
**Clothing and equipment for protection
against heat — Test method for
convective heat resistance using a hot
air circulating oven**

*Vêtements et équipement de protection contre la chaleur — Méthode
d'essai de la résistance à la chaleur de convection au moyen d'un four
à circulation d'air chaud*

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ISO copyright office
Ch. de Blandonnet 8 • CP 401
CH-1214 Vernier, Geneva, Switzerland
Tel. +41 22 749 01 11
Fax +41 22 749 09 47
copyright@iso.org
www.iso.org

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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.

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 documents 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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 94, *Personal safety — Protective clothing and equipment*, Subcommittee SC 13, *Protective clothing*.

This second edition cancels and replaces the first edition (ISO 17493:2000), which has been technically revised with the following changes:

- the specifications for the apparatus have been improved and completed ([5.1](#), [5.2](#), [5.4](#), new [5.5](#), [5.6](#), [5.7](#));
- procedures for the calibration of the test oven have been added (new [Clause 7](#));
- a list of ASTM standards related to ISO 17493 is given in the Bibliography.

Introduction

This test method allows for the evaluation of the heat resistance of materials, protective clothing and equipment when suspended in a hot air circulating oven at a specified temperature of typically 180 °C or 260 °C for typically 5 min. Visible observations of charring, deformation, delamination, hole formation, ignition, melting of the specimen are recorded. The exposure in the hot air circulating oven may be used either for a visual evaluation only or as a pre-treatment for a material property measurement such as shrinkage or other property measurement which is not specified in this document.

Clothing and equipment for protection against heat — Test method for convective heat resistance using a hot air circulating oven

1 Scope

This document describes a test method for evaluating the heat resistance of protective clothing materials or items and equipment when exposed in a hot air circulating oven. The method is intended to evaluate physical changes in a material at a given exposure temperature. Materials are evaluated for defined visible changes including the measurement of shrinkage.

Different procedures are provided depending on the type of the protective clothing material or item being tested.

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 3759, *Textiles — Preparation, marking and measuring of fabric specimens and garments in tests for determination of dimensional change*

ISO 3873, *Industrial safety helmets*

ISO 4643:1992, *Moulded plastics footwear — Lined or unlined poly(vinyl chloride) boots for general industrial use — Specification*

IEC 60584-1, *Thermocouples — Part 1: EMF specifications and tolerances*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

charring

response of the test specimen to heat evidenced by the formation of a carbonaceous residue

3.2

clothing assembly

series of garments arranged in the order as worn

Note 1 to entry: They may contain multilayer materials, material combinations, or a series of separate garments in single layers.

3.3

component assembly

combination of all materials and *hardware* (3.7) presented exactly as the finished garment construction