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**Footwear — Test methods for uppers  
and lining — Flex resistance**

*Chaussures — Méthodes d'essai pour les tiges et les doublures —  
Résistance à la flexion*

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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](http://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](http://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 WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

ISO 17694 was prepared by the European Committee Standardization (CEN) Technical Committee CEN/TC 309, *Footwear*, in collaboration with ISO Technical Committee TC 216, *Footwear*, in accordance with the agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 17694:2003), which has been technically revised.

# Footwear — Test methods for uppers and lining — Flex resistance

## 1 Scope

This International Standard specifies a test method for determining the flex resistance of uppers and linings irrespective of the material in order to assess the suitability for the end use.

## 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, *Water for analytical laboratory use — Specification and test methods*

ISO 5402-1:2011, *Leather — Determination of flex resistance — Part 1: Flexometer method*

ISO 17709<sup>1)</sup>, *Footwear — Sampling location, preparation and duration of conditioning of samples and test pieces*

ISO 18454<sup>2)</sup>, *Footwear — Standard atmospheres for conditioning and testing of footwear and components for footwear*

## 3 Terms and definitions

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

### 3.1

#### **flex resistance**

resistance of a material to crack or otherwise fail at flexing creases

### 3.2

#### **surface**

visible site of the material during the use at the shoe

Note 1 to entry: The visible site of the material can be by upper the grain site of the leather or the coated site of a coated textile, by lining the site of the material visible from the inside of the shoe.

## 4 Short description

Test specimens are cut from a shoe vamp or from material for shoes, folded and inserted in the test machine. The test simulates the damage caused by the inward folding of the vamp of the upper, but does not readily reproduce damage occurring on outward folds. It is carried out humid, dry or in a cold climate.

## 5 Apparatus and material

The following apparatus and material shall be used.

1) EN 13400 is equivalent to ISO 17709.

2) EN 12222 is equivalent to ISO 18454.