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## **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*



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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.

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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 14505-2 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 5, *Ergonomics of the physical environment*.

ISO 14505 consists of the following parts, under the general title *Ergonomics of the thermal environment — Evaluation of thermal environments in vehicles*:

- *Part 1: Principles and methods for assessment of thermal stress* [Technical Specification]
- *Part 2: Determination of equivalent temperature*
- *Part 3: Evaluation of thermal comfort using human subjects*

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## 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 having a 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 require integration in order to predict the thermal effects on humans. Since several climatic factors play a role for the final heat exchange of a person, an integrated measure of these factors, representing their relative importance, is required.