

Hygrothermal performance of building components and building elements - Internal surface temperature to avoid critical surface humidity and interstitial condensation - Calculation methods

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 13788:2001 sisaldab Euroopa standardi EN ISO 13788:2001 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 16.11.2001 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 13788:2001 consists of the English text of the European standard EN ISO 13788:2001.</p> <p>This document is endorsed on 16.11.2001 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This standard gives calculation methods for: a) The internal surface temperature of building component or building element below which mould growth is likely, given the internal temperature and relative humidity - the method can also be used to assess the risk of other surface condensation problems. b) The assessment of the risk of interstitial condensation due to water vapour diffusion. The method used assumes built-in water has dried out and does not take account of a number of important physical phenomena.</p>	<p>Scope:</p> <p>This standard gives calculation methods for: a) The internal surface temperature of building component or building element below which mould growth is likely, given the internal temperature and relative humidity - the method can also be used to assess the risk of other surface condensation problems. b) The assessment of the risk of interstitial condensation due to water vapour diffusion. The method used assumes built-in water has dried out and does not take account of a number of important physical phenomena.</p>
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ICS 91.120.10, 91.120.30

Võtmesõnad: buildings, condensation, construction, damp-proofing, definitions, exterior walls, heat engineering, heat exchange, heating, indoors, surface moisture, walls

ICS 91.120.10; 91.120.30

English version

Hygrothermal performance of building components and building elements
**Internal surface temperature to avoid critical surface
humidity and interstitial condensation**

Calculation methods
(ISO 13788 : 2001)

Performance hygrothermique des
composants et parois de bâtiments –
Température superficielle intérieure
permettant d'éviter l'humidité super-
ficielle critique et la condensation
dans la masse – Méthodes de calcul
(ISO 13788 : 2001)

Wärme- und feuchtetechnisches
Verhalten von Bauteilen und Bauele-
menten – Raumseitige Oberflächen-
temperatur zur Vermeidung kritischer
Oberflächenfeuchte und Tauwasser-
bildung im Bauteilinneren – Berech-
nungsverfahren (ISO 13788 : 2001)

This European Standard was approved by CEN on 2000-10-18.

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.

Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

The European Standards exist 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, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

The text of EN ISO 13788:2001 has been prepared by Technical Committee CEN/TC 89 "Thermal performance of buildings and building components", the secretariat of which is held by SIS, in collaboration with Technical Committee ISO/TC 163 "Thermal insulation".

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 January 2002, and conflicting national standards shall be withdrawn at the latest by January 2002.

This standard is one of a series of standards, which specify test methods for the thermal and moisture related properties of building materials and products.

The annexes A, B, C, D, E and F are informative.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Moisture transfer is a very complex process and the knowledge of moisture transfer mechanisms, material properties, initial conditions and boundary conditions is often insufficient, inadequate and still under development. Therefore this standard lays down simplified calculation methods, based on experience and commonly accepted knowledge. The standardisation of these calculation methods does not exclude use of more advanced methods. The calculations will normally lead to designs well on the safe side and if a construction fails a specified design criterion according to this procedure, more accurate methods may be used to show that the design will pass.

This standard deals with critical surface humidity and interstitial condensation, and does not cover other aspects of moisture, e.g. ground water, precipitation, built-in moisture and moisture convection, which can be considered in the design of a building component.

1 Scope

This standard gives calculation methods for:

- a) The internal surface temperature of a building component or building element below which mould growth is likely, given the internal temperature and relative humidity – the method can also be used to assess the risk of other surface condensation problems.
- b) The assessment of the risk of interstitial condensation due to water vapour diffusion. The method used assumes built-in water has dried out and does not take account of a number of important physical phenomena including:
 - the dependence of thermal conductivity on moisture content;
 - the release and absorption of latent heat;
 - the variation of material properties with moisture content;
 - capillary suction and liquid moisture transfer within materials;
 - air movement through cracks or within air spaces;
 - the hygroscopic moisture capacity of materials.

Consequently the method is applicable only to structures where these effects are negligible.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN 12524	<i>Building materials and products – Hygrothermal properties - Tabulated design values</i>
ISO 6946	<i>Building components and building elements – Thermal resistance and thermal transmittance - Calculation method</i>
ISO 9346	<i>Thermal insulation - Mass transfer - Physical quantities and definitions</i>
ISO 10211-1	<i>Thermal bridges in building construction – Calculation of heat flows and surface temperatures - Part 1: General methods</i>
ISO 10456	<i>Building materials and products – Procedures for determining declared and design thermal values</i>
ISO 12572	<i>Hygrothermal performance of building materials and products - Determination of water vapour transmission properties</i>