

INTERNATIONAL
STANDARD

ISO
26082-1
IUP 53-1

Second edition
2019-03

**Leather — Physical and mechanical
test methods for the determination of
soiling —**

**Part 1:
Rubbing (Martindale) method**

*Cuir — Méthodes d'essai physique et mécanique de détermination de
la salissure —*

Partie 1: Méthode par frottement (Martindale)

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Reference numbers
ISO 26082-1:2019(E)
IUP 53-1:2019(E)

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Published in Switzerland

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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 of 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 www.iso.org/iso/foreword.html.

This document was prepared by the Physical Tests 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 sampling and the testing of leather. ISO recognizes IULTCS as an international standardizing body for the preparation of test methods for leather.

This second edition cancels and replaces the first edition (ISO 26082-1:2012), 5.9 to 5.15 and Clause 9 of which have been technically revised.

A list of all parts in the ISO 26082 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Leather — Physical and mechanical test methods for the determination of soiling —

Part 1: Rubbing (Martindale) method

1 Scope

This document specifies a method for determining the resistance of all forms of leather to visible soiling through repeated contact with soiled objects. It provides a physical pretreatment routine for leathers that may be vulnerable to loss of soiling resistance while in service, prior to conducting further tests such as cleaning.

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 105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

ISO 105-A05, *Textiles — Tests for colour fastness — Part A05: Instrumental assessment of change in colour for determination of grey scale rating*

ISO 105-F09, *Textiles — Tests for colour fastness — Part F09: Specification for cotton rubbing cloth*

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

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

ISO 11640, *Leather — Tests for colour fastness — Colour fastness to cycles of to-and-fro rubbing*

ISO 12945-2, *Textiles — Determination of fabric propensity to surface fuzzing and to pilling — Part 2: Modified Martindale method*

ISO 12947-1, *Textiles — Determination of the abrasion resistance of fabrics by the Martindale method — Part 1: Martindale abrasion testing apparatus*

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:

— ISO Online browsing platform: available at <https://www.iso.org/obp>

— IEC Electropedia: available at <http://www.electropedia.org/>

3.1

soiling

change in colour of a leather specimen caused by rubbing a standard soiled fabric on the coated surface of the leather

4 Principle

A test specimen of leather is subjected to a rubbing-type soiling process under standard conditions and the change in colour of the leather is evaluated.

A pretreatment to simulate wear and/or an after-treatment to test cleaning procedures is possible.

5 Apparatus and materials

Normal laboratory apparatus and, in particular, the following.

5.1 Martindale abrasion apparatus, as specified in ISO 12947-1.

5.2 Abrasion specimen holder heads, for the Martindale apparatus (5.1) as defined in ISO 12947-1. The holder shall be fitted with loading pieces so that the sum of the mass of the applied load and the mass of the specimen holder assembly is (795 ± 10) g. This exerts a nominal pressure of 12 kPa on the test specimen during the test.

Use the abrasion option that forms a Lissajous figure with a (60 ± 1) mm stroke.

5.3 Pilling specimen holder heads, for the Martindale apparatus (5.1), including the auxiliary mandrel device for specimen mounting, as defined in ISO 12945-2. The pilling specimen holder shall be fitted with ring weight and the nominal 12 kPa loading piece (as in 5.2), so that the sum of the mass of the applied load and the mass of the specimen holder assembly is $(1\ 010 \pm 15)$ g. This exerts a nominal pressure of 1,6 kPa on the test specimen during the test.

The use of the mandrel is necessary to correctly mount the soiling cloth on the holder and to avoid contact with the soiling surface of the cloth.

Use the abrasion option that traces a Lissajous figure with a (60 ± 1) mm stroke. It should be noted that this stroke differs from the standard machine setting for the textile pilling test.

NOTE This might not be possible with all Martindale machines, particularly old machines.

5.4 Circular sample cutters, for the specimen and soiling cloth. One cutter with a diameter of at least 140 mm and another with a diameter of at least 38 mm.

5.5 Standard soiling cloth, cut to a diameter of either

- at least 38 mm for the abrasion specimen holder of the Martindale apparatus (5.2), or
- at least 140 mm for the pilling specimen holder of the Martindale apparatus (5.3).

The standard soiling test cloth is impregnated with a soilant mix of carbon black and olive oil. Alternative soiling cloths can be specified by the client.

NOTE Various standard soiling cloths are commercially available, see [Annex A](#).

5.6 Polyetherurethane foam underlay, as specified in ISO 12947-1, cut to a diameter of at least 38 mm, for the abrasion specimen holder of the Martindale apparatus (5.2).

5.7 Wool felt underlay, as specified in ISO 12945-2, cut to a diameter of (90 ± 1) mm, for the pilling specimen holder (5.3). This is available pre-cut to size.

5.8 Wool felt underlay, as specified in ISO 12947-1, cut to a diameter of at least 140 mm, for the abrading table of the Martindale apparatus (5.1).