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STANDARD

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**Ergonomics of the thermal
environment — Principles and application
of relevant International Standards**

*Ergonomie des ambiances thermiques — Principes et application des
Normes internationales pertinentes*



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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.

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.

International Standard ISO 11399 was prepared by Technical Committee ISO/TC 159, *Ergonomics*, Subcommittee SC 5, *Ergonomics of the physical environment*.

Annexes A, B and C of this International Standard are for information only.

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Introduction

This International Standard is one of a series of standards which specify methods of measuring and evaluating hot, moderate or cold thermal environments. It provides the underlying principles behind the assessment of human response to thermal environments in general and, in particular, those used in the development of each International Standard. It also demonstrates the relationships between the standards and how they can be used in a complementary way to evaluate the whole range of thermal environments.

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Ergonomics of the thermal environment — Principles and application of relevant International Standards

1 Scope

The purpose of this International Standard is to specify information which will allow the correct, effective and practical use of International Standards concerned with the ergonomics of the thermal environment.

This includes:

- a) a description of each relevant International Standard and the complementary way in which these standards can be used in the ergonomic assessment of thermal environments;
- b) a description of the underlying principles used in each relevant International Standard;
- c) a description of the underlying principles concerning the ergonomics of the thermal environment.

This International Standard applies to the application of those International Standards listed in clause 2. These standards cover thermal environments over the whole range of ergonomics investigation.

The information provided in this International Standard is not sufficient for the assessment of thermal environments. For that purpose, the appropriate International Standard should be used (see clause 2).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements

based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 7243:1989, *Hot environments — Estimation of the heat stress on working man, based on the WBGT-index (wet bulb globe temperature).*

ISO 7726:1985, *Thermal environments — Instruments and methods for measuring physical quantities.*

ISO 7730:1994, *Moderate thermal environments — Determination of the PMV and PPD indices and specification of the conditions for thermal comfort.*

ISO 7933:1989, *Hot environments — Analytical determination and interpretation of thermal stress using calculation of required sweat rate.*

ISO 8996:1990, *Ergonomics — Determination of metabolic heat production.*

ISO 9886:1992, *Evaluation of thermal strain by physiological measurements.*

ISO 9920:1995, *Ergonomics of the thermal environment — Estimation of the thermal insulation and evaporative resistance of a clothing ensemble.*

ISO 10551:1995, *Ergonomics of the thermal environment — Assessment of the influence of the thermal environment using subjective judgement scales.*

ISO/TR 11079:1993, *Evaluation of cold environments — Determination of requisite clothing insulation (IREC).*