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IULTCS IUP 2

Fourth edition
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Leather — Chemical, physical, mechanical and fastness tests — Position and preparation of specimens for testing

Cuir — Essais chimiques, physiques, mécaniques et essais de solidité — Emplacement et préparation des spécimens pour les essais

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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).

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).

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.

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 document was prepared by the Physical Test Commission of the International Union of Leather Technologists and Chemists Societies (IUP Commission, IULTCS), 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).

The Chemical and Fastness Test Commissions were consulted in the preparation of this document. The locations of the test specimens are identical to those given in IUP 2 published in *J. Soc. Leather Trades Chemists*, **42**, pp. 382–385, 1958 and IUC 2 published in *J. Soc. Leather Trades Chemists*, **49**, pp. 6–8, 1965. IUP 2 was declared an official method in 1959 and IUC 2 in 1965. Updated versions were published in *J. Soc. Leather Tech. Chem.*, **82**, p. 194, 1998 and further revisions were published in *J. Soc. Leather Tech. Chem.*, **84**, p. 303, 2000 and reconfirmed as official methods in March 2001. This document differs slightly in the text and includes tolerances for measurements but the locations of the test specimens are identical.

This fourth edition cancels and replaces the third edition (ISO 2418:2017), which has been technically revised.

The main changes are as follows:

— title has been revised to more correctly explain the purpose of this document;

— entries 3.1 and 3.2 have been added and the text throughout the document has been revised to use the words “specimen” and “test piece” where appropriate instead of “sample” and “sampling”;

— 4.1 has been revised and reorganised; in addition, in 4.1.1 when the client identifies the part of the hide or skin supplied and the location of the backbone then the laboratory is not responsible for this identification;

— in 4.2 a new Table 1 specifies the distance from the backbone depending on the size of the leather hide or skin;

— new Clauses 7 and 8 have been added to specify the press knives used for cutting test pieces and the preparation of the test pieces.

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 — Chemical, physical, mechanical and fastness tests — Position and preparation of specimens for testing

1 Scope

This document specifies the position of laboratory test specimens within a piece of leather and the method of labelling and marking the laboratory test specimens for future identification. In addition, this document specifies the design of press knives for cutting test pieces and the preparation of test pieces.

It is applicable to all types of leather derived from mammals, irrespective of the tanning used.

It is not applicable to leathers derived from birds, fish, reptiles or furs.

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 15115, *Leather — Vocabulary*

International Council of Tanners. *International Glossary of Leather Terms*. 2nd edition, 1975[1)]

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 15115 and the *International Glossary of Leather Terms* and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
specimen
portion or a part of a leather hide or skin from which test pieces are cut

EXAMPLE The GJKH square in 4.2.

3.2
test piece
specific portion of a specimen cut in a suitable shape or dimensions for testing

EXAMPLE The dog-bone-shaped test piece for testing tensile strength (see ISO 3376).

1) Issued by the International Council of Tanners in 1975, with the Addenda of 1978.

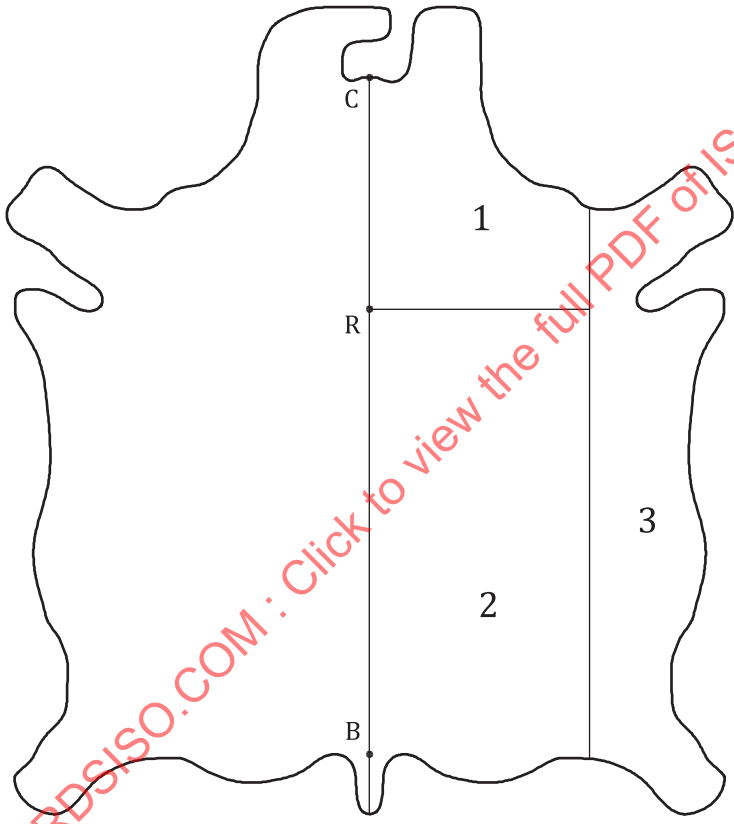
4 Position of laboratory test specimens

4.1 General

4.1.1 Segmentation of leather

For the purposes of this document, the following segmentation of leather is considered (see Figure 1): bend (or butt), shoulder and belly.

The definition of the test specimen locations from bends or butts (4.3), shoulder (4.4) or belly (4.5) by the laboratory is possible only in the case of a clearly identifiable segment, which means from a whole hide or skin, or a side of a hide or skin. When the official specimen location cannot be determined accurately its identification should not be considered the laboratory's responsibility.



Key

1 shoulder
2 bend (butt)
3 belly
B root of the tail (if visible)
C top of the neck
BC backbone
R shoulder point where CR = BC/3

Figure 1 — Segmentation of a whole hide

4.1.2 Selection of test specimens

4.1.2.1 Areas selected for laboratory test specimens shall be free from all obvious defects such as scratches and flay cuts.

4.1.2.2 The selection procedures described are designed to allow concurrent physical, colour fastness and chemical testing.

4.1.2.3 The results of analyses carried out on test specimens taken from different segments can vary significantly. For this reason, in addition to the impossibility of uniquely specifying segment size, cutting testing specimens from whole hides and sides is preferred (see 4.2).

4.1.3 Position of specimens for physical and mechanical testing

4.1.3.1 For physical and mechanical testing, take leather test specimens from the non-shaded areas specified in Figure 2 to Figure 5 as appropriate or according to client instructions.

4.1.3.2 Unless otherwise indicated by the client, the laboratory shall cut specimens for physical and mechanical tests from bends or butts as reported in 4.2 and 4.3.

4.1.4 Position of specimens for chemical testing

4.1.4.1 For chemical testing, take leather test specimens from the shaded areas specified in Figure 2 to Figure 5 as appropriate or according to client instructions.

4.1.4.2 If the minimum mass required for chemical testing is not attained, cut from the corresponding area on the other side of the backbone. If this is impossible, take additional material from the area immediately adjacent to the official specimen position, which is the area included within 50 mm.

4.1.4.3 Uncontaminated trimmings from physical and mechanical specimens may be used for chemical testing, except in arbitration analysis.

4.1.5 Position of specimens for colour fastness testing

For colour fastness testing, take leather test specimens from the non-shaded areas specified in Figure 2 to Figure 5 as appropriate. If the client agrees, other locations are allowed for colour fastness testing.

4.1.6 Location of test specimens where areas of tension exist

If a hide is cut into half hides or segments and dried afterwards in a toggling drier or a drying process that creates tension in the leather at the edges, then the distance of the test specimen areas from the edges of the leather shall be increased from 50 mm to at least 100 mm where possible.

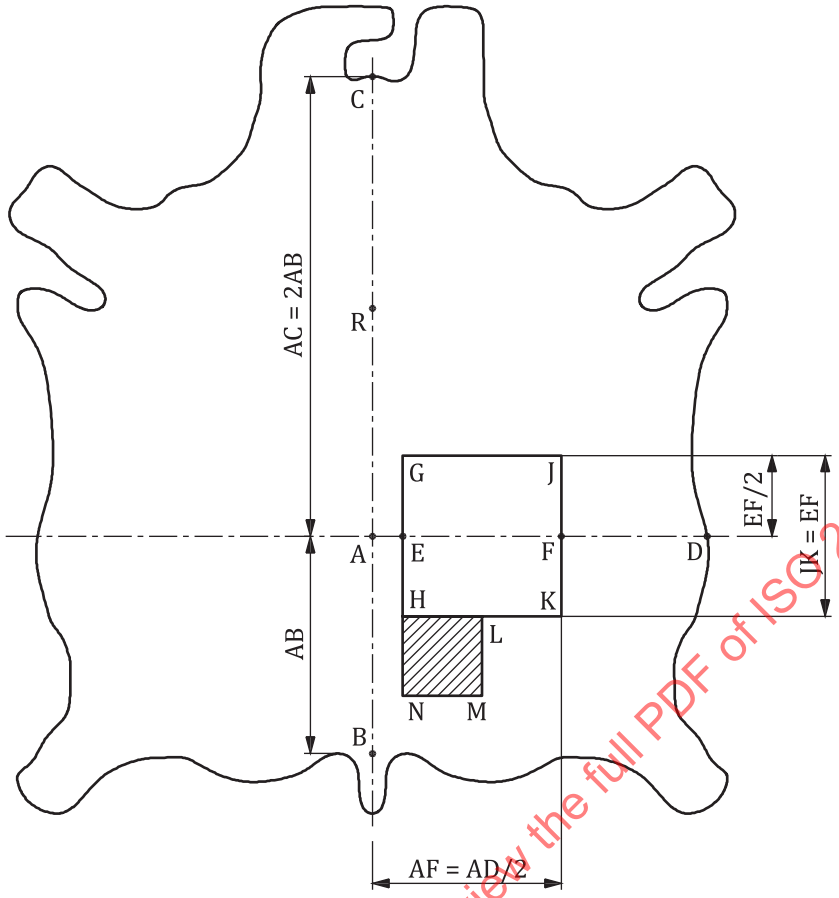
4.1.7 Location of test specimens in case of arbitration

In arbitration analysis, unless previously agreed, only leather specimens for testing taken from the appropriate area of whole hides, skin or sides (see 4.2) shall be used as the test specimen.

4.2 Whole hides, skins and sides

Take the non-shaded square piece GJKH and/or the shaded square piece HLMN shown in Figure 2.

Pieces can be taken from the right and/or left sides of the hide.



Key

B root of the tail
C top of the neck
BC backbone
D edge of the hide
AD line perpendicular to BC
AB = BC/3, such that AC = 2AB
AE = see Table 1
AF = FD
JK = EF
GE = EH
HL = NM = HN = ML = HK/2

NOTE Lines GH, JK, HN and LM are parallel to BC.

Figure 2 — Specimen location for whole hides, skins and sides

In small skins, the GJKH area can be smaller than the surface required for a single test series. For this reason, the AE distance should be selected as reported in Table 1.

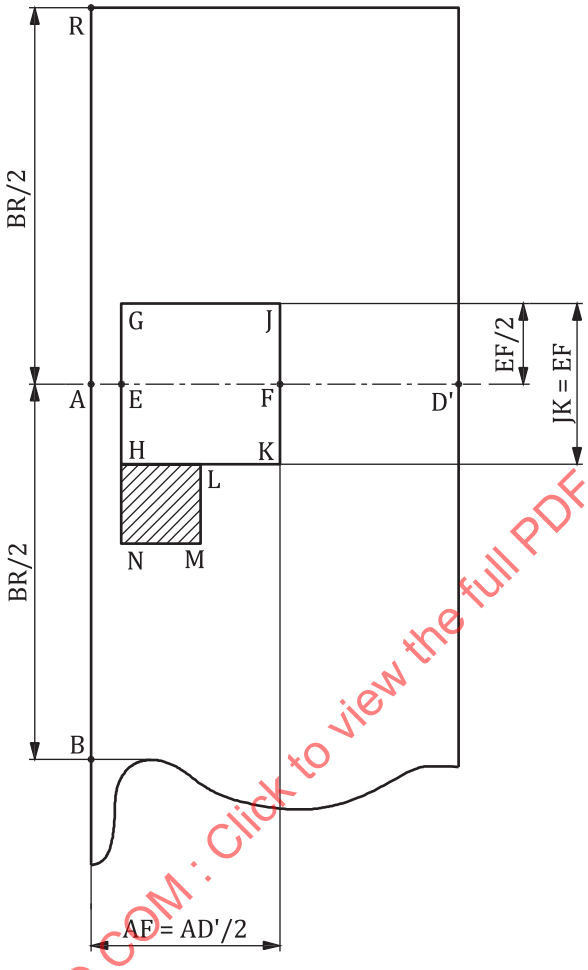
Table 1 — AE distance for location by leather size

AD mm	AE mm
< 350	0
≥ 350 and < 600	20
≥ 600	50

If the leather having an AD dimension less than 350 mm shows evidence of folding along the backbone due to packaging, AE shall be considered equal to 20 mm.

4.3 Bends (butts)

Take the non-shaded square piece GJKH and/or the shaded square piece HLMN shown in Figure 3.



Key

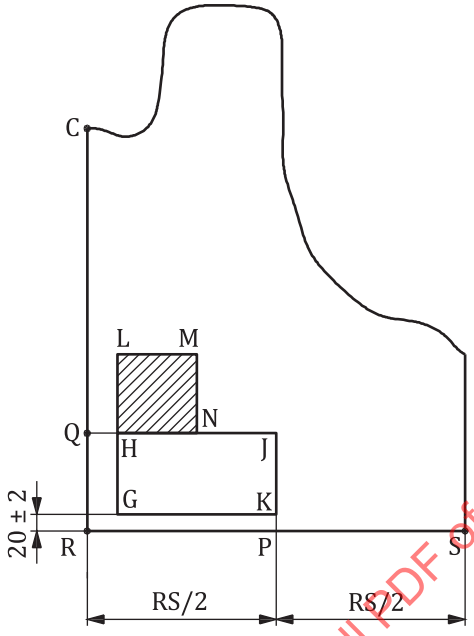
B root of the tail
R shoulder point (see Figure 1)
BR backbone
D′ edge of the bend (butt)
AD′ line perpendicular to BR
AB = BR/2, such that AB = AR
AE = see Table 1
AF = FD′
JK = EF
GE = EH
HL = NM = HN = ML = HK/2

NOTE Lines GH, JK, HN and LM are parallel to BR.

Figure 3 — Representation of a bend showing specimen location for bends (or butts)

4.4 Shoulders

Take the non-shaded rectangular piece GHJK and/or the shaded square piece HLMN shown in Figure 4.



Key

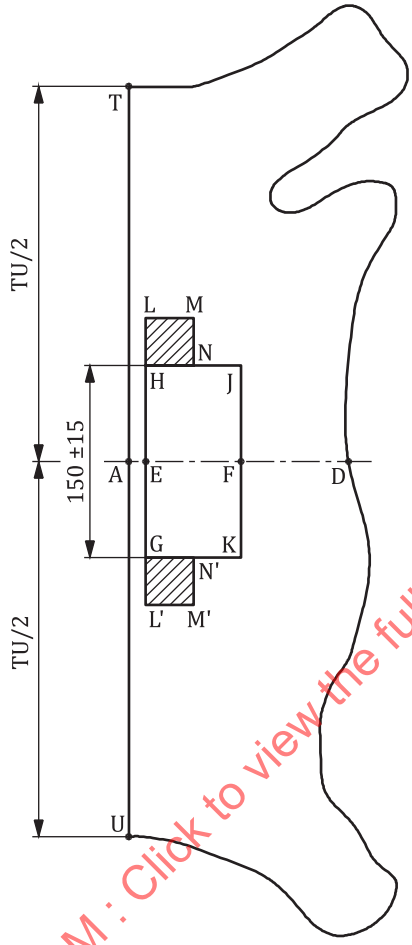
C top of the neck
R shoulder point (see Figure 1)
CR backbone
S edge of the shoulder
KP = (20 ± 2) mm (see also 4.1.5)
HQ = AE as defined in Table 1
RP = PS
GH = JK = HL = LM = MN = GK/2

NOTE Lines RS, HJ, GK and LM are perpendicular to CR. Lines GL, KJ and NM are parallel to CR.

Figure 4 — Representation of a shoulder showing specimen location for shoulders

4.5 Bellies

Take the non-shaded rectangular piece GHJK and/or the shaded square pieces HLMN and GL′M′N′ shown in Figure 5.



Key

T neck end of the belly
U tail end of the belly
D edge of the hide
AD line perpendicular to TU
TA = AU
GE = EH = EF = GK = HJ
LH = NH = GN′ = GL′ = GH/4
GH = (150 ± 15) mm
AE = 10 mm

Figure 5 — Representation of a belly showing specimen location for bellies

5 Storage of laboratory leather pieces and specimens

Store leather pieces and specimens in such a way as to avoid contamination and the effects of localized heating.