
**Thermal bridges in building
construction — Linear thermal
transmittance — Simplified methods and
default values**

*Ponts thermiques dans les bâtiments — Coefficient linéique de
transmission thermique — Méthodes simplifiées et valeurs par défaut*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 14683 was prepared by Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 2, *Calculation methods*.

This second edition cancels and replaces the first edition (ISO 14683:1999), which has been technically revised.

The following principal changes have been made to the first edition:

- the Scope has been amended to remove the restriction on window and door frames and curtain walling, and specifies that the default values of linear thermal transmittance are provided for information;
- 5.2 is a new subclause replacing some elements previously contained in 4.2;
- 5.5 is a summary into a short text of the former 5.4, the remainder of which has been transferred into informative Annex A;
- Annex A contains values of linear thermal transmittance which have all been reviewed, many of them amended upwards as a result of changing the basis in Table A.1 (intermediate floor slabs thickness of 200 mm instead of 150 mm; frames in openings of thickness 60 mm instead of 400 mm).

Introduction

This International Standard provides the means (in part) to assess the contribution that building products and services make to energy conservation and to the overall energy performance of buildings.

Thermal bridges in building constructions give rise to changes in heat flow rates and surface temperatures compared with those of the unbridged structure. These heat flow rates and temperatures can be precisely determined by numerical calculation in accordance with ISO 10211. However, for linear thermal bridges, it is often convenient to use simplified methods or tabulated values to obtain an estimate of their linear thermal transmittance.

The effect of repeating thermal bridges which are part of an otherwise uniform building element, such as wall ties penetrating a thermal insulation layer or mortar joints in lightweight blockwork, needs to be included in the calculation of the thermal transmittance of the building element concerned, in accordance with ISO 6946.

Although not covered by this International Standard, it is worth noting that thermal bridges can also give rise to low internal surface temperatures, with an associated risk of surface condensation or mould growth.

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Thermal bridges in building construction — Linear thermal transmittance — Simplified methods and default values

1 Scope

This International Standard deals with simplified methods for determining heat flows through linear thermal bridges which occur at junctions of building elements.

This International Standard specifies requirements relating to thermal bridge catalogues and manual calculation methods.

Default values of linear thermal transmittance are given in Annex A for information.

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 7345, *Thermal insulation — Physical quantities and definitions*

ISO 10211, *Thermal bridges in building construction — Heat flows and surface temperatures — Detailed calculations*

3 Terms, definitions, symbols and units

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 7345 and the following apply.

3.1.1

linear thermal bridge

thermal bridge with a uniform cross section along one of the three orthogonal axes

3.1.2

point thermal bridge

localized thermal bridge whose influence can be represented by a point thermal transmittance

3.1.3

linear thermal transmittance

heat flow rate in the steady state divided by length and by the temperature difference between the environments on either side of a thermal bridge

NOTE The linear thermal transmittance is a quantity describing the influence of a linear thermal bridge on the total heat flow.