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BSI Standards Publication

Leather — Chemical tests — Preparation of chemical test samples (ISO 4044:2017)

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National foreword

This British Standard is the UK implementation of EN ISO 4044:2017. It supersedes BS EN ISO 4044:2008 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee TCI/69, Footwear, leather and coated fabrics.

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Leather - Chemical tests - Preparation of chemical test samples (ISO 4044:2017)

Cuir - Essais chimiques - Préparation des échantillons pour essais chimiques (ISO 4044:2017)

Leder - Chemische Prüfungen - Vorbereitung von Proben für chemische Untersuchungen (ISO 4044:2017)

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European foreword

This document (EN ISO 4044:2017) has been prepared by Technical Committee CEN/TC 289 “Leather” the secretariat of which is held by UNI, in collaboration with Technical Committee IULTCS "International Union of Leather Technologists and Chemists Societies”.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by July 2017, and conflicting national standards shall be withdrawn at the latest by July 2017.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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Endorsement notice

The text of ISO 4044:2017 has been approved by CEN as EN ISO 4044:2017 without any modification.

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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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html

ISO 4044 was prepared by the Chemical Test Commission of the International Union of Leather Technologists and Chemists Societies (IUC 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 is based on IUC 3 originally published in *J. Soc. Leather Trades Chemists*, **49**, pp. 8-10, 1965, and declared an official method of the IULTCS in 1965.

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 4044:2008), which has been technically revised.

Experience has shown it can be difficult to find a suitable grinding (or cutter) mills for preparing ground leather samples without considerable heating of the milling chamber or blocking of the sieve. Those mills commercially available require reasonably large leather samples to prepare a representative ground sample. But in many cases where consumer items are being tested, only small pieces of leather are available for testing. For this reason, Subclause 6.3 has been added to allow preparation of test samples by cutting the leather into small pieces with a sharp blade. An informative Annex A has been added to give help with locating a suitable grinding mill.

INTERNATIONAL STANDARD

ISO 4044:2017(E)
IULTCS/IUC 3:2017(E)

Leather — Chemical tests — Preparation of chemical test samples

1 Scope

This document specifies how to prepare a test sample of leather for chemical analysis. The test sample can be either ground or cut into small pieces. Unless specified in this document, the method to be used depends on the size of leather sample available for testing.

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

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15987 apply.

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

— ISO Online browsing platform: available at http://www.iso.org/obp

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

4 Principle

The leather sample shall be prepared by either:

— grinding in a mill to form “ground leather”, see 5.1 and 6.2, or

— cutting into small pieces, see 5.2 and 6.3.

Which sample preparation shall be used depends on the size of the leather sample available or what preparation method is defined in the test method procedure.

5 Apparatus

5.1 Grinding mill, having a blade rotational frequency of 300 r/min to 1 000 r/min and a perforated sieving plate with (4,0 ± 0,5) mm diameter perforations. The mill blades shall be sharp. To avoid samples heating up during grinding the preferred blade rotation should be towards the lower end of the rotational frequency range. Temperature shall not be higher than 40° C. Information about a suitable grinding mill is given in Annex A.

5.2 Suitable tool with a sharp blade for cutting leather samples into small pieces of 3 mm to 5 mm side length.

6 Preparation of test sample

6.1 Sample preparation

Test pieces that are wet (i.e. in excess of approximately 30 % moisture) should be pre-dried at a temperature not exceeding 40 °C. The drying temperature should be selected with consideration of the influence of elevated temperature on the nature of the analyte.

If the samples are dried at elevated temperature, they shall be conditioned according to ISO 2419.

6.2 Grinding

This method of preparation shall be used when a sufficiently large piece of leather is available for grinding in a mill (5.1) to give a representative ground leather sample. As a guideline for the purpose of this document, the leather sample should be at least 200 mm × 200 mm or more than 10 g.

Before grinding, the samples of leather should be reduced to small pieces of suitable dimensions depending on the design of the cutter mill feed system.

It shall be ensured that the grinding mill and sample collecting device are clean. Water should not be used for cleaning.

If sufficient sample is available, then a few small pieces of test leather should be ground and discarded, with the apparatus being cleaned again before proceeding with grinding the main test sample.

6.3 Cutting

This method of preparation is used when only a small piece of leather is available. Typically this sample will be a part of a consumer item, for example a leather panel or piece from a leather product. For some leather test procedures it may be preferable to use test samples cut into pieces.

The leather test samples are cut into small pieces using a suitable device with a sharp blade (5.2). The pieces shall be of 3 mm to 5 mm side length.

6.4 Choice of sample preparation method

When the method for sample preparation is defined in a specific test method then the procedure specified shall be used.

If no method of preparation is defined, then procedures specified in 6.2 and 6.3 are selected according to the size of the leather sample available. The method of preparation shall be reported in the test report.

7 Storage of test sample

After grinding or cutting, the leather test sample shall be mixed thoroughly and placed in a clean, dry, airtight container. The container shall be kept away from localized sources of heat.

Annex A
(informative)

Commercial sources for apparatus

A.1 General

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

A.2 Grinding apparatus

A suitable grinding mill (also called cutting mills) is one that efficiently cuts and grinds the leather without blocking and leaving only a small amount of unground leather. The milling chamber should be easy to open to allow cleaning between samples. During the grinding process, the speed of the cutter blade should not be excessive, so that the temperature in the milling chamber does not heat-up noticeably. To achieve these requirements, grinding mills with a small, easily accessible milling chamber and a slower blade rotation are preferred. The ground sample should readily pass through a perforated sieving plate with (4,0 ± 0,5) mm diameter perforations.

To ensure there is no contamination from heavy metals such as chromium, the metal parts of the grinding mill are made of chromium-free steel and the cutting blade is made with hardened tungsten carbide.

An example of a suitable machine is the universal cutting mill of type Pulverisette 19 with a rotational frequency of 300 min^{-1} to 360 min^{-1}. This cutting mill is a combination of type Pulverisette 19 (original rotational frequency of 2 800 min^{-1}) and a slower motor system of type Pulverisette 25. The equipment with this combination is manufactured by Fritsch GmbH, Industriestrasse 8, D-55743 Idar-Oberstein, Germany. Website: www.fritsch-milling.com.

Any other grinding mill equipment may be used, provided it gives a ground leather sample as described above and the grinding chamber does not heat-up noticeably during grinding. Technical information on the grinding of leather is given in Reference [2].

Bibliography

[1] EN 15987, *Leather — Terminology — Key definitions for the leather trade*

[2] Morgenstern U., Schulz H., Hopfe W. Probenvorbereitung bei Leder (Sample preparation for leather), Labo (4/2014): 38 – 41

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