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

Part 3:
**Quantification by atomic absorption
spectrometry**

Cuir — Dosage chimique de l'oxyde de chrome —

Partie 3: Quantification par spectrométrie d'absorption atomique



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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

This part of ISO 5398 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 co-operation between ISO and CEN (Vienna Agreement). It is based on IUC 8 originally published in *J. Soc. Leather Trades Chemists* **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.

ISO 5398 consists of the following parts, under the general title *Leather — Chemical determination of chromic oxide content*:

- *Part 1: Quantification by titration*
- *Part 2: Quantification by colorimetric determination*
- *Part 3: Quantification by atomic absorption spectrometry*
- *Part 4: Quantification by inductively coupled plasma — optical emission spectrometer (ICP-OES)*

Introduction

ISO 5398 has been split into 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.

ISO 5398-3 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 atomic absorption spectroscopy.

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Leather — Chemical determination of chromic oxide content —

Part 3:

Quantification by atomic absorption spectrometry

1 Scope

This part of ISO 5398 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 atomic absorption spectrometry and is applicable to leathers which are expected to have chromic oxide contents in excess of 5 mg/kg. Two techniques for the preparation of the solution to be analysed are included. In the case of dispute, the wet oxidation technique is to be used.

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 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*

EN 14602, *Footwear — Test methods for the assessment of ecological criteria*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

chromic oxide content

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

NOTE The chromic oxide content is expressed in milligrams per kilogram (mg/kg), based on dry matter.

4 Principle

The chromium present in the leather is solubilized in the hexavalent state followed by analysis of the solution by atomic absorption spectrometry.