
Okna – Obnašanje med dvema različnima klimama – Preskusna metoda

Windows – Behaviour between different climates – Test method

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN 13420:2006
https://standards.iteh.ai/catalog/standards/sist/b7d98b92-452c-447d-a170-40588bddbf76/osist-pren-13420-2006](https://standards.iteh.ai/catalog/standards/sist/b7d98b92-452c-447d-a170-40588bddbf76/osist-pren-13420-2006)

iTeh STANDARD PREVIEW
(standards.iteh.ai)

[oSIST prEN 13420:2006](https://standards.iteh.ai/catalog/standards/sist/b7d98b92-452c-447d-a170-40588bddbf76/osist-pren-13420-2006)

<https://standards.iteh.ai/catalog/standards/sist/b7d98b92-452c-447d-a170-40588bddbf76/osist-pren-13420-2006>

January 2006

ICS

Will supersede ENV 13420:2000

English Version

Windows - Behaviour between different climates - Test method

Fenêtres - Comportement entre climats différents -
Méthode d'essai

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 33.

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.

This draft European Standard was established by CEN in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, 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 United Kingdom.

Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

Page

Foreword.....	3
Introduction	4
1 Scope	4
2 Normative references	4
3 Terms and definitions.....	5
4 Principle of test.....	5
5 Test facility.....	6
6 Dimensions of the test specimens.....	6
7 Preparation for test.....	6
8 Test conditions	6
9 Test methods.....	7
10 Test sequence	8
11 Test report	9
Annex A (informative) Design principles (standards.iteh.ai).....	10
Annex B (informative) Survey of general design criteria where tests are not necessary.....	11

iTeh STANDARD PREVIEW
(standards.iteh.ai)
oSIST prEN 13420:2006
<https://standards.iteh.ai/catalog/standards/sist/b7d98b92-452c-447d-a170-40588bddbf76/osist-pren-13420-2006>

Foreword

This document (prEN 13420:2006) 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 document is currently submitted to the CEN Enquiry in order to convert ENV 13050: 2000 into an EN by a CEN enquiry + formal vote.

This document will supersede ENV 13420:2000.

The contents of this draft is exactly the same that the contents of ENV 13420: 2000. Only the normative references were updated.

iTeh STANDARD PREVIEW (standards.iteh.ai)

[oSIST prEN 13420:2006](https://standards.iteh.ai/catalog/standards/sist/b7d98b92-452c-447d-a170-40588bddbf76/osist-pren-13420-2006)

<https://standards.iteh.ai/catalog/standards/sist/b7d98b92-452c-447d-a170-40588bddbf76/osist-pren-13420-2006>

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 fulfill their basic functions (serviceability, air permeability) because of unacceptable deformations.

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

1 Scope

This European Standard specifies the test methods for evaluating

- the risks of decay of 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 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 informative Annex A, Figure A.1).

Test method 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 moisture accumulation as a result of water vapour diffusion of the moisture at the internal and external face (see informative Annex A, Figure A.2 + 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 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, Annex B 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, *Doors - Behaviour between two different climates – Test method*

EN 12046-1, *Operating forces – Test method – Part 1: windows*

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

3 Terms and definitions

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

3.1

designs with low resistance to water vapour diffusion

a design 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.

3.2

designs with high resistance to water vapour diffusion

a design 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 cross-section.

3.3

designs being sensitive to deformation

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

3.4

windows manufactured of different materials

the window manufactured of different materials is a window whose frame members, operating hardware being excluded, is made of a minimum of two materials.

[oSIST prEN 13420:2006](https://standards.iteh.ai/catalog/standards/sist/b7d98b92-452c-447d-a170-10c3e3c0e306/sist-prEN-13420-2006)

NOTE Typical examples standards.iteh.ai/catalog/standards/sist/b7d98b92-452c-447d-a170-10c3e3c0e306/sist-prEN-13420-2006

- 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: Inward looking face

side 2: Outward looking face

3.6

wet spot

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

4 Principle of test

In order to create a gradient of water vapour diffusion and condensation hazards as well as a temperature gradient and deformation hazards, the test specimen is exposed on both sides, for a specified time, to a set of different climates capable of creating a temperature below dew point in composite profiles. In the case of test procedures 1 and 2 the moisture content is to be determined periodically with an electric hygrometer or oven-dry samples on hygroscopic frame materials. Wet spots are to be recorded at the end of the exposure, by dismantling the test samples, if possible.

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 properly calibrated for determining the moisture content of the timber. The hygrometer has to have an accuracy of $\pm 1\%$.
- a measuring device for determining the deformation with an accuracy of 0,1 mm.

6 Dimensions of the test specimens

For 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.

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 according to EN 1121 are to be maintained.

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

Table 1 - Test methods for designs with low and high resistance to water vapour diffusion

Test method	Test climate	Side 1		Side 2		Cycle/ durability
		Air temp. ¹ °C	Rel. humidity (U) ϑ %	Air temp. ² °C	Rel. humidity (U) ϑ %	
1	A	23	50	-10	-	see Figure 1 (12 h)
	B	23	50	60	-	
2.1	C	23	70	3	80 %	≥ 30 days ≤ 60 days *
2.2	A	23	50	-10	-	≥ 30 days ≤ 60 days *

* until the constant moisture content of the hygroscopic materials or visible condensation is reached in the profile.

Table 2 - Test methods for designs sensitive to deformation

Test method	Test climate	Side 1		Side 2		Cyclus / durability
		Air temp. ¹ ₁ °C	Rel. humidity (U) _θ %	Air temp. ¹ ₂ °C	Rel. humidity (U) _θ %	
3	A	23	50	-10	-	24 h
	D	23	50	75 ¹⁾	-	24 h

¹⁾ The reference temperature for heating up the surface by radiation.

9 Test methods

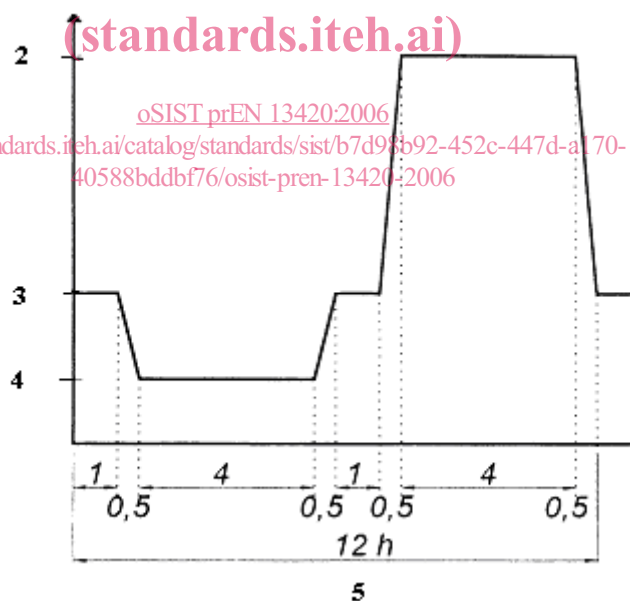
Test method 1

For the test the specimen shall be exposed within a changing test climate A and B (see Table 1) according to Figure 1 with 100 cycles or until a constant weight or moisture of the hygroscopic materials of a climatic exposure has been reached. The moisture of the wood shall be continuously examined and recorded.
Key:

iTeh STANDARD PREVIEW

(standards.iteh.ai)

oSIST prEN 13420:2006
<https://standards.iteh.ai/catalog/standards/sist/b7d98b92-452c-447d-a170-40588bddbf76/osist-pren-13420-2006>



- 1 air temperature, side 2
- 2 test climate B + 60°C
- 3 ca. +20°C
- 5 test climate A -10°C
- 6 100 cycles

NOTE The moisture content shall be gauged before and after the test procedure 1, 2.1 and 2.2. **Figure 1 - Loading by changing temperatures ("side 2" in accordance with definition 3.1)**

Test methods 2.1 and 2.2

For the test the specimen shall be exposed to a constant climatic loading according to the test climate C or A (Table 1) for a period of 30 days (min.) and 60 days (max.)¹⁾. The moisture of the wood shall be examined and recorded continually or at least once a week.

Test method 3

For the test the specimen shall be loaded with test climate A and D (Table 2) with a temperature loading on one side for a period of 24 h per climate.

10 Test sequence

For test method 3 the following test sequence is to be carried out:

- Air permeability according to EN 1026;
- Operating forces according to EN 12046-1;

- Deformation;
- Cold test - climate A (Table 2);

- Deformation;
- Operating forces according to EN 12046-1;

- Heat test - climate D (Table 2);
- Deformation;

- Operating forces according to EN 12046-1;

- Air permeability according to EN 1026.

iTeh STANDARD PREVIEW
(standards.iteh.ai)
<https://standards.iteh.ai/catalog/standards/sist/b7d98b92-452c-447d-a170-40588bddbf76/osist-pren-13420-2006>

NOTE For analysing the test results it is reasonable to measure the deformation of the sash and the frame members before and after the climatic loading.

¹⁾ Until the constant moisture content of the hygroscopic materials or visible condensation is reached in the profile.