

INTERNATIONAL STANDARD

**ISO
10291**

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Glass in building — Determination of steady-state U values (thermal transmittance) of multiple glazing — Guarded hot plate method

*Verre dans la construction — Détermination du coefficient de transmission
thermique U , en régime stationnaire des vitrages multiples — Méthode
de la plaque chaude gardée*



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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.

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.

International Standard ISO 10291 was prepared by Technical Committee ISO/TC 160, *Glass in building*, Subcommittee SC 2, *Use considerations*.

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Glass in building — Determination of steady-state U values (thermal transmittance) of multiple glazing — Guarded hot plate method

1 Scope

This International Standard specifies a measuring method used to determine the coefficient of thermal transmittance, the U -value, of multiple glazing with flat and parallel surfaces, including cast and figured rolled glass.

It applies to multiple glazing with outer panes which are not transparent to far-infrared radiation, which is the case for normal window glass. However internal elements may be far-infrared transparent.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 8302:1991, *Thermal insulation — Determination of steady-state thermal resistance and related properties — Guarded hot plate apparatus.*

ISO 10292:1994, *Glass in building — Calculation of steady-state U values (thermal transmittance) of multiple glazing.*

3 General

This International Standard makes possible the determination of the coefficient of thermal transmittance, the U -value, in the central area of the multiple glazing. Edge effects, due to the thermal bridge through the spacer of a sealed glazing unit or through the frame are not included. Neither is energy transfer due to solar radiation taken into account.

The determination of the coefficient of thermal transmittance is performed for conditions which will correspond to the average situation for glazing in practice. In this way a fair comparison between different products becomes possible.

4 Basic equations and units

The coefficient of thermal transmittance, the U -value, of glazing characterizes the heat transfer through the central part of the glazing, i.e. without edge effects, and defines the steady-state density of heat transfer per unit of time, per surface area unit and per temperature difference between the ambient temperatures on each side. The U -value is given in watts per square metre kelvin [$W/(m^2 \cdot K)$].