INTERNATIONAL STANDARD

ISO 16533

First edition
2014-07-01

Textiles — Measurement of exothermic and endothermic properties of textiles under humidity change

Textiles — Mesurage des propriétés exothermiques et endothermiques de textiles sous conditions d'humidité changeantes

Reference number
ISO 16533:2014(E)

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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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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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 38, *Textiles*.

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Introduction

The thermal properties of textile materials contribute to a wearer's physiological comfort, product's durability, etc. Hence, there are many kinds of products with specific thermal performances and various test methods that have been developed and standardized. However, these tests should be conducted in a certain humidity. The method for thermal properties in elevated or reduced humidity has not been standardized.

All materials generate heat when absorbing moisture and absorb heat when releasing moisture. The heat of absorption varies according to the material, for example, the heat of absorption in wool fibre is much bigger than that in common synthetic fibre. Recently, with this property, some heat-generating textiles have been developed and applied to various products, such as outdoor wear, sportswear, inner wear, special working wear, and healthcare wear. Therefore, the test for the hygroscopic and exothermic properties of textiles is needed for both producers and customers. Despite these needs, accurate and reliable information about hygroscopic and exothermic properties of textiles cannot be offered because of the absence of a standard test method.

The exothermic and endothermic properties of textiles under changing conditions of environmental humidity can be measured with this test method and apparatus proposed in this International Standard.

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Textiles — Measurement of exothermic and endothermic properties of textiles under humidity change

1 Scope

This International Standard specifies a method for the measurement of exothermic and endothermic properties by moisture absorption and desorption in sheet-like textiles, e.g. fabrics, knit or nonwovens for clothing, bedding, upholstery, and similar textile products.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
exothermic property
property of material whereby it releases heat to the surroundings

3.2
endothermic property
property of material whereby it absorbs heat from the surroundings

3.3
hygroscopic and exothermic property
property of material whereby it generates heat by absorbing moisture and releases the generated heat to its surroundings where relative humidity changes from low to high over time

3.4
hygroemissive and endothermic property
property of material whereby it loses heat and cools down by releasing moisture through evaporation to its surroundings where relative humidity changes from high to low over time

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