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Leather — Physical and mechanical tests — Determination of softness

Cuir — Essais physiques et mécaniques — Détermination de la souplesse

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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 (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 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 17235 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).

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 third edition cancels and replaces the second edition (ISO 17235:2011), 4.1, 4.1.8, 4.2, 6.2, 6.5, 6.8, 6.9, Clause 7 c), and Annex A of which have been technically revised.

Leather — Physical and mechanical tests — Determination of softness

1 Scope

This International Standard specifies a non-destructive method for determining the softness of leather. It is applicable to all non-rigid leathers, e.g. shoe upper leather, upholstery leather, leathergoods leather, and apparel leather.

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*

3 Principle

A cylindrical rod of defined mass is lowered at a specified rate onto a securely clamped area of leather. The distension of the leather produced is recorded as the softness.

4 Apparatus

4.1 Test machine, shown in Figure 1, including the parts described in 4.1.1 to 4.1.7.

4.1.1 Circular aperture, A, diameter 35,0 mm ± 0,1 mm.

4.1.2 Metal rings, able to fit into aperture A and reduce the diameter of the aperture to 25,0 mm ± 0,1 mm and 20,0 mm ± 0,1 mm, respectively.

NOTE The apertures described above are more conveniently referred to by their nominal diameters of 35 mm, 25 mm, and 20 mm, respectively.

4.1.3 Clamps, B, capable of holding the leather securely both before the load pin is released and when the maximum force is applied while leaving the portion over the aperture free to move.

4.1.4 Cylindrical load pin, C, diameter 4,9 mm ± 0,1 mm and length 11,5 mm ± 0,1 mm rigidly attached to a cylindrical mass, D. The total mass of load pin and cylindrical load shall be 530 g ± 10 g.

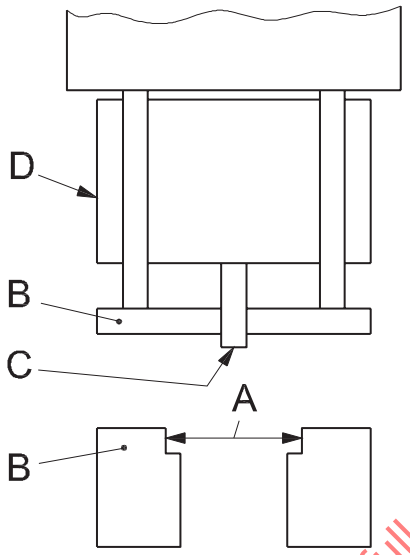
4.1.5 Means of guiding the load pin, such that the load pin acts perpendicularly to the leather surface and the vertical travel of the load pin is restricted to a distance of 11,5 mm ± 0,1 mm.

4.1.6 Means of lowering the load pin, such that the load pin travels its full permitted distance of 11,5 mm ± 0,1 mm in 1,5 s ± 0,5 s.

4.1.7 Gauge, reading to 0,1 mm, to directly measure the distension of the leather by the load pin.

4.1.8 Forces when measured in a static position, the effective total test force is composed of the combined force exerted by the load pin (4.1.4) and the cylindrical load (D) of (5,20 ± 0,1) N and an additional linearly decreasing spring force ranging from (0,73 ± 0,1) N at the 0,0mm position to (0,5 ± 0,1) N at 6,5 mm, so that the effective total test force is in a range of 6,13 N to 5,5 N.

4.2 Flat rigid metal disc, for setting gauge (4.1.7) to zero, minimum diameter 60 mm.



Key

A aperture
B clamps
C load pin
D cylindrical load

Figure 1 — Layout of the test machine

5 Sampling and sample preparation

Condition the leather in accordance with ISO 2419.

NOTE It is possible to take measurements without physically cutting a sample from the hide or skin.

6 Procedure

6.1 Select the aperture from 35 mm, 25 mm, or 20 mm.

NOTE It is suggested that the apertures are used as follows:

— 35 mm, measurement of firmer leathers, e.g. shoe upper leathers;

— 25 mm, measurement of leathers of, moderate softness, e.g. upholstery leathers and softer shoe upper leathers;

— 20 mm, measurement of softer leathers, e.g. apparel leathers.

6.2 Open the test machine and place the metal disc (4.2) on the upper face of the lower part of clamp B such that it covers the circular aperture.

6.3 Raise the load pin and close the test machine to clamp the metal disc in position.

6.4 Release the load pin, allow the reading on the gauge to become steady, and set to zero. Open the test machine and remove the metal disc.

6.5 Place the area of the leather defined in ISO 2418 such that it covers the whole of the upper face of the lower part of clamp B and the aperture, ensuring that the leather lies flat and that there are no obvious defects such as flay cuts or scar tissue over the aperture.

6.6 Raise the load pin and close the test machine to clamp the leather in position.

6.7 Release the load pin, allow the reading on the gauge to become steady, and record the reading. Open the test machine and remove the leather.

6.8 Repeat 6.5 to 6.7 using at least three separate and non-overlapping areas of leather, in accordance with ISO 2418. To guarantee that the areas are non-overlapping, the distance between the centres of each area shall be a distance apart which is greater than the diameter of the clamp B.

6.9 Report the individual readings and the mean value of the readings.

7 Test report

The test report shall include the following:

a) reference to this International Standard, i.e. ISO 17235;

b) nominal aperture(s) used in tests;

c) identification of the areas tested and the individual and mean readings for each aperture used;

d) standard atmosphere used for conditioning and testing as given in ISO 2419;

e) any deviations from the method specified in this International Standard;

f) full details for identification of the sample and any deviations from ISO 2418 with respect to sampling.

Annex A
(informative)

Source of apparatus

Examples of sources of suitable apparatus available commercially are given below. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of these products.

— MSA ENGINEERING SYSTEMS LIMITED, 3 Assured Drive, Thurmaston, Leicester, LE4 8BB, UK, www.msa-engineering.co.uk