INTERNATIONAL STANDARD

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IULTCS/IUP 56

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Leather — Identification of leather with microscopy

Cuir — Identification du cuir par microscopie

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Contents

Page

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.

ISO 17131 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 289, *Leather*, in collaboration with the Physical Tests Commission of the International Union of Leather Technologists and Chemists Societies (IUP Commission, IULTCS) 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 sampling and the testing of leather. ISO recognizes IULTCS as an international standardizing body for the preparation of test methods for leather.

Introduction

The identification of leather is best made by operators experienced in material identification using microscopy, which is the preferred method. With other methods, such as chemical analysis, it can be difficult to absolutely determine that the material is leather.

Leather — Identification of leather with microscopy

1 Scope

This International Standard specifies a method using microscopy to identify leather and distinguish it from other materials. The method is not applicable for identifying specific leathers (e.g. sheep leather).

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.

EN 15987, *Leather — Terminology — Key definitions for the leather trade*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15987 apply.

4 Principle

A cross-section of the material is cut perpendicular to the surface. The material structure is compared with typical pictures or known samples by means of microscopy.

The method should be carried out by operators experienced in material identification by microscopy.

5 Apparatus and materials

5.1 Light microscope or scanning electron microscope, capable of giving a normal magnification of at least 20×.

NOTE For some materials it is necessary to use a microscope with a magnification of 500×.

5.2 Razor blade, capable of cutting a clean cross-section in leather.

5.3 Coating unit, sputter or evaporation, including a suitable element or alloy (e.g. gold) for coating, if a scanning electron microscope is used.

5.4 Specimen stubs, suitable for a scanning electron microscope, if used.

5.5 Reference materials, with known designation.

6 Procedure

6.1 From the material being tested, cut two test pieces approximately 10 mm × 10 mm using a suitable cutting device and then section each of the test pieces in accordance with 6.2.

6.2 Place the cutting edge of the razor blade (5.2) with the blade perpendicular to the surface and press the blade through the whole thickness of the test piece, ensuring that the blade remains vertical and the section is cleanly cut. If the test piece is considered to be leather, make the cut with the flesh or inner side uppermost.

NOTE It is useful to prepare the second test piece section perpendicular to the first.

6.3 When using a scanning electron microscope, ensure that the prepared section adheres to a specimen stub (5.4) with the cut surface uppermost. Coat the stub and section in the coating unit (5.3) so that good image quality can be obtained.

6.4 Place the sections under the microscope and compare the material structure with the typical pictures presented in Annex A (scanning electron microscope photos) and/or Annex B (light microscope photos) or with known reference materials (5.5). Use a suitable magnification to distinguish the typical fibre structure of leather from other materials. Consider the appropriate terms for leather defined in EN 15987.

For the absolute identification of leather it is necessary to identify the more or less intact original fibrous structure.

6.5 If necessary, determine the surface coating thickness and the total thickness in accordance with ISO 17186.

6.6 Define the designation of the material considering the results of 6.4 and 6.5 and the leather terms defined in EN 15987.

7 Test report

The test report shall include the following:

a) reference to this document (i.e. ISO 17131);

b) type and origin of the analysed material sample;

c) designation of the material (see 6.6) as leather or another material;

d) if necessary, the thickness of the coating layer and total thickness in accordance with ISO 17186;

e) if requested, photographs of the sections;

f) any deviations from the procedure;

g) any additional information important for the designation;

h) the date of the test.

Annex A
(normative)

Scanning electron microscope cross-section photographs

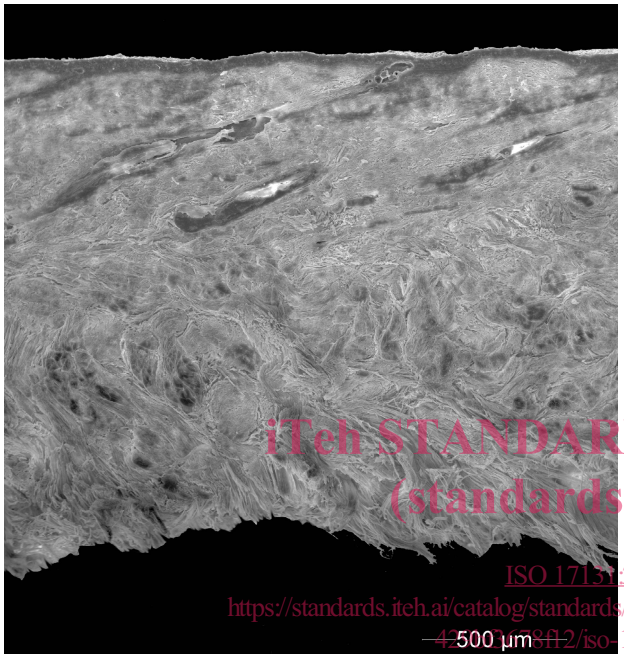

Figure A.1 — Typical section of bovine leather with surface coating of less than 150 µm

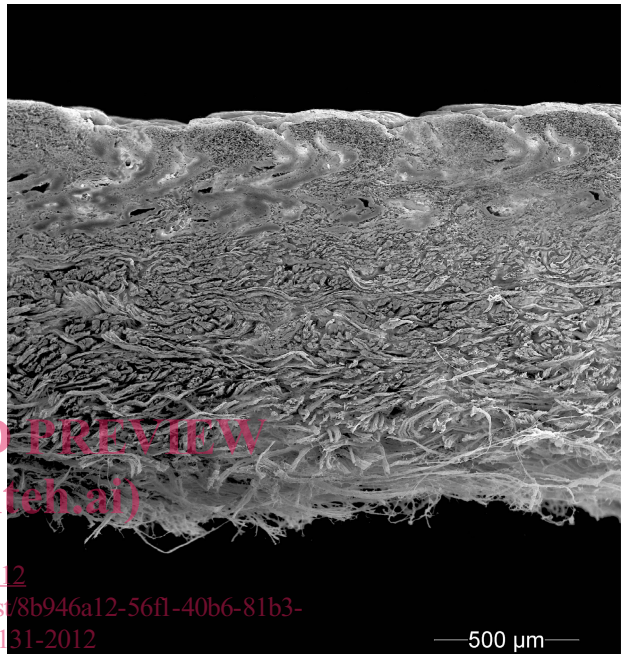

Figure A.2 — Typical section of sheep leather