

**INTERNATIONAL
STANDARD**

**ISO
17076-1**

**IULTCS/IUP
48-1**

First edition
2012-03-15

**Leather — Determination of abrasion
resistance —**

**Part 1:
Taber method**

*Cuir — Détermination de la résistance à l'abrasion —
Partie 1: Méthode Taber*



Reference number
ISO 17076-1:2012(E)
IULTCS/IUP 48-1:2012(E)

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Published in Switzerland

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 17076-1 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 289, *Leather*, in collaboration with the Physical Test Commission of the International Union of Leather Technologists and Chemists Societies (IUP Commission, IULTCS), in accordance with the Agreement on technical co-operation 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.

This first edition of ISO 17076-1 cancels and replaces ISO 17076:2006, which has been technical revised. It has a modified title and small changes were made in 4.6 and 6.2.2.

ISO 17076 consists of the following parts, under the general title *Leather — Determination of abrasion resistance*:

- *Part 1: Taber method*
- *Part 2: Martindale ball plate method*

Leather — Determination of abrasion resistance —

Part 1: Taber method

1 Scope

This part of ISO 17076 specifies a method of determining the abrasion resistance of leather using a Taber apparatus.

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 105-A02, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour*

3 Principle

The test piece is rotated on a vertical axis against the sliding rotation of two abrading wheels which are pressed against the test piece with a specified force. One abrading wheel rubs the test piece outwards towards the periphery, the other inwards to the centre. Any damage to the test piece is noted along with any change in colour.

NOTE This method is also referred to as the “Taber Test”.

4 Apparatus

4.1 Horizontal, motor driven platform, rotating at (60 ± 5) rpm.

4.2 Removable, flat, circular test piece holder.

4.3 Pair of pivoted arms, for holding the abrasive wheels with the inner edge of the wheels $(26,20 \pm 0,25)$ mm from the centre of the motor shaft and pressing each abrasive wheel against the test piece with a force of $(2,5 \pm 0,1)$ N.

4.4 Vacuum nozzle, with inlet set just above the upper surface of the test piece.

4.5 Counter, indicating the number of revolutions of the platform (4.1).

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4.6 Abrasive wheels, tungsten carbide or rubber based, width $(12,7 \pm 0,1)$ mm, maximum diameter 51,7 mm and minimum diameter 44,0 mm. Abrasive wheels are gradually abraded away during use. The maximum diameter of 51,7 mm is the diameter of a new wheel. Used wheels shall be discarded when the diameter falls to 44,0 mm. The type of tungsten carbide and rubber based wheels to be used should be agreed with the client and the type of wheel used reported in the test report [7 c)]. Other types of abrasive wheels can also be used at the client's request. The abrasive wheels used in the test should be of the same diameter.

4.7 Additional weights, to increase the force between the abrasive wheel and the test piece to $(5,0 \pm 0,1)$ N or $(10,0 \pm 0,1)$ N.

4.8 Specimen mounting sheet, such as a card of minimum 1,0 mm thickness, with an adhesive where necessary, to keep the test pieces rigid and flat.

4.9 Vacuum cleaner, domestic type, with an adapter to connect to the nozzle (4.4).

4.10 Abrasive paper, silicon carbide, grade E150.

4.11 Soft brush or compressed air.

4.12 Brush, stiff bristle.

4.13 Grey scale, for assessing change in colour conforming to ISO 105-A02.

5 Sampling and sample preparation

5.1 Sample in accordance with ISO 2418.

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.

5.2 Apply the specimen mounting sheet (4.8) to the sample, if required. Cut three circular test pieces of diameter (106 ± 1) mm with a central circular hole to fit over the central drive shaft.

5.3 Condition in accordance with ISO 2419. All testing should be carried out in a standard atmosphere as specified in ISO 2419.

6 Procedure

6.1 Preparation of new wheels

6.1.1 Prepare new rubber abrasive wheels using the procedure in 6.1.2 to 6.1.8. Prepare new tungsten carbide abrasive wheels using the procedure in 6.1.9.

6.1.2 Fit the rubber abrasive wheels to the pivoted arms (4.3) ensuring that the wheels are mounted on the correct arm with the labels facing outwards.

6.1.3 Fit the additional weights (4.7) to give a loading of $(10,0 \pm 0,1)$ N on each abrasive wheel.

6.1.4 Fit a piece of abrasive paper (4.10) to the test piece holder.

6.1.5 Lower the abrasive wheels onto the surface of the abrasive paper, turn on the vacuum (4.9), switch on the machine and run for 20 cycles.

6.1.6 Replace the abrasive paper with a new piece of abrasive paper and repeat 6.1.5.

6.1.7 Examine the abrasive wheels. If the colour is not uniform, repeat the abrasive treatment with a fresh piece of abrasive paper. If the colour is still not uniform, discard the wheels.

6.1.8 Brush the wheels with a soft brush or use compressed air (4.11) to remove any debris.

6.1.9 Prepare new tungsten carbide wheels by brushing with a stiff bristle brush (4.12) to remove any loose particles.

6.2 Abrasion of test pieces

6.2.1 Fit the prepared new abrasive wheels (6.1) or reconditioned abrasive wheels (6.3) to the pivoted arms (4.3) ensuring that the wheels are mounted on the correct arm with the labels facing outwards.

6.2.2 Select the weights (4.7) to give a loading of either $(2,5 \pm 0,1)$ N (no additional weight), $(5,0 \pm 0,1)$ N or $(10,0 \pm 0,1)$ N on each abrasive wheel. The weight used is recorded in the test report [7 c)].

NOTE Generally, an additional weight of $(5,0 \pm 0,1)$ N is used, but the client will specify the weight to be used.

6.2.3 Fit a prepared and mounted test piece (5.2) to the test piece holder.

6.2.4 Lower the abrasive wheels onto the test piece, turn on the vacuum (4.9), switch on the machine and run for the specified number of cycles.

6.2.5 Stop the machine and remove the test piece. Examine the test piece and record any damage excluding any damage 2 mm from the edge of the tested area or in depressed areas caused by starting or stopping the machine. If required, use the grey scale (4.13) to determine the colour change of the tested area.

6.2.6 Replace the test piece and continue the abrasion to the next specified number of cycles. Repeat 6.2.5.

6.2.7 Repeat 6.2.6 for any other number of cycles given in 6.2.4.

6.3 Reconditioning of abrasive wheels

6.3.1 Recondition rubber abrasive wheels using the procedure in 6.3.2 to 6.3.7. Recondition new tungsten carbide abrasive wheels using the procedure in 6.3.8.

6.3.2 Recondition rubber abrasive wheels after each completed test.

6.3.3 Fit the additional weights (4.7) to give a loading of $(10,0 \pm 0,1)$ N on each abrasive wheel.

6.3.4 Fit a piece of abrasive paper (4.10) to the test piece holder.

6.3.5 Lower the abrasive wheels onto the surface of the abrasive paper, switch on the vacuum (4.9), switch on the machine and run for 20 cycles.

6.3.6 Brush the wheels with a soft brush (4.11) to remove any debris.

6.3.7 Use abrasive paper for a maximum of 60 cycles (i.e. use for reconditioning three wheels and then replace).

6.3.8 Recondition the tungsten carbide wheels by brushing with a stiff bristle brush (4.12) to remove any loose particles. Any burring of the edges of the wheels after reconditioning should be removed by rotating the wheel by hand against abrasive paper (4.10).

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7 Test report

The test report shall include the following:

- a) reference to this part of ISO 17076; i.e. ISO 17076-1;
- b) the number of test cycles;
- c) the type of abrasive wheel and the loading used for the test;
- d) any observed damage; use photographs or, if required, return the test pieces to the client to illustrate damage;
- e) any colour change expressed in terms of a grey scale rating, if required;
- f) the standard atmosphere used for conditioning and testing as given in ISO 2419;
- g) any deviations from the method specified in this this part of ISO 17076;
- h) full details for identification of the sample and any deviations from ISO 2418 with respect to sampling.

Annex A **(informative)**

Sources of apparatus

An example of a suitable product available commercially is given below. This information is given for the convenience of the user of this International Standard and does not constitute an endorsement by ISO of this product.

A suitable apparatus is manufactured by:

- Taber Industries, P.O. Box 164, North Tonawanda, NY 14120, USA. Abrasive wheels and papers may also be obtained from this source. Web-address: <http://www.taberindustries.com/>
- SATRA Technology Centre, Wyndham Way, Telford Way, Kettering, Northamptonshire, NN16 8SD, England. Web-address: <http://www.satrap.co.uk>

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ICS 59.140.30

Price based on 5 pages