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Leather — Chemical determination of chromium(VI) content in leather — Thermal pre-ageing of leather and determination of hexavalent chromium

Cuir — Détermination chimique de la teneur en chrome(VI) du cuir — Vieillissement thermique du cuir et détermination de la teneur en chrome hexavalent

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Foreword

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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).

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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, and the European Committee for Standardization (CEN) Technical Committee CEN/TC 309, *Footwear*, the secretariat of which is held by AENOR, 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.

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Introduction

More than 80 % of leather is tanned using chromium(III) salts. The industry recommends manufacturing procedures to avoid oxidative conditions that could allow the formation of traces of hexavalent chromium [chromium(VI)] in the leather.

It is difficult to reproduce the natural ageing process. Therefore, in order to predict the tendency for trace levels of hexavalent chromium to develop in chromium(III) tanned leather, a number of pre-ageing tests have been proposed, some of which are being used in commercial leather specifications.

Following an inter-laboratory trial (see Annex A), thermal pre-ageing was selected as a suitable pre-ageing test procedure. The method is presented in this document.

Information on the development of hexavalent chromium during the natural ageing of chromium(III) tanned leather is given in Annex B.

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Leather — Chemical determination of chromium(VI) content in leather — Thermal pre-ageing of leather and determination of hexavalent chromium

1 Scope

This document specifies a thermal pre-ageing procedure for leather to obtain indications about the tendency to the formation of hexavalent chromium under specified conditions and the determination of hexavalent chromium according to ISO 17075-1 or ISO 17075-2.

This thermal pre-ageing procedure does not simulate any real condition in leather production or use.

It is applicable to all types of chromium tanned leather.

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 4044:2017, *Leather — Chemical tests — Preparation of chemical test samples*

ISO 17075-1:2017, *Leather — Chemical determination of chromium(VI) content in leather — Part 1: Colorimetric method*

ISO 17075-2:2017, *Leather — Chemical determination of chromium(VI) content in leather — Part 2: Chromatographic method*

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 test specimen of leather is heated in an oven for a specified period of time. The sample is then cooled and the chemical determination of hexavalent chromium [chromium(VI)] is carried out according to ISO 17075-1 or ISO 17075-2.

5 Apparatus

5.1 Static oven, capable of maintaining the required temperature within a tolerance of ±2 °C. The oven shall not have a fan or any other air circulating system, nor openings that allow active air exchange. The oven should have an interior made of inert materials. An oven with natural convection should be used.

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