
Footwear — Ageing conditioning

Chaussures — Conditionnement en vue du vieillissement

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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).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, 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.

This document was prepared by Technical Committee ISO/TC 216, *Footwear*.

This second edition cancels and replaces the first edition (ISO 20870:2001) which has been technically revised.

Footwear — Ageing conditioning

1 Scope

This document specifies laboratory procedures which are intended to imitate the effects of naturally occurring reactions. The physical properties of interest are measured before and after the application of the specified treatments. The effect of the ageing procedures on any of the physical properties of the material can be examined.

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 17709, *Footwear — Sampling location, preparation and duration of conditioning of samples and test pieces*

ISO 18454, *Footwear — Standard atmospheres for conditioning and testing of footwear and components for footwear*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 17709 and ISO 18454 apply.

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

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

4 Apparatus and material

The following apparatus and material shall be used.

4.1 For heat ageing.

4.1.1 Oven, with forced circulation, capable of maintaining the temperature of $70\text{ °C} \pm 2\text{ °C}$.

4.2 For humidity ageing.

4.2.1 Ageing apparatus, of such a size that the total volume of test pieces does not exceed 10 % of the free air space, and such that the test pieces are free of strain, freely exposed to the ageing atmosphere on all sides and not exposed to light.

4.2.2 Glass vessel, with a suitable closure for maintaining the test pieces at a relative humidity of 100 %, and a water-bath or drying oven for heating the vessel, capable of maintaining the temperature of $70\text{ °C} \pm 2\text{ °C}$.

5 Sampling and conditioning

The number, size and shape of the test pieces shall be appropriate to the property being examined, and sampling shall be done in accordance with ISO 17709 before ageing, with the dimensions defined in the particular test.

6 Procedure

After conditioning, the test of the required physical property shall be performed and the test pieces shall be brought rapidly to the ageing condition. The duration of heat ageing and of humidity ageing is $168 \text{ h} \pm 2 \text{ h}$.

At the end of the ageing treatment, condition for 24 h according to ISO 18454 before testing.

7 Expression of results

The percentage change in the property being examined is given by [Formula \(1\)](#):

$$\frac{\bar{x}_a - \bar{x}_o}{\bar{x}_o} \times 100 \quad (1)$$

where

$\bar{x}_o$ is the average value of the property before ageing;

$\bar{x}_a$ is the average value of the property after ageing.

8 Test report

The test report shall include the following information:

- a) a reference to this document, i.e ISO 20870:—;
- b) a full identification of the sample;
- c) a reference to this method of test;
- d) the results, expressed in accordance with [Clause 7](#);
- e) indicate whether the test is heat ageing or humidity ageing;
- f) the properties determined, with their individual values before and after ageing and, if appropriate, the percentage change;
- g) the date of testing;
- h) the standard atmospheric conditions observed during the test.