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IULTCS/IUP 39-2

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**Leather — Determination of flex
resistance —**

Part 2:
Vamp flex method

*Cuir — Détermination de la résistance à la flexion —
Partie 2: Méthode de flexion d'empeigne*



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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).

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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 5402-2, formerly ISO 22288, was prepared by the Physical Test Commission of the International Union of Leather Technologists and Chemists Societies (IUP Commission, IULTCS) in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 289, *Leather*, the secretariat of which is held by UNI, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement). It was published as EN 13335.

It is based on IUP 39 published in *J. Soc. Leather Tech. Chem.*, **84** (7), p. 381, 2000, and declared an official method of the IULTCS in March 2001. The title was changed, [Clause 4](#) revised in 2013, and the standard re-numbered as ISO 5402-2.

IULTCS, originally formed in 1897, is a world-wide organization of professional leather societies to further the advancement of leather science and technology. IULTCS has three Commissions, which are responsible for establishing international methods for the sampling and testing of leather. ISO recognizes IULTCS as an international standardizing body for the preparation of test methods for leather.

This first edition cancels and replaces ISO 22288:2006 which has been technically revised.

ISO 5402 consists of the following parts, under the general title *Leather — Determination of flex resistance*:

- *Part 1: Flexometer method*
- *Part 2: Vamp flex method*

Leather — Determination of flex resistance —

Part 2: Vamp flex method

1 Scope

This part of ISO 5402 specifies a method for determining the wet or dry flex resistance of leather and finishes applied to leather. It is applicable to all types of leather below 3,0 mm in thickness.

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 2418, *Leather — Chemical, physical and mechanical and fastness tests — Sampling location*

ISO 2419, *Leather — Physical and mechanical tests — Sample preparation and conditioning*

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

3 Principle

A test piece is folded with the surface to be tested outwards over two inverted “V” shaped clamps. Relative movement of the clamps flexes the sample producing one downward crease surrounded by four upward creases. The test piece is examined periodically for damage.

4 Apparatus

4.1 **Test machine**, incorporating the following.

4.1.1 **Two inverted “V” shaped clamps** (Figures 1 and 2), aligned parallel to one another, centred on the same axis and with a minimum separation between the clamps of $(9,5 \pm 1,0)$ mm.

Each clamp shall have two parts.

4.1.1.1 An outer part comprising a “V” form with an internal angle of $(40 \pm 1)^\circ$ and a truncated tip radius of $(6,4 \pm 0,5)$ mm.

4.1.1.2 An inner part having the shape and size that shall complement the outer part.

4.1.2 **A means of applying a simple harmonic reciprocating motion** between the two clamps, to move them apart by $(19,0 \pm 1,5)$ mm and return them to the minimum separation (4.1.1) at a rate of oscillation of (300 ± 30) cycles/min.

4.1.3 **Counter**, to indicate the number of complete cycles.