



International Standard

**ISO
20433**

**IULTCS
IUF 452**

Leather — Tests for colour fastness — Colour fastness to crocking

*Cuir — Essais de solidité des coloris — Solidité des coloris au
dégorgement par frottement*

**Third edition
2024-04**

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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 document 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 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.

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 document was prepared by the Fastness Tests Commission of the International Union of Leather Technologists and Chemists Societies (IUF Commission, IULTCS), in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 289, *Leather*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

It is based on IUF 452 published in *J. Soc. Leather Tech. Chem.*, **86**, pp. 333–335, 2002, and declared an official method of the IULTCS in May 2003.

This third edition cancels and replaces the second edition (ISO 20433:2012), which has been technically revised. The main changes are as follows:

- in [Clauses 2](#) and [4](#) the leather-specific reference, ISO 7906, has been included;
- the terminology has been aligned with the revised terminology in ISO 2418:2023.

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 — Tests for colour fastness — Colour fastness to crocking

1 Scope

This document specifies a method to determine the amount of colour transferred from the surface of coloured leather to other surfaces by rubbing.

Two tests are carried out, one with a dry rubbing cloth and one with a wet rubbing cloth.

The method is applicable to all types of coloured leather. Since after-treatments of the leather as well as surface finishes can affect the degree of colour transfer, the test can be made before and/or after such treatments.

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-A03, *Textiles — Tests for colour fastness — Part A03: Grey scale for assessing staining*

ISO 105-A04, *Textiles — Tests for colour fastness — Part A04: Method for the instrumental assessment of the degree of staining of adjacent fabrics*

ISO 2418, *Leather — Chemical, physical, mechanical and fastness tests — Position and preparation of specimens for testing*

ISO 2419¹⁾, *Leather — Physical and mechanical tests — Specimen and test piece conditioning*

ISO 7906, *Leather — Tests for colour fastness — General principles of testing*

3 Terms and definitions

No terms and definitions are listed in this document.

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

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

4 Principle

Test pieces of leather are rubbed with a dry or wet rubbing cloth attached to a cylindrical finger that is moved back and forth under controlled conditions. Colour transferred to the white rubbing cloth is assessed with the grey scale for staining.

The general principles of testing for colour fastness shall be in accordance with those described in ISO 7906.

1) Under preparation. Stage at time of publication: ISO/DIS 2419:2023.

5 Apparatus and materials

5.1 Suitable test device, for determining the colour fastness to crocking. The device shall have a rubbing finger consisting of a cylinder of 16 mm diameter which is driven to carry out a linear reciprocating motion along a 100 mm $\pm$ 5 mm track on the specimen, exerting a downward force of 9 N.

NOTE An example of a suitable apparatus available commercially is given in [Annex A](#).

5.2 White cotton rubbing cloth, desized, bleached, without finish, cut into squares measuring approximately 50 mm $\times$ 50 mm, for the finger used in [5.1](#). A suitable cotton rubbing cloth is that specified in ISO 105-F09.

NOTE An example of a suitable commercial source is given in [Annex A](#).

5.3 Grey scale for assessing staining, conforming with ISO 105-A03.

5.4 Spectrophotometer or colorimeter for assessing staining, conforming to ISO 105-A04.

6 Leather specimen and test pieces

If the piece of leather available for testing is a whole hide or skin, then first take a specimen in accordance with ISO 2418.

Two representative leather test pieces, each measuring not less than 140 mm $\times$ 50 mm, are required. One test piece is required for dry rubbing and the other for wet rubbing. Prior to testing, condition the test pieces and dry rubbing cloth for at least 24 h under standard conditions in accordance with ISO 2419.

7 Procedure

7.1 Fasten each test piece securely to the baseboard of the test device so that the surface to be tested is uppermost and the long direction of the piece follows the track of the device.

Test the test piece by the procedures in [7.2](#) and [7.3](#).

7.2 For dry rubbing, fix the dry rubbing cloth ([5.2](#)) in place over the end of the cylindrical finger of the test device ([5.1](#)). At a rate of one turn per second, complete 10 turns of the crank to slide the rubbing finger back and forth (10 times forwards and 10 times backwards) in a straight line along a track 100 mm long on a dry specimen, exerting a downward force of 9 N. After rubbing, remove the cloth.

7.3 For wet rubbing, establish a technique for preparing a wet rubbing cloth by weighing a conditioned piece of cloth, thoroughly wetting it out in distilled water until the water pick-up is approximately 100 %.

Follow the directions for rubbing given in [7.2](#) with a fresh leather test piece. After rubbing, remove the cloth and dry it at room temperature.

8 Evaluation

8.1 Remove dust and fibrous matter retained on the surface of both cotton rubbing cloths by light brushing or by careful use of the sticky side of clear adhesive tape. Consider only the coloration due to staining by the dye.

8.2 Back each of the rubbing cloths used in the test with three layers of unused white rubbing cloth and, under suitable illumination, visually assess the staining of the rubbing cloths using the grey scale for assessing staining ([5.3](#)) in accordance with ISO 105-A03.

8.3 Alternatively, provided the staining on the rubbing cloth is even, the grey scale colour difference can be assessed instrumentally ([5.4](#)) in accordance with ISO 105-A04.

9 Test report

The test report shall include the following information:

- a) a reference to this document, i.e. ISO 20433:2024;
- b) a description of the type of leather tested;
- c) the evaluation method used ([8.2](#) or [8.3](#));
- d) the numerical grey scale ratings obtained for the staining of the dry rubbing cloth and the wet rubbing cloth;
- d) details of any deviations from the procedure specified;
- e) any unusual features observed;
- e) the date of the test.

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Annex A
(informative)

Apparatus and materials

A.1 Crockmeter

A suitable apparatus, the AATCC Crockmeter,²⁾ is described in AATCC Test Method 8:2016^[4].

A Crockmeter can be obtained, for example, from James Heal/PPT Group, Lake View, Halifax, West Yorkshire HX3 6EP, United Kingdom³⁾.

Available from: <https://www.jamesheal.com/instrument/crockmaster>.

Other crocking devices can be used, provided that the same results are obtained as with the apparatus described in [5.1](#).

A.2 Rubbing cloth

The white cotton rubbing cloth (see [5.2](#)) can be obtained, for example, from Swissatest Testmaterialien AG, Mövenstrasse 12, CH-9015 St. Gallen, Switzerland⁴⁾. Available from: <https://www.swissatest.ch/en/>.

A.3 Abnormal crock images

If the crocking apparatus is not correctly maintained, poor, circular images of the rubbing finger can be obtained. Details of possible causes and corrective actions are contained in AATCC Test Method 8:2016^[4].

2) AATCC Crockmeter is an example of a suitable product available commercially. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this product.

3) James Heal/PPT group is an example of a retailer. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this retailer.

4) Swissatest Materialien AG is an example of a retailer. This information is given for the convenience of users of this document and does not constitute an endorsement by ISO of this retailer.