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**Leather — Chemical tests —  
Determination of water-soluble  
matter, water-soluble inorganic matter  
and water-soluble organic matter**

*Cuir — Essais chimiques — Dosage des matières solubles dans  
l'eau, des matières inorganiques solubles dans l'eau et des matières  
organiques solubles dans l'eau*

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CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Fax: +41 22 749 09 47  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
Website: [www.iso.org](http://www.iso.org)

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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](http://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](http://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](http://www.iso.org/iso/foreword.html).

This document was prepared by the Chemical Tests 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 6, originally published in *J. Soc. Leather Tech. Chem.*, **49**, p. 13, 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 second edition cancels and replaces the first edition (ISO 4098:2006), which has been technically revised in [8.1](#) and [9.1](#) to allow a larger tolerance in the temperature of extraction.

# Leather — Chemical tests — Determination of water-soluble matter, water-soluble inorganic matter and water-soluble organic matter

## 1 Scope

This document specifies a method of determination of water-soluble matter, water-soluble inorganic matter and water-soluble organic matter.

It is applicable to all leather types. The result obtained by this analysis depends on factors such as:

- the degree to which the leather is ground;
- the extraction temperature;
- the extraction period;
- the ratio of leather to water.

To obtain comparable results, it is consequently imperative that test conditions be accurately reproduced.

In all cases, any ammonium salts in the filtrate are included as part of the water-soluble matter and are then decomposed on ignition. Thus they contribute towards the result for water-soluble organic substances. The concentration of the ammonium salts can be determined in the filtrate separately if required.

## 2 Normative references

ISO 4098:2018

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

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

ISO 4048, *Leather — Chemical tests — Determination of matter soluble in dichloromethane and free fatty acid content*

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

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

## 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 water-soluble matter**  
substance which, under the conditions described in this method, is dissolved out of the leather by water
- 3.2 water-soluble inorganic matter**  
sulfated ash of the *water-soluble matter* (3.1) prepared in accordance with this method
- 3.3 water-soluble organic matter**  
difference between total *water-soluble matter* (3.1) and *water-soluble inorganic matter* (3.2)

## 4 Principle

Following aqueous extraction of a prepared sample under specified conditions, the water-soluble matter is quantified by evaporation and drying at  $(102 \pm 2)$  °C. Sulfating and ashing of the residue at 700 °C yields the water-soluble inorganic matter. The water-soluble organic matter is derived by the difference.

## 5 Reagents

- 5.1 Sulfuric acid solution**, 1 mol/l.
- 5.2 Distilled or deionized water**, conforming to the requirements of Grade 3 of ISO 3696.

## 6 Apparatus

The usual laboratory apparatus is required, in particular the following:

- 6.1 Flasks**, with a wide neck and a close fitting stopper (650 ml to 750 ml capacity should be suitable).
- 6.2 Graduated measuring cylinder**, capacity 500 ml.
- 6.3 Pipette**, capacity 50 ml.
- 6.4 Evaporating basin**, quartz, platinum or porcelain, with flat bottom, and a working capacity of at least 50 ml.
- 6.5 Appropriate shaking apparatus** operating at  $(50 \pm 10)$  cycles per minute.
- 6.6 Thermometer** of range from 0 °C to 50 °C.
- 6.7 Fluted filter paper** of fast qualitative grade.
- 6.8 Boiling water or steam bath.**
- 6.9 Oven**, capable of being maintained at  $(102 \pm 2)$  °C.
- 6.10 Muffle furnace**, capable of being maintained at a temperature close to but not exceeding 700 °C (see 9.4).
- 6.11 Desiccator.**