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Leather — Leather for apparel (excluding furs) — Specifications and sampling procedures

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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).

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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.

This document was prepared by Technical Committee ISO/TC 120, *Leather*, Subcommittee SC 2, *Tanned leather*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 289, *Leather*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This third edition cancels and replaces the second edition (ISO 14931:2015), which has been technically revised.

The main changes to the previous edition are as follows:

- title revised;
- requirement for formaldehyde content modified;
- requirements for total chlorinated phenol content and individual chlorinated phenol content added;
- requirements for tensile strength, elongation at maximum force and stitch tear strength added;
- [Clause 8](#) on packaging and marking added.

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.

Leather — Leather for apparel (excluding furs) — Specifications and sampling procedures

1 Scope

This document gives recommended values and related test methods for apparel leather, excluding furs. It also specifies the sampling and conditioning procedures of laboratory samples.

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 105-B02, *Textiles — Tests for colour fastness — Part B02: Colour fastness to artificial light: Xenon arc fading lamp test*

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

ISO 2419, *Leather — Physical and mechanical tests — Sample preparation and conditioning*

ISO 2588, *Leather — Sampling — Number of items for a gross sample*

ISO 3376, *Leather — Physical and mechanical tests — Determination of tensile strength and percentage elongation*

ISO 3377-1, *Leather — Physical and mechanical tests — Determination of tear load — Part 1: Single edge tear*

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

ISO 4045, *Leather — Chemical tests — Determination of pH and difference figure*

ISO 5402-1, *Leather — Determination of flex resistance — Part 1: Flexometer method*

ISO 11640, *Leather — Tests for colour fastness — Colour fastness to cycles of to-and-fro rubbing*

ISO 11642, *Leather — Tests for colour fastness — Colour fastness to water*

ISO 11643, *Leather — Tests for colour fastness — Colour fastness of small samples to solvents*

ISO 11644, *Leather — Test for adhesion of finish*

ISO 15700, *Leather — Tests for colour fastness — Colour fastness to water spotting*

ISO 17070, *Leather — Chemical tests — Determination of tetrachlorophenol-, trichlorophenol-, dichlorophenol-, monochlorophenol-isomers and pentachlorophenol content*

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

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

ISO 17186, *Leather — Physical and mechanical tests — Determination of surface coating thickness*

ISO 17226-1, *Leather — Chemical determination of formaldehyde content — Part 1: Method using high performance liquid chromatography*

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ISO 17233, *Leather — Physical and mechanical tests — Determination of cold crack temperature of surface coatings*

ISO 17234-1, *Leather — Chemical tests for the determination of certain azo colourants in dyed leathers — Part 1: Determination of certain aromatic amines derived from azo colourants*

ISO 17234-2, *Leather — Chemical tests for the determination of certain azo colorants in dyed leathers — Part 2: Determination of 4-aminoazobenzene*

ISO 23910, *Leather — Physical and mechanical tests — Measurement of stitch tear resistance*

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 Sampling

4.1 When possible, the location and identification of laboratory samples shall be in accordance with ISO 2418.

4.2 The number of samples shall be by agreement between the interested parties, except in cases of dispute, when the number of samples shall be in accordance with ISO 2588. If the lot size of the leathers is high, the maximum number of samples shall be five.

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5 Sample conditioning and preparation

5.1 Laboratory samples for physical, mechanical and fastness tests shall be conditioned and prepared in accordance with ISO 2419.

5.2 Laboratory samples for chemical tests shall be conditioned and prepared in accordance with ISO 4044.

6 Characteristics, test methods and recommended values

[Table 1](#) and [Table 2](#) show the characteristics, test methods and recommended values for different types of leather intended for apparel. The essential characteristics in [Table 1](#) shall all be taken into account, even if they can have different relative weights in the process of evaluation relative to use. The subsidiary characteristics in [Table 2](#) shall be agreed by the parties concerned according to the intended use of the leather.

Table 1 — Essential characteristics, recommended values and test methods for apparel leather

Leather characteristics	Recommended value	Test methods
Coating thickness (mm)	≤ 0,15	ISO 17186
Tear load ^a (N)	≥ 15	ISO 3377-1
Tensile strength ^a (N/mm ²)	≥ 12	ISO 3376
Elongation at maximum force ^a (%)	40 to 90	ISO 3376
Flexing resistance ^b (cycles)	Aniline (non-pigmented finish) ≥ 20 000 Leather (pigmented finish) ≥ 50 000 (without visible damage, no crack)	ISO 5402-1
Stitch tear resistance (N)	≥ 40	ISO 23910
Chromium VI content (mg/kg)	< 3	ISO 17075-1 or ISO 17075-2
pH and ΔpH	≥ 3,5 If the pH value is below 4, ΔpH shall be ≤ 0,7	ISO 4045
Formaldehyde content (mg/kg)	≤ 150 for leather without direct contact with the skin ≤ 75 for leather in direct contact with the skin ≤ 20 for leather for infants and children (0 to 14 years age group)	ISO 17226-1
Total chlorinated phenol content ^c (%)	< 0,1	ISO 17070
Individual chlorinated phenol content (mg/kg)	< 0,5	
PCP	< 0,5	
Tetra-CP	< 0,5	
Tri-CP	< 1,0	
Di-CP	< 1,0	
Mono-CP	< 2,0	
Azo colourant (mg/kg)	≤ 30	ISO 17234-1 ISO 17234-2
Colour fastness to light	Aniline ≥ 3 blue scale Nubuck ≥ 3 blue scale Suede ≥ 3 blue scale Other finishing ≥ 4 blue scale	ISO 105-B02
^a Mean value of each direction (parallel and perpendicular to the backbone). ^b Using dry flex method. ^c Pentachlorophenol, tetrachlorophenol, trichlorophenol, dichlorophenol, monochlorophenol. ^d Alkaline artificial perspiration solution is defined in ISO 11641.		

Table 1 (continued)

Leather characteristics	Recommended value	Test methods
Colour fastness to to-and-fro rubbing (colour change and staining)	For aniline, nubuck or suede: — dry felt 20 cycles \geq 3 grey scale — wet felt 10 cycles \geq 3 grey scale — felt wetted with artificial perspiration solution ^d 10 cycles \geq 3 grey scale Other finishing: — dry felt 50 cycles \geq 3 grey scale — wet felt 20 cycles \geq 3 grey scale — felt wetted with artificial perspiration solution ^d 20 cycles \geq 3 grey scale	ISO 11640
Colour fastness to water spotting referring to the residual halo after 24 h	\geq 3 grey scale (no blistering of the leather surface or other permanent physical effects and no salt spew formation)	ISO 15700
Colour fastness to dry cleaning	\geq 3 grey scale (no finish lost, no refatting)	ISO 11643
^a Mean value of each direction (parallel and perpendicular to the backbone). ^b Using dry flex method. ^c Pentachlorophenol, tetrachlorophenol, trichlorophenol, dichlorophenol, monochlorophenol. ^d Alkaline artificial perspiration solution is defined in ISO 11641.		

Table 2 — Subsidiary characteristics, recommended values and test methods for apparel leather

Leather characteristics	Recommended value	Test methods
Colour fastness to water	\geq 3 grey scale	ISO 11642
Finish adhesion (only for pigmented leathers)	\geq 2 N per 10 mm (dry adhesion)	ISO 11644
Cold crack resistance (only for pigmented leathers)	-10 °C (no damage)	ISO 17233

7 Test report

The test report shall contain at least the following information:

- a reference to this document, i.e. ISO 14931:—;
- identification of test sample and, if required, sampling procedure;
- date and place of the tests;
- test results and number of test specimens;
- conditioning and test atmosphere used;
- any deviation from this document.

8 Packaging and marking

8.1 Packaging

The upper leather shall be packaged suitably as agreed between the interested parties.

8.2 Marking

The following information shall be clearly and permanently marked or labelled on the flesh side and for suede on the grain side of leather:

- a) area of leather;
- b) manufacturer's identification mark;
- c) lot number or month and year of the product.

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