ICS 13.180, 43.020 SLOVENSKÁ TECHNICKÁ NORMA November 2026

STN	**Ergonómia tepelného prostredia Hodnotenie tepelného prostredia vo vozidlách Časť 2: Stanovenie ekvivalentnej teploty (ISO 14505-2: 2026)**	**STN EN ISO 14505-2** 83 3566

Ergonomics of the thermal environment - Evaluation of thermal environments in vehicles - Part 2: Determination of equivalent temperature (ISO 14505-2:2026)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 10/26

Obsahuje: EN ISO 14505-2:2026, ISO 14505-2:2026

Oznámením tejto normy sa ruší
STN EN ISO 14505-2 (83 3566) z mája 2007

143264

Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2026
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 14505-2

August 2026

ICS 13.180; 43.020

Supersedes EN ISO 14505-2:2006

English Version

Ergonomics of the thermal environment - Evaluation of thermal environments in vehicles - Part 2: Determination of equivalent temperature (ISO 14505-2:2026)

Ergonomie des ambiances thermiques - Évaluation des ambiances thermiques dans les véhicules - Partie 2: Détermination de la température équivalente (ISO 14505-2:2026)

Ergonomie der thermischen Umgebung - Beurteilung der thermischen Umgebung in Fahrzeugen - Teil 2: Bestimmung der Äquivalenttemperatur (ISO 14505-2:2026)

This European Standard was approved by CEN on 20 July 2026.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

© 2026 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. EN ISO 14505-2:2026 E

Contents

Page

European foreword..... 3

European foreword

This document (EN ISO 14505-2:2026) has been prepared by Technical Committee ISO/TC 159 "Ergonomics" in collaboration with Technical Committee CEN/TC 122 “Ergonomics” the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2027, and conflicting national standards shall be withdrawn at the latest by February 2027.

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

This document supersedes EN ISO 14505-2:2006.

Any feedback and questions on this document should be directed to the users’ national standards body/national committee. A complete listing of these bodies can be found on the CEN website.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Türkiye and the United Kingdom.

Endorsement notice

The text of ISO 14505-2:2026 has been approved by CEN as EN ISO 14505-2:2026 without any modification.

International Standard

ISO 14505-2

Ergonomics of the thermal environment — Evaluation of thermal environments in vehicles —

Part 2: Determination of equivalent temperature

Ergonomie des ambiances thermiques — Évaluation des ambiances thermiques dans les véhicules —

Partie 2: Détermination de la température équivalente

Second edition
2026-08

Reference number
ISO 14505-2:2026(en)

© ISO 2026



COPYRIGHT PROTECTED DOCUMENT

© ISO 2026

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

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 ... **iv**

Introduction ... **v**

1 Scope ... **1**

2 Normative references ... **1**

3 Terms and definitions ... **1**

4 Assessment principles ... **2**
4.1 General ... 2
4.2 General description of equivalent temperature ... 3
4.3 General determination principle of equivalent temperature ... 3

5 Specific equivalent temperatures ... **4**
5.1 General ... 4
5.2 Whole body equivalent temperature ... 4
5.2.1 Determination principle ... 4
5.2.2 Calculation ... 4
5.3 Segmental equivalent temperature ... 5
5.3.1 Determination principle ... 5
5.3.2 Calculation ... 5
5.4 Directional equivalent temperature ... 5
5.4.1 Determination principle ... 5
5.4.2 Calculation ... 6
5.5 Omnidirectional equivalent temperature ... 6
5.5.1 Determination principle ... 6
5.5.2 Calculation ... 7

6 Measuring instruments ... **7**

7 Assessment ... **8**
7.1 General ... 8
7.2 Determination of whole body equivalent temperature ... 8
7.2.1 General ... 8
7.2.2 Determination with omnidirectional sensors ... 8
7.2.3 Determination with a thermal manikin ... 8
7.3 Determination of local equivalent temperature ... 8
7.3.1 General ... 8
7.3.2 Determination with omnidirectional sensors or flat, heated sensors ... 8
7.3.3 Determination with a thermal manikin ... 9

8 Equivalent contact temperature ... **9**
8.1 General ... 9
8.2 Calculation methodology ... 9

Annex A (informative) **Examples of measuring instruments** ... **14**

Annex B (informative) **Characteristics and specifications of measuring instruments** ... **17**

Annex C (informative) **Calibration and other determinations** ... **22**

Annex D (informative) **Interpretation of equivalent temperature** ... **24**

Annex E (informative) **Examples** ... **28**

Bibliography ... **32**

© ISO 2026 – All rights reserved

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 second edition cancels and replaces the first edition (ISO 14505-2:2006/Cor 1:2007), which has been technically revised.

The main change is as follows:

— addition of an evaluation method for the contact areas (equivalent contact temperature).

A list of all parts in the ISO 14505 series can be found on the ISO website.

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.

© ISO 2026 – All rights reserved

Introduction

The interaction of convective, radiative and conductive heat exchange in a vehicle compartment is very complex. External thermal loads in combination with the internal heating and ventilation system of the vehicle create a local climate that can vary considerably in space and time. Asymmetric thermal conditions arise, and these are often the main cause of complaints of thermal discomfort. In vehicles without or with poor heating, ventilating and air-conditioning system (HVAC-system), thermal stress is determined largely by the impact of the ambient climatic conditions on the vehicle compartment.

Subjective evaluation is integrative, as the individual combines into one reaction the combined effect of several thermal stimuli. However, it is not sufficiently detailed or accurate for repeated use. Technical measurements provide detailed and accurate information but must be integrated in order to predict the thermal effects on humans. Since several climatic factors play a role for the final heat exchange of a person, these factors must be integrated to a measure, representing their relative importance.

This document includes the equivalent temperature models t_{eq} for the assessment of the thermal conditions. For special consideration of the seat, the equivalent contact temperature $t_{eq,cont}$ can be applied for body compartments in contact to surfaces. Methods for the calculation of t_{eq} using thermal factors are described in ISO 14505-4. The methodology described in this document can also be used in specific performance standards for testing of HVAC-systems for vehicles and similar confined spaces.

© ISO 2026 – All rights reserved

International Standard **ISO 14505-2:2026(en)**

Ergonomics of the thermal environment — Evaluation of thermal environments in vehicles —

Part 2: Determination of equivalent temperature

1 Scope

This document specifies requirements and recommendations for the assessment of the thermal conditions inside a vehicle compartment. It can also be applied to other confined spaces with asymmetric climatic conditions.

It applies to the assessment of thermal conditions, when deviations from thermal neutrality are relatively small.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 13731, *Ergonomics of the thermal environment — Vocabulary and symbols*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN