

**Leather - Chemical determination of metal content -
Part 1: Extractable metals (ISO 17072-1:2011)**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 17072-1:2011 sisaldab Euroopa standardi EN ISO 17072-1:2011 ingliskeelset teksti.

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English Version

Leather - Chemical determination of metal content - Part 1: Extractable metals (ISO 17072-1:2011)

Cuir - Détermination chimique de la teneur en métal - Partie
1: Métaux extractibles (ISO 17072-1:2011)

Leder - Chemische Bestimmung des Metallgehaltes - Teil
1: Extrahierbare Metalle (ISO 17072-1:2011)

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Foreword

This document (EN ISO 17072-1:2011) has been prepared by Technical Committee CEN/TC 289 "Leather", the secretariat of which is held by UNI, in collaboration with the 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of an identical text or by endorsement, at the latest by August 2011, and conflicting national standards shall be withdrawn at the latest by August 2011.

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Contents

Page

Foreword	iv
1 Scope	1
2 Normative references	1
3 Principle	2
4 Reagents	2
5 Apparatus and materials	3
6 Sampling and sample preparation	3
7 Procedure	4
7.1 Preparation of acid artificial-perspiration solution in accordance with ISO 105-E04:2008, Clause 4	4
7.2 Extraction of leather sample	4
7.3 Digestion of the extracted solution	4
7.4 Analysis by ICP, AAS and SFA	4
7.4.1 ICP	4
7.4.2 AAS	5
7.4.3 Analysis by SFA technique	5
8 Calculation and expression of results	5
9 Test report	6
Annex A (informative) Interlaboratory test results	7
Bibliography	8

Leather — Chemical determination of metal content —

Part 1: Extractable metals

1 Scope

This part of ISO 17072 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), or inductively coupled plasma/atomic emission spectrometry (ICP/AES), or inductively coupled plasma/mass spectrometry (ICP/MS), or atomic absorption spectrometry (AAS) or spectrometry of atomic fluorescence (SFA).

This method is especially suitable for determining the extractable chromium in chromium-tanned leathers.

This method determines extractable metals in leather; it is not compound-specific or specific to the oxidation state of the metals.

The method is also 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)		

The quantification limit of extractable lead is 3 mg/kg (see Annex A).

2 Normative references

The following referenced documents are indispensable for the application 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-E04:2008, *Textiles — Tests for colour fastness — Part E04: Colour fastness to perspiration*

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

ISO 3696:1987, *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 metals using atomic absorption spectrometry with graphite furnace*

ISO 17072-2:2011, *Leather — Chemical determination of metal content — Part 2: Total metal content*

ISO 17294-2, *Water quality — Application of inductively coupled plasma mass spectrometry (ICP-MS) — Part 2: Determination of 62 elements*

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

3 Principle

A sample of leather is ground and extracted at $37\text{ °C} \pm 2\text{ °C}$ for $4\text{ h} \pm 5\text{ min}$ in an acid artificial-perspiration solution. The extract solution is filtered, acidified and analysed by ICP, or SFA or AAS. If necessary, digest a portion of filtrate solution in accordance with ISO 17072-2.

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

If sampling in accordance with ISO 2418 is not possible (e.g. leathers are from finished products like shoes or garments), details about the sampling shall be given together with the test report.

4 Reagents

WARNING — As concentrated acids are used, it is imperative to use all necessary personal protective equipment.

4.1 General

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

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

4.3 L-histidine monohydrochloride monohydrate, $\text{C}_6\text{H}_9\text{O}_2\text{N}_3 \cdot \text{HCl} \cdot \text{H}_2\text{O}$.

4.4 Sodium chloride.

4.5 Sodium dihydrogen orthophosphate dihydrate, $\text{NaH}_2\text{PO}_4 \cdot 2\text{H}_2\text{O}$.

4.6 Sodium hydroxide, 0,1 mol/l.

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

4.8 Nitric acid, 0,1 mol/l.

4.9 Water, grade 3 in accordance with ISO 3696:1987.