# Külmasillad hoones. Soojusvood ja pinnatemperatuurid. Üldised arvutusmeetodid.

Thermal bridges in building construction - Heat flows and surface temperatures - Detailed calculations

EESTI STANDARDIKESKUS
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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

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| Käesolev Eesti standard EVS-EN ISO 10211:2008 sisaldab Euroopa standardi EN ISO 10211:2007 ingliskeelset teksti. | This Estonian standard EVS-EN ISO 10211:2008 consists of the English text of the European standard EN ISO 10211:2007. |
| Standard on kinnitatud Eesti Standardikeskuse 30.01.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas. | This standard is ratified with the order of Estonian Centre for Standardisation dated 30.01.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation. |
| Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 15.12.2007. | Date of Availability of the European standard text 15.12.2007. |
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## Thermal bridges in building construction - Heat flows and surface temperatures - Detailed calculations (ISO 10211:2007)

Ponts thermiques dans les bâtiments - Flux thermiques et températures superficielles - Calculs détaillés (ISO 10211:2007)

Wärmebrücken im Hochbau - Wärmeströme und Oberflächentemperaturen - Detaillierte Berechnungen (ISO 10211:2007)



This European Standard was approved by CEN on 7 December 2007.

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# Foreword

This document (EN ISO 10211:2007) has been prepared by Technical Committee ISO/TC 163 "Thermal performance and energy use in the built environment" in collaboration with Technical Committee CEN/TC 89 "Thermal performance of buildings and building components", the secretariat of which is held by SIS.

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of an identical text or by endorsement, at the latest by June 2008, and conflicting national standards shall be withdrawn at the latest by June 2008.

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**Endorsement notice**

The text of ISO 10211:2007 has been approved by CEN as a EN ISO 10211:2007 without any modification.

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## Introduction

Thermal bridges, which in general occur at any junction between building components or where the building structure changes composition, have two consequences compared with those of the unbridged structure:

a) a change in heat flow rate, and

b) a change in internal surface temperature.

Although similar calculation procedures are used, the procedures are not identical for the calculation of heat flows and of surface temperatures.

A thermal bridge usually gives rise to three-dimensional or two-dimensional heat flows, which can be precisely determined using detailed numerical calculation methods as described in this International Standard.

In many applications, numerical calculations based on a two-dimensional representation of the heat flows provide results of adequate accuracy, especially when the constructional element is uniform in one direction.

A discussion of other methods for assessing the effect of thermal bridges is provided in ISO 14683.

ISO 10211 was originally published in two parts, dealing with three-dimensional and two-dimensional calculations separately.

# Thermal bridges in building construction — Heat flows and surface temperatures — Detailed calculations

## 1 Scope

This International Standard sets out the specifications for a three-dimensional and a two-dimensional geometrical model of a thermal bridge for the numerical calculation of:

— heat flows, in order to assess the overall heat loss from a building or part of it;

— minimum surface temperatures, in order to assess the risk of surface condensation.

These specifications include the geometrical boundaries and subdivisions of the model, the thermal boundary conditions, and the thermal values and relationships to be used.

This International Standard is based upon the following assumptions:

— all physical properties are independent of temperature;

— there are no heat sources within the building element.

This International Standard can also be used for the derivation of linear and point thermal transmittances and of surface temperature factors.

## 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.

ISO 6946, *Building components and building elements — Thermal resistance and thermal transmittance — Calculation method*

ISO 7345, *Thermal insulation — Physical quantities and definitions*

ISO 13370:2007, *Thermal performance of buildings — Heat transfer via the ground — Calculation methods*

ISO 13788, *Hygrothermal performance of building components and building elements — Internal surface temperature to avoid critical surface humidity and interstitial condensation — Calculation methods*