1 and 2.2:** For designs with high resistance to water vapour diffusion (normally designs without water vapour equalization holes); the test procedure is to be used for cross-sections where the danger is given by the condensation of the moisture between the surface of the inner profile and the inner surface of the outer profile by having a different water vapour diffusion (see Annex A (informative), Figures A.2 and A.3).

— **Test method 3:** For designs being sensitive to deformation; the test procedure is to be used for cross-sections where they are sensitive to the function through deformation as a result of climatic loading.

This European Standard defines the test procedures which are to be used in dependence of the potential risk of the design.

This European Standard is relevant to initial type testing, i. e. to developments or changes in designs. It is not relevant to routine quality control or to proven designs.

NOTE Designs are included in Annex A (informative). Annex B (normative) is the survey of general design criteria where tests are not necessary.

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 1026, *Windows and doors — Air permeability — Test method*

EN 1121:2000, *Doors — Behaviour between two different climates — Test method*

EN 12046-1, *Operating forces — Test method — Part 1: Windows*

EN 12207, *Windows and doors — Air permeability — Classification*

EN 12519:2004, *Windows and pedestrian doors — Terminology*

EN 13115, *Windows — Classification of mechanical properties — Racking, torsion and operating forces*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12519:2004 and the following apply.

3.1
design with low resistance to water vapour diffusion
design which is regarded as being a design with low water vapour diffusion when moisture conditioned by water vapour diffusion can be drained in the cross-section in a controlled way under specified service conditions, e.g. through sufficient ventilation

NOTE See Annex A (informative) and B (normative).

3.2
design with high resistance to water vapour diffusion
design which is regarded as being a design with high resistance to water vapour diffusion when as a result of profile coverings a sufficient draining of the moisture conditioned by water vapour diffusion is impaired in the combined profile

3.3
design being sensitive to deformation
design which is regarded as being sensitive to deformation when under specified service conditions the relative expansion (thermal or hygrometrical) of the profile may impair the basic functions of the window (e.g. operating forces, air permeability)

3.4
window manufactured of different materials
window whose frame (or sash or both) members are manufactured of non-identical materials, operating hardware being excluded

EXAMPLES Typical examples:

- basic timber windows clad with aluminium or PVC profiles;
- basic aluminium windows clad with timber (solid profiles or veneers);
- basic plastic windows clad with aluminium profiles.

3.5
orientation side 1
orientation with an inward looking face

3.6
orientation side 2
orientation with an outward looking face

3.7
wet spot
visible moisture accumulation, after climatic exposure, at the interface between timber (or any other hygroscopic materials) and another material

4 Principle of tests

4.1 Vapour diffusion

In order to have a temperature below dew point in composite profiles, a gradient of water vapour diffusion and a gradient of temperature are created; the window is exposed to this double gradient for a specified time during which the water content of hygroscopic elements is checked.

4.2 Stability

A gradient of temperature between the 2 sides of window is created and the window is exposed to this gradient for a specified time and measurement of deformations and functional deformations are carried out.

5 Test facility

The test facility is defined in EN 1121. In addition the following test facilities are required:

— a measuring device for determining the moisture content;

— an electric hygrometer which is properly calibrated for determining the moisture content of the timber and which has to have an accuracy of ± 1 %; and

— a measuring device for determining the deformation with an accuracy of 0,1 mm.

6 Dimensions of the test specimens

For the test methods 1 and 2 the test results are independent of the dimensions. For that reason, the dimension can be agreed upon between the test laboratory and the applicant.

In the case of designs sensitive to deformation (test method 3) the largest overall dimension foreseen by the manufacturer is to be tested to ensure the validity of the test.

The test results obtained at the foreseen maximum dimensions of the tested profile system can be extrapolated to smaller width and height without additional testing.

7 Preparation for test

The test specimen shall be mounted taking into account the installation instructions as defined and published by the manufacturer.

The test specimen shall be fixed in the test rig plumb without any twists or bends, which may influence the test results. The specimen shall be fully operable and shall be opened and closed five times before the test.

During the test the windows shall be secured in a closed and locked position.

8 Test conditions

The test conditions subsequently listed shall be used in connection with the test methods in Clause 9.