INTERNATIONAL STANDARD

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IULTCS/IUP 47

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Leather — Physical and mechanical tests — Determination of resistance to horizontal spread of flame

Cuir — Essais physiques et mécaniques — Détermination de la résistance à la propagation horizontale de la flamme

Reference number
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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.

ISO 17074 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*, the secretariat of which is held by UNI. It was published as EN 14326. It is based on IUP 47 published in *J. Soc. Leather Tech. Chem.*, **86** (7), p. 359, 2002, and declared an official method of the IULTCS in May 2003.

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.

Leather — Physical and mechanical tests — Determination of resistance to horizontal spread of flame

1 Scope

This International Standard specifies a method for determining the horizontal burning rate of leather. It is applicable to all light leathers but is particularly intended for leathers used in the passenger compartment of motor vehicles.

NOTE The method uses the apparatus specified in ISO 3795 but incorporates special provisions for sampling, conditioning and testing of 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.

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

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

ISO 2589, *Leather — Physical and mechanical tests — Determination of thickness*

ISO 3795:1989, *Road vehicles, and tractors and machinery for agriculture and forestry — Determination of burning behaviour of interior materials*

3 Principle

A test piece is held horizontally in a U-shaped holder and is exposed to a defined flame for a specified time with the flame acting on the free end of the test piece. The time is recorded for the flame to self-extinguish or to burn a measured distance.

4 Apparatus

4.1 **Combustion chamber**, as specified in 5.1 of ISO 3795:1989.

4.2 **Test piece holder**, as specified in 5.2 of ISO 3795:1989.

4.3 **Gas burner**, as specified in 5.3 of ISO 3795:1989.

4.4 **Test gas**, calorific value approximately 38 MJ/m^3, (e.g. natural gas).

4.5 **Stop watch**, reading to 0,5 s.

4.6 **Thickness gauge**, conforming to ISO 2589.

4.7 **Ruler**, reading to 1 mm.

4.8 **Fume cupboard**, as specified in 5.7 of ISO 3795:1989.

5 Sampling and sample preparation

5.1 Sample in accordance with ISO 2418.

5.2 Prepare three test pieces of the form and dimensions shown in Figure 1 with the long edge of the test piece being parallel to the backbone.

NOTE If there is a requirement for more than two hides or skins to be tested in one batch, then only one sample need be taken from each hide or skin, provided that the overall total is not less than three test pieces.

Dimensions in millimetres

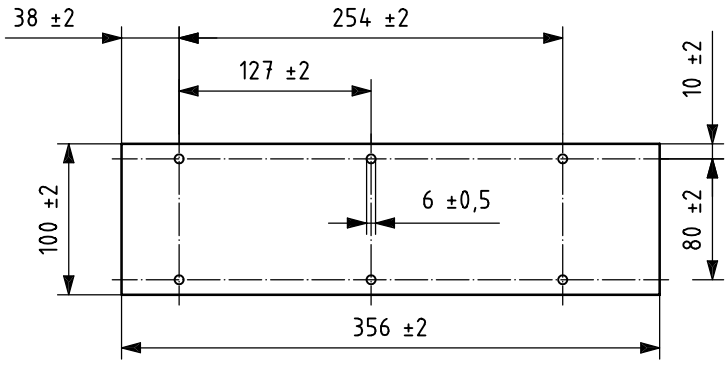

Figure 1 — Test piece

5.3 Condition the test pieces in accordance with ISO 2419. The test pieces should be maintained under these conditions until immediately prior to testing.

6 Procedure

6.1 Determine the thickness of the test piece in accordance with ISO 2589.

6.2 Place the test piece in the holder (4.2) so that the exposed side will be downwards to the flame.

6.3 Light the burner, close the air inlet and adjust the flame to a height of 38 mm ± 1 mm using the mark in the chamber (4.1). Allow the flame to burn for at least 5 min while the gas flow stabilises.

6.4 Push the test piece holder (4.2) into the combustion chamber (4.1) so that the left hand end of the test piece (Figure 1) is exposed to the flame. After 15,0 s ± 0,5 s, extinguish the flame by turning off the gas supply to the burner.

6.5 Allow any flame on the leather to propagate along the test piece, observing the flame on the side where the flame is burning faster.

6.6 Note the time when the foot of the flame passes the first measuring points which are the holes at the left hand end of the test piece in Figure 1. Allow the flame to continue and note the time when the flame reaches the last measuring points which are the holes at the right hand end of the test piece in Figure 1. If the flame self-extinguishes before reaching the last measuring point, note the time when it self-extinguishes.

6.7 Using the ruler (4.7), measure the burnt distance up from the first measuring point to either the last measuring point or the point where the flame self-extinguishes. Burnt distance is the decomposed part of the test piece, which is destroyed on its surface or in the interior by burning.

6.8 If the sample does not ignite, does not continue burning when the flame is removed or self-extinguishes before reaching the first measuring point, then the burning rate is 0 mm/min.

6.9 Allow the combustion chamber to cool to less than 30 °C before further tests are carried out.

7 Expression of results

Calculate the burning rate, B, in millimetres per minute, using the formula:

$$B = \frac{d \times 60}{t}$$

where

d is the burnt distance, in millimetres;

t is the time, in seconds, to burnt distance, d.

8 Test report

The test report shall include the following:

a) a reference to this International Standard, i.e. ISO 17074:2006;

b) the mean thickness of the test pieces;

c) the mean value of the burning rate in millimetres per minute (mm/min);

d) the standard atmosphere used for conditioning and testing as given in ISO 2419 (i.e. 20 °C/65 % RH, or 23 °C/50 % RH);

e) any deviations from the method specified in this International Standard;

f) full details for identification of the sample and any deviations from ISO 2418 with respect to sampling.

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