Leather - Chemical determination of metal content - Part 1: Extractable metals (ISO 17072-1:2019)

EESTI STANDARDIKESKUS
ESTONIAN CENTRE FOR STANDARDISATION

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN ISO 17072-1:2019 sisaldab Euroopa standardi EN ISO 17072-1:2019 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 17072-1:2019 consists of the English text of the European standard EN ISO 17072-1:2019.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 03.04.2019.	Date of Availability of the European standard is 03.04.2019.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 59.140.30

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 17072-1

April 2019

ICS 59.140.30

Supersedes EN ISO 17072-1:2011

English Version

Leather - Chemical determination of metal content - Part 1: Extractable metals (ISO 17072-1:2019)

Cuir - Détermination chimique de la teneur en métal - Partie 1: Métaux extractibles (ISO 17072-1:2019)

Leder - Chemische Bestimmung des Metallgehaltes - Teil 1: Extrahierbare Metalle (ISO 17072-1:2019)

This European Standard was approved by CEN on 9 February 2019.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN ISO 17072-1:2019 E

European foreword

This document (EN ISO 17072-1:2019) has been prepared by Technical Committee IULTCS "International Union of Leather Technologists and Chemists Societies" in collaboration with Technical Committee CEN/TC 289 “Leather” the secretariat of which is held by UNI.

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 October 2019, and conflicting national standards shall be withdrawn at the latest by October 2019.

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

This document supersedes EN ISO 17072-1:2011.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 17072-1:2019 has been approved by CEN as EN ISO 17072-1:2019 without any modification.

Contents

Page

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 on 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 the following URL: www.iso.org/iso/foreword.html.

This document 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).

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 second edition cancels and replaces the first edition (ISO 17072-1:2011), which has been technically revised as follows:

— the Scope and Clauses 5, 6, 7, 8.3, 9 and 10 have been editorially modified;

— 7.2 and 8.2 have been technically modified. 7.2 refers to ISO 4044 for sample preparation, which requires the user to grind sufficiently large pieces of leather or cut small pieces of leather;

— the previous subclauses 6.3 and 7.3 from ISO 17072-1:2011 have been deleted.

A list of all parts in the ISO 17072 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 — Chemical determination of metal content —

Part 1:
Extractable metals

1 Scope

This document specifies a method for the determination of extractable metals in leather using extraction with an acid artificial-perspiration solution and subsequent determination with inductively coupled plasma optical emission spectrometry (ICP-OES), inductively coupled plasma mass spectrometry (ICP-MS), atomic absorption spectrometry (AAS) or spectrometry of atomic fluorescence (SFA).

This method determines extractable metals in leather; it is not compound-specific or specific to the oxidation state of the metals. This method is especially suitable for determining the extractable chromium in chromium-tanned leathers.

The method is applicable for the determination of many extractable metals, including:

Aluminium (Al)	Copper (Cu)	Nickel (Ni)
Antimony (Sb)	Iron (Fe)	Potassium (K)
Arsenic (As)	Lead (Pb)	Selenium (Se)
Barium (Ba)	Magnesium (Mg)	Tin (Sn)
Cadmium (Cd)	Manganese (Mn)	Titanium (Ti)
Calcium (Ca)	Mercury (Hg)	Zinc (Zn)
Chromium (Cr)	Molybdenum (Mo)	Zirconium (Zr)
Cobalt (Co)		

Interlaboratory test results and the quantification limits possible with ICP-OES are given in Table A.1 and Table A.2 of Annex A.

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-E04, *Textiles — Tests for colour fastness — Part E04: Colour fastness to perspiration*

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

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

ISO 4044, *Leather — Chemical tests — Preparation of chemical test samples*

ISO 4684, *Leather — Chemical tests — Determination of volatile matter*

ISO 11885, *Water quality — Determination of selected elements by inductively coupled plasma optical emission spectrometry (ICP-OES)*

ISO 15586, *Water quality — Determination of trace elements using atomic absorption spectrometry with graphite furnace*

ISO 17294-2, *Water quality — Application of inductively coupled plasma mass spectrometry (ICP-MS) — Part 2: Determination of selected elements including uranium isotopes*

ISO 17852, *Water quality — Determination of mercury — Method using atomic fluorescence spectrometry*

3 Terms and definitions

No terms and definitions are listed in this document.

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/

4 Principle

A sample of leather is extracted at (37 ± 2) °C for 4 h ± 5 min in an acid artificial-perspiration solution. The extract solution is filtered, acidified and analysed by ICP, SFA or AAS.

The results are reported on the dry matter of the leather.

5 Reagents

WARNING — The concentrated acids used in this method are very corrosive and/or oxidising liquids, which could raise the possibility of fire in the event of contact with ignitable materials and promote an existing fire considerably, or could decompose explosively with warming. They might cause acute or chronic health dangers as well. Moreover, they are hazardous to water. Suitable safety measures are therefore necessary.

5.1 General

Unless otherwise stated, only analytical grade chemicals shall be used. All solutions are aqueous solutions.

5.2 Nitric acid, 60 % to 70 % concentration (by mass).

5.3 L-histidine monohydrochloride monohydrate.

5.4 Sodium chloride.

5.5 Sodium dihydrogen phosphate dihydrate.

5.6 Sodium hydroxide, 0,1 mol/l.

5.7 Element stock solutions, of the various metals with mass concentrations of 1 000 mg/l each.

5.8 Nitric acid, 0,1 mol/l.

5.9 Water, grade 3 in accordance with ISO 3696.

5.10 Solution of gold (Au), in hydrochloric acid or potassium permanganate, 1 000 µg/l.