FINAL DRAFT
International Standard

ISO/FDIS 7730

Ergonomics of the thermal environment — Analytical determination and interpretation of thermal comfort using calculation of the PMV and PPD indices and local thermal comfort criteria

Ergonomie des ambiances thermiques — Détermination analytique et interprétation du confort thermique par le calcul des indices PMV et PPD et par des critères de confort thermique local

ISO/TC **159**/SC **5**

Secretariat: **BSI**

Voting begins on:
2025-05-28

Voting terminates on:
2025-07-23

ISO/CEN PARALLEL PROCESSING

Reference number
ISO/FDIS 7730:2025(en)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

ISO draws attention to the possibility that the implementation of this document may involve the use of (a) patent(s). ISO takes no position concerning the evidence, validity or applicability of any claimed patent rights in respect thereof. As of the date of publication of this document, ISO had not received notice of (a) patent(s) which may be required to implement this document. However, implementers are cautioned that this may not represent the latest information, which may be obtained from the patent database available at www.iso.org/patents. ISO shall not be held responsible for identifying any or all such patent rights.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 5, *Ergonomics of the physical environment*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 122, *Ergonomics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 7730:2005), which has been technically revised.

The main changes are as follows:

— deletion of sections of the text (long-term evaluations, adaptation and diversity);

— correction of the calculation program;

— deletion of tables for predicting predicted mean vote (PMV).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

This document, covering the evaluation of moderate thermal environments, is one of a number of ISO documents (alongside ISO 7243, ISO 7933 and ISO 11079, all dealing with extreme environmental conditions) specifying methods for the measurement and evaluation of the moderate and extreme thermal environments to which human beings are exposed.

A human being's thermal sensation is mainly related to the thermal balance of his or her body as a whole. This balance is influenced by physical activity and clothing, as well as the environmental parameters air temperature, mean radiant temperature, air velocity and air humidity. When these factors have been estimated or measured, the index for thermal comfort predicted mean vote (PMV) can be calculated. See Clause 4.

The predicted percentage dissatisfied (PPD) index provides information on thermal discomfort or thermal dissatisfaction expressed as the percentage of people likely to feel too warm or too cool in a given environment. The PPD can be obtained from the PMV. See Clause 5.

Thermal discomfort can also be caused by unwanted local cooling or heating of the body. The most common local discomfort factors are radiant temperature asymmetry (cold or warm surfaces), draught (defined as a local cooling of the body caused by air movement), vertical air temperature difference and cold or warm floors. Clause 6 specifies how to predict the percentage dissatisfied owing to local discomfort parameters.

Dissatisfaction can be caused by hot or cold discomfort for the body as a whole. Comfort limits can, in this case, be expressed by the PMV and PPD indices. But thermal dissatisfaction can also be caused by local thermal discomfort parameters. Clause 7 deals with acceptable thermal environments for comfort.

Clauses 6 and 7 are based mainly on steady-state conditions. Means of evaluating non-steady-state conditions, such as transients (temperature steps), cycling temperatures or temperature ramps, are presented in Clause 8. Thermal environments in buildings or workplaces change over time and it is not always possible to keep conditions within recommended limits.

This document is intended to be used together with the technical guideline ISO/TR 23663. It is also intended to be used along with ISO 28803 when considering persons with special requirements, such as those with physical disabilities. Ethnic, national or geographical differences are also important, especially when considering non-conditioned spaces. Guidance is given in Clause 8 and 10 in the guideline ISO/TR 23663