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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 40233-2021

Ergonomics of the thermal environment - Instruments for measuring physical quantities

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard is equivalent to the adoption of ISO 7726.1998 "Ergonomics of Thermal Environment Physical Quantities Measuring Instruments".

The Chinese documents that have a consistent correspondence relationship with the normatively cited international documents in this standard are as follows.

---GB/T 18049-2017 Ergonomics of thermal environment through calculation of PMV and PPD index and local thermal comfort criteria

Analysis, measurement and interpretation of thermal comfort (ISO 7730.2005, IDT)

This standard has made the following editorial changes.

---Adjusted the number of formulas in the appendix according to the specification.

This standard was proposed and managed by the National Ergonomics Standardization Technical Committee (SAC/TC7).

Drafting organizations of this standard. Zhejiang Anji Chair Industry Technology Co., Ltd., China National Institute of Standardization, Guangdong Midea Refrigeration Equipment Co., Ltd.,

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Anji County Quality and Technical Supervision and Testing Center, Wuhu Meizhi Air Conditioning Equipment Co., Ltd., Chongqing University, Tsinghua University.

Introduction

This standard is one of a series of documents applied to the ergonomics research of thermal environment.

This series of standards mainly involves the following aspects.

---The final clauses can be used in measurement methods, experiments or annotations that already exist or are being drafted;

--- Formulate specifications for related physical quantity test methods that describe the characteristics of the thermal environment;

---Provide several options for explaining parameters;

---The recommended value or limit value of the thermal environment suitable for standard comfortable environment and extreme environment (including heat and cold);

---Standardize the test method of individual or collective heating (cold) protection device and the effect of the process.

Any measuring instrument that can meet (or exceed) the accuracy required by this standard can be used.

The appendix introduces some recommended instruments for physical quantity measurement. The characteristics of these instruments will be based on the measurement principle, structure, and use method.

The style is different. Users can also compare the accuracy of related instruments and equipment on the market, and check that they meet the requirements of this standard.

The equipment can be used.

Ergonomics physical quantity measuring instrument for thermal environment

1 Scope

This standard specifies the basic characteristics and measurement methods of thermal environment physical quantity measuring instruments.

This standard is to standardize the recording of test data, thereby defining some indicators. These definitions do not involve specific comfort or heat stress.

index.

This standard applies to.

a) Specifications for the manufacture and equipment use of environmental physical quantity measuring instruments;

b) Both parties draw up relevant contracts for measuring these physical quantities.

This standard applies to the effects of hot, mild, comfortable or cold environments on the human body.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version applies to this article

Pieces. For undated reference documents, the latest version (including all amendments) is applicable to this document.

ISO 7730.1994 Ergonomics of the thermal environment through the calculation of PMV and PPD index and local thermal comfort criteria for thermal comfort

Perform analysis, determination and interpretation (ModeratethermalenvironmentsDeterminationofthePMVandPPDindices

andspecificationoftheconditionsforthermalcomfort)

3.1 Comfortable and stressful environment

The specifications and methods contained in this standard are divided into two categories according to the impact of the thermal environment on people.

Type C. Its specifications and methods are mainly used for measurements made in a mild environment close to comfort.

Class S. Its specifications and methods are mainly used for measurements under high or even extreme stress environments.

The specifications and methods described in each category take into account the actual

possibility of on-site measurement and the performance of currently available measuring instruments.

3.2.1 Overview

Determining the overall index of comfort or heat stress requires measuring physical quantities related to the environment. These physical quantities can be based on their impact on the environment

The degree of dependence is divided into two types. basic physical quantities and derived physical quantities.

3.2.2 Basic physical quantities

Each basic physical quantity can independently characterize environmental parameters. Based on the establishment of thermal balance by the human body in a thermal environment, these physical quantities are usually

It is used to define the degree of comfort or heat stress, as follows.

a) Air temperature, expressed in thermodynamic temperature (Ta) or Celsius temperature (ta);

b) Average radiation temperature, expressed in thermodynamic temperature (Tr) or Celsius temperature (tr); plane radiation temperature, expressed in thermodynamic temperature (Tpr) or

Celsius temperature (tpr) representation; the unit of direct radiation is W/m2;