

Third edition  
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## **Building materials and products — Hygrothermal properties — Tabulated design values and procedures for determining declared and design thermal values**

*Matériaux et produits pour le bâtiment — Propriétés hygrothermiques —  
Valeurs utiles tabulées et procédures pour la détermination des valeurs  
thermiques déclarées et utiles*



Reference number  
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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 10456 was prepared by Technical Committee ISO/TC 163, *Thermal performance and energy use in the built environment*, Subcommittee SC 2, *Calculation methods*.

This third edition cancels and replaces the second edition (ISO 10456:1999), which has been technically revised.

The following changes have been made to the second edition:

- the Scope has been extended to include tabulated design values of thermal and moisture properties of materials, and the title has been modified accordingly;
- an Introduction has been added;
- the Scope specifies that moisture coefficients are valid only between 0 °C and 30 °C;
- 4.2 has been added as a new subclause on tests for moisture properties;
- 7.2 has been extended to contain general information about climates;
- 7.4 contains clarification that ageing factors are not applied if taken into account in declared values;
- 7.5 has been added as a new subclause dealing with convection in insulating materials;
- Clause 8 has been added, giving tabulated design values (in Tables 3, 4 and 5); the data, taken from EN 12524, have been reviewed and updated.
- Annex A contains data reviewed for extruded polystyrene (XPS) and polyurethane (PU).

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## 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.

Heat and moisture transfer calculations require design values of thermal and moisture properties for materials used in building applications.

Design values can be derived from declared values that are based on measured data on the product concerned, which is usually the case for thermal insulation materials. Where the design conditions differ from those of the declared value, the data needs to be converted to the applicable conditions. This International Standard provides the methods and data for making this conversion.

For materials for which measured values are not available, design values can be obtained from tables. This International Standard provides such tabulated information based on the compilation of existing data (see reference documents listed in the Bibliography).