SRI LANKA STANDARD 1079:1995
(ISO 11640:1993)

SRI LANKA STANDARD

LEATHER – TESTS FOR COLOUR FASTNESS – COLOUR FASTNESS TO CYCLES OF TO-AND-FRO RUBBING

SRI LANKA STANDARDS INSTITUTION

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SLS 1079: 1995

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Sri Lanka standard
LEATHER – TESTS FOR COLOUR FASTNESS – COLOUR FASTNESS TO CYCLES OF TO-AND-FRO RUBBING

NATIONAL FOREWORD

This standard was finalised by the Sectoral Committee on Textiles, Clothing and Leather and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 1995-10-26.

This Sri Lanka Standard is identical with ISO 11640 : 1993 Leather – Tests for Colour fastness – colour fastness to cycles of to-and-fro rubbing, published by the International Organization for Standardization. (ISO).

Terminology and Conventions

The text of the International Standard has been accepted as suitable for publication, without deviation, as a Sri Lanka Standard. However, certain terminology and conventions are not identical with those used in Sri Lanka Standards, attention is therefore drawn to the following :

a). Wherever the words " International standard/Publication" appear, referring to this Standard they should be interpreted as "Sri Lanka Standard".

b). Wherever page numbers are quoted, they are ISO page numbers.

CROSS - REFERENCES

International Standard	Corresponding Sri Lanka standard
ISO 11641 :1993, Leather – Tests for Colour fastness – Colour fastness to perspiration	SLS ….. : 1995 Leather – Tests for colour fastness – colour fastness to perspiration

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INTERNATIONAL STANDARD

ISO 11640

IULTCS/IUF 450

First edition
1993-12-15

Leather — Tests for colour fastness — Colour fastness to cycles of to-and-fro rubbing

Cuir — Essais de solidité des teintures — Solidité des teintures au frottement va-et-vient

Reference number
ISO 11640:1993 (E)
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450, 1993 Edition

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.

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.

International Standard ISO 11640 was prepared by the Fastness Tests Commission of the International Union of Leather Technologists and Chemists Societies (IUF Commission, IULTCS). It is based on IUF 450 published in *J. Soc. Leather Tech. Chem.*, **71**, pp. 24-25 (1987), and declared an official method of the IULTCS in October 1989.

Annexes A and B of this International Standard are for information only.

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INTERNATIONAL STANDARD © ISO **ISO 11640:1993(E)**

Leather — Tests for colour fastness — Colour fastness to cycles of to-and-fro rubbing

1 Scope

This International Standard specifies a method for determining the behaviour of the surface of a leather on rubbing with felt.

NOTE 1 During the test, the felt may become coloured to a certain extent through transfer of coloured matter, e.g. finish, pigment, dyestuff or buffing dust, and the colour and surface of the leather may become altered.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 105-A02:1993, *Textiles — Tests for colour fastness — Part A02: Grey scale for assessing change in colour.*

ISO 105-A03:1993, *Textiles — Tests for colour fastness — Part A03: Grey scale for assessing staining.*

ISO 2419:1972, *Leather — Conditioning of test pieces for physical tests.*

ISO 3696:1987, *Water for analytical laboratory use — Specification and test methods.*

ISO 9073-2:1989, *Textiles — Test methods for non-wovens — Part 2: Determination of thickness.*

ISO 11641:1993, *Leather — Tests for colour fastness — Colour fastness to perspiration.*

3 Principle

One side of the leather to be tested is rubbed with pieces of reference wool felt under a given pressure for a given number of forward and backward motions.

The change in colour of the pieces of felt and of the leather are assessed with the grey scales. Any other visible change in or damage to the surface of the leather is also reported.

4 Apparatus and materials

4.1 Rub fastness test apparatus[1], incorporating the elements specified in 4.1.1 to 4.1.3 and optionally including those described in 4.1.4.

4.1.1 A carriage with:

a) a horizontal, completely planar metal platform;

b) a holder for fastening the leather to the platform, leaving 80 mm exposed;

c) a device with which the leather may be extended at least 20 % linearly in the direction of rubbing.

1) An example of a suitable apparatus available commercially is given in annex A.

4.1.2 A finger, 500 g ± 25 g in mass, removable, yet able to be fixed firmly in place, with:

a) a base measuring 15 mm × 15 mm;

b) a device for attaching pieces of wool felt (see 4.2) to the base;

c) a weightpiece of mass 500 g ± 10 g to load the finger up to a total mass of 1 kg;

d) means of lowering the finger with the base flat on to the test specimen.

4.1.3 Means for driving the carriage to and fro with a distance of travel of 35 mm to 40 mm at a frequency of 40 cycles/min ± 2 cycles/min for the complete forward and backward motion.

4.1.4 Convenient, but not essential, elements as follows:

a) means of adjusting the position of the finger at right angles to the direction of rubbing, so that two or three positions may be used for rubbing on one piece of leather;

b) a motor to drive the carriage forward and backward (see 4.1.3);

c) means for preselecting a given number of cycles.

4.2 Rubbing material[2], square pieces of white or black wool felt, measuring 15 mm × 15 mm, punched out of a sheet of pure wool felt meeting the following specification:

— pH of an extract made by shaking 5 g of ground felt with 200 ml of demineralized water (4.5) for 2 h in a polyethylene bottle: between 5,5 and 7;

— mass per unit area: 1 750 g/m^2 ± 100 g/m^2;

— thickness, determined in accordance with ISO 9073-2: 5,5 mm ± 0,5 mm.

The black felt shall be dyed with Acid Black 24 (CI 26370).

4.3 Vacuum-desiccator vessel, or other glass container suitable for evacuation.

4.4 Vacuum pump, capable of evacuating the desiccator vessel (4.3) to 5 kPa (50 mbar) within 4 min.

4.5 Demineralized water, grade 3 in accordance with ISO 3696.

5 Test specimens

Test specimens shall be rectangular pieces of leather, at least 120 mm long and, for each position of the finger [see 4.1.4 a)], at least 20 mm wide.

NOTE 2 Usually with one set of conditions (conditioning of leather and felt, number of cycles, etc.) only one specimen is tested. In case of dispute, it is strongly recommended to test several specimens, sampled from different positions on the hide or skin.

6 Conditioning of test specimens and pieces of felt

6.1 Dry leather and dry felt

Condition in accordance with ISO 2419.

6.2 Wet felt

Wet the felt by placing pieces of felt in demineralized water (4.5), heat to boiling and allow to boil gently until the felt pieces sink. Then decant off the hot water and replace with cold demineralized water. Allow to stand until the wetted felt pieces have reached room temperature. Take each piece of felt from the water just before use and squeeze or wipe it in order to reduce its water uptake to approximately 1 g. The wet pieces of felt shall not be allowed to soak in the water for more than 24 h.

6.3 Wet leather

Wet the leather by immersing specimens in demineralized water (4.5) in such a way that there is no contact between specimens. Place the containing vessel in the vacuum desiccator (4.3), produce a vacuum of 5 kPa and hold it for 2 min. Restore normal pressure. Carry out this procedure two more times. Just before use, take the specimens out of the water and remove excess water on their surfaces with blotting paper.

The specimens shall not be allowed to soak in the water for more than 1 h.

2) An example of suitable wool felt available commercially is given in annex A.

6.4 Felt wetted with artificial perspiration solution

Wet the felt with artificial perspiration solution prepared as specified in ISO 11641, proceeding as described in 6.3 above. Just before use, take each felt piece out of the solution and squeeze or wipe it in order to reduce its uptake of artificial perspiration solution to approximately 1 g.

The felt shall not be allowed to soak in the artificial perspiration solution for more than 24 h.

7 Procedure

7.1 Mount a conditioned specimen on the apparatus and stretch it 10 % in the direction of rubbing. If the specimen cannot be extended linearly by 10 %, stretch it less or not at all. If the specimen at 10 % extension does not remain stable during rubbing, stretch it sufficiently to achieve stability. In both the latter cases, state the extension in the test report.

7.2 For normal leathers, attach the weightpiece so that the total mass of the finger is 1 000 g.

NOTE 3 Due to the higher friction on suede leathers and suede-like leathers, it may be desirable in such cases to carry out the test with a total mass of 500 g (i.e. without the additional weightpiece).

7.3 Attach a piece of conditioned felt to the finger (4.1.2). Place the finger on the leather and carry out a number of cycles, selected from the following list: 5, 10, 20, 50, 100, 200, 500.

7.4 If required, repeat the test with another number of cycles with the finger in a fresh position on the specimen (or a new specimen) and after replacing the felt by a new piece.

7.5 Release the specimen and assess the rubbed area on the specimen and/or on the pieces of felt for change in colour and staining, respectively, as specified in 7.6. Wetted specimens and pieces of felt shall be dried at ambient temperature before assessment.

Before assessing the change in colour of leathers having a finish, it can be useful to apply a colourless shoe polish and polish lightly with a woollen fabric. Similarly, with suede leathers and similar leathers (e.g. velour, nubuck), it can be useful to brush with a brush in the direction of the nap.

It is preferable to use a colourless wax emulsion as the shoe polish. In some cases, a wax emulsion is unsuitable and a polish consisting of waxes and organic solvents only may have to be used. If a shoe polish is used, this shall be stated in the test report, together with the composition or other details identifying the polish.

In testing white or pale leathers with black felt, slight discoloration of the leather, due to rub-off from the felt, may be possible. In this case, do not assess the change in colour of the leather. This shall be assessed after rubbing in a different place with white felt.

7.6 Assess the change in colour of the leather and the staining of the pieces of felt with the grey scales in accordance with ISO 105-A02 and ISO 105-A03. Note any other visible changes in the surface of the specimen, e.g. loss of gloss, development of polish, flattening of the nap or destruction of finish.

8 Test report

The test report shall include the following information:

a) a reference to this International Standard;

b) a description of the type of leather tested;

c) an indication as to which surface of the leather was tested;

d) the conditions under which the leather and felt were conditioned before testing, the type of felt used (white or black) and the numerical ratings for the change in colour of the specimens and for the staining of each piece of felt;

e) details of any other visible change in the surface of the specimen;

f) details of any deviations from the procedure, such as the extension applied (if other than 10 %), polishing, total mass of the finger (if other than 1 kg, etc.

Annex A
(informative)

Commercial sources for apparatus and materials

Examples of suitable products available commercially are given below. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of these products.

A.1 A suitable apparatus is the VESLIC Rub Fastness Tester, which is made under VESLIC licence by Bally Schuhfabriken AG, Prüfgeräteverkauf, CH-5012 Schönenwerd, Switzerland.

A.2 Pieces of wool felt may be obtained as reference felts for use with the VESLIC Rub Fastness Tester, in packs of 1 000 for white felts and packs of 100 for black felts, from Eidgenössische Materialprüfungs- und Forschungsanstalt, Unterstrasse 11, CH-9001 St. Gallen, Switzerland.

Annex B
(informative)

Bibliography

The following IULTCS publications describe related methods:

[1] IUF 120, *General principles of colour fastness testing of leather.*

[2] IUF 131, *Grey scale for assessing change in colour.*

[3] IUF 132, *Grey scale for assessing staining.*

[4] IUF 426, *Fastness of leather to perspiration.*

[5] IUP 3, *Conditioning.*

[6] IUP 4, *Measurement of thickness.*

UDC 675.016.2:535.686.1:620.162

Descriptors: leather, tests, friction tests, determination, colour fastness.

Price based on 5 pages

SRI LANKA STANDARDS INSTITUTION

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The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

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In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of standardization as are of special interest to Sri Lanka.

Printed at the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.

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