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## **Thermal performance of buildings — Calculation of internal temperatures of a room in summer without mechanical cooling — General criteria and validation procedures**

*Performance thermique des bâtiments — Calcul des températures  
intérieures en été d'un local sans dispositif de refroidissement —  
Critères généraux et procédures de validation*



Reference number  
ISO 13791:2012(E)

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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 13791 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 13791:2004), which has been technically revised. The main changes compared to the previous edition are given in the following table:

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Clause/subclause	Changes
2	Added ISO 9050, ISO 10292, ISO 15099, ISO 15927-2 and EN 673
3.2	Deleted $q_a$ and $v_m$ and added $m_a$
4.2.1	Amended Equation (1) Deleted $m_{a,i}$ and added the descriptions of $\rho_a$ and $v_{ai}$
4.5.6.1	Replaced $q_a$ by $m_a$
8.3.9.1	Amended the values in Tables 22 and 23
8.3.9.2	Amended the values in Tables 24 and 25
1.2.2	Replaced $m$ by $m_a$ Amended Equation (I.1) and added the descriptions of $n$ and $\Delta p_0$ Amended Equation (I.4) and added the description of $\Delta C_w$ Amended the unit used in Table I.1
1.2.3	Replaced $m$ , $m_w$ and $m_T$ by $m_a$ , $m_{a,w}$ and $m_{a,T}$ , respectively Amended Equations (I.5), (I.6), (I.9), (I.10), (I.11), (I.12), (I.13) and (I.14) Replaced $A$ by $A_T$ in Equation (I.13) Replaced $\Delta c_p$ by $\Delta C_w$ Added the descriptions of Equations (I.8) and (I.10)
1.2.3.3.3	Amended the description I.2.3.3.3
1.3.2	Replaced $\Delta c_p$ by $\Delta C_w$ Replaced $m_w$ by $m_{a,w}$
1.3.3	Replaced $m_T$ by $m_{a,T}$
Annex J	Amended the values in Tables J.1 and J.2
Annex K	Added as a new annex

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## Introduction

This International Standard is intended for use by specialists to develop and/or validate methods for the hourly calculation of the internal temperatures of a single room.

Examples of application of such methods include:

- a) assessing the risk of internal overheating;
- b) optimizing aspects of building design (building thermal mass, solar protection, ventilation rate, etc.) to provide thermal comfort conditions;
- c) assessing whether a building requires mechanical cooling.

Criteria for building performance are not included. They can be considered at national level. This International Standard can also be used as a reference to develop more simplified methods for the above and similar applications.