



**NSAI**  
Standards

Irish Standard  
I.S. EN ISO 5398-4:2019

Leather - Chemical determination of  
chromic oxide content - Part 4:  
Quantification by inductively coupled  
plasma (ICP) (ISO 5398-4:2018)

**I.S. EN ISO 5398-4:2019**

*Incorporating amendments/corrigenda/National Annexes issued since publication:*

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## National Foreword

I.S. EN ISO 5398-4:2019 is the adopted Irish version of the European Document EN ISO 5398-4:2019, Leather - Chemical determination of chromic oxide content - Part 4: Quantification by inductively coupled plasma (ICP) (ISO 5398-4:2018)

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EUROPEAN STANDARD

**EN ISO 5398-4**

NORME EUROPÉENNE

EUROPÄISCHE NORM

February 2019

ICS 59.140.30

Supersedes EN ISO 5398-4:2007

English Version

**Leather - Chemical determination of chromic oxide content  
- Part 4: Quantification by inductively coupled plasma  
(ICP) (ISO 5398-4:2018)**

Cuir - Dosage chimique de l'oxyde de chrome - Partie 4:  
Quantification par plasma à couplage inductif (ICP)  
(ISO 5398-4:2018)

Leder - Chemische Bestimmung des Chromoxidgehalts  
- Teil 4: Quantitative Bestimmung durch induktiv  
gekoppeltes Plasma (ICP) (ISO 5398-4:2018)

This European Standard was approved by CEN on 16 December 2018.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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

**EN ISO 5398-4:2019 (E)**

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## **European foreword**

This document (EN ISO 5398-4:2019) has been prepared by Technical Committee ISO/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of an identical text or by endorsement, at the latest by August 2019, and conflicting national standards shall be withdrawn at the latest by August 2019.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 5398-4:2007.

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 5398-4:2018 has been approved by CEN as EN ISO 5398-4:2019 without any modification.

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**INTERNATIONAL  
STANDARD**

**ISO  
5398-4**

**IULTCS/IUC 8-4**

Second edition  
2018-12

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**Leather — Chemical determination of  
chromic oxide content —**

**Part 4:  
Quantification by inductively coupled  
plasma (ICP)**

*Cuir — Dosage chimique de l'oxyde de chrome —*

*Partie 4: Quantification par plasma à couplage inductif (ICP)*



Reference numbers  
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**ISO 5398-4:2018(E)**  
**IULTCS/IUC 8-4:2018(E)**



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## ISO 5398-4:2018(E) IULTCS/IUC 8-4:2018(E)

### 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 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](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 8, published in *J. Soc. Leather Tech. Chem.*, **49**, p. 17, 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 5398-4:2007), which has been technically revised. The main changes compared to the previous edition are as follows:

- the title has changed to “inductively coupled plasma (ICP)” to include more than just the “ICP-OES” type equipment;
- [Clause 5](#) now refers to ISO 4044 for preparing the sample rather than grinding the leather;
- the description of additional suitable ICP equipment (ICP-MS) has been included in a new subclause [7.3](#);
- the previous subclause 8.2.1 describing suitable ICP equipment has been moved to a new informative [Annex B](#);
- the text has been revised for editorial corrections.

A list of all parts in the ISO 5398 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](http://www.iso.org/members.html).

**ISO 5398-4:2018(E)**  
**IULTCS/IUC 8-4:2018(E)**

## **Introduction**

The ISO 5398 series comprises four parts, each describing methods suitable for the determination of the chromic oxide content in leather. The different techniques have been described to reflect the variations in industrial practice compared with the more sensitive analytical equipment available for test laboratories. Variations also exist in the range of chromic oxide that the methods are deemed suitable to quantify.

This document describes a technique that is suitable for determining chromium more precisely than those described in ISO 5398-1 and ISO 5398-2. It requires the use of sophisticated analytical equipment, such as inductively coupled plasma (ICP).

# Leather — Chemical determination of chromic oxide content —

## Part 4: Quantification by inductively coupled plasma (ICP)

### 1 Scope

This document describes a method for the determination of chromium in aqueous solution obtained from leather. This is an analysis for total chromium in leather; it is not compound specific or specific to its oxidation state.

This method describes the determination of chromium by inductively coupled plasma (ICP) and is applicable to leathers which are expected to have chromic oxide contents in excess of 1 mg/kg. Two techniques for the preparation of the solution to be analysed are included. In the event of dispute, the wet oxidation technique is intended to be used.

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

### 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

##### **chromic oxide content**

amount of chromium in leather, determined by this method and reported as chromic oxide

Note 1 to entry: The chromic oxide content is expressed in milligrams per kilogram (mg/kg), based on dry matter.

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