भारतीय मानक

Indian Standard

IS 5914 (Part 5/Sec 2) : 2023
ISO 3377-2 : 2016

चमड़े की भौतिक परीक्षण पद्धतियाँ
भाग 5 विदारण भार का निर्धारण
अनुभाग 2 डबल एज विदारण

Methods of Physical Testing of Leather
Part 5 Determination of Tear Load
Section 2 Double Edge Tear

ICS 59.140.30

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June 2023 **Price Group 4**

Leather, Tanning Materials and Allied Products Sectional Committee, CHD 17

NATIONAL FOREWORD

This Indian Standard (Part 5/Sec 2) which is identical with ISO 3377-2 : 2016 'Leather — Physical and mechanical tests — Determination of tear load — Part 2: Double edge tear' issued by the International Organization for Standardization (ISO) was adopted by the Bureau of Indian Standards on the recommendation of the Leather, Tanning Materials and Allied Products Sectional Committee and approval of the Chemical Division Council.

The Indian Standard IS 5914 : 1970 Methods of physical testing of leather prescribes the methods for carrying out physical tests for all types of leathers. The Committee responsible for formulating this standard has decided to harmonize the methods of test prescribed in IS 5914 with those prescribed in ISO/IULTCS standards. Accordingly, the Committee decided to retain IS 5914 and publish the harmonized/adopted test methods published by ISO/IULTCS in various parts of IS 5914 as this standard is widely recognized by the Indian Leather Industry.

The Committee further decided to publish the adopted/harmonized standards in the following manner:

a) Wherever an existing test method is being replaced by the corresponding ISO/IULTCS test method, the relevant part will be published as revision with the information in the national foreword about the method of IS 5914 being superseded; and

b) When a new test method is being incorporated in IS 5914 the same will be published as a new standard and as subsequent part of IS 5914.

This part is an adoption of ISO 3377-2 : 2016 which specifies a method for determining the tear strength of leather using a double edged tear.

This standard has been published in several other parts. The other parts of this series are:

IS No.	*Title*
IS 5914	Methods of physical testing of leather:
Part 1 : 2018	Determination of water vapour absorption
Part 2	Determination of abrasion resistance,
Sec 1 : 2022	Taber method (*first revision*)
Sec 2 : 2017	Martindale ball plate method
Part 3	Determination of soiling,
Sec 1 : 2017	Rubbing (Martindale) method
Sec 2 : 2017	Tumbling method
Part 4	Determination of apparent density and mass per unit area (*under preparation*)
Part 5	Determination of tear load,
Sec 1	Single edge tear (*under preparation*)
Part 6	Determination of flex resistance,
Sec 1	Flexometer method (*under preparation*)

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Indian Standard

METHODS OF PHYSICAL TESTING OF LEATHER

PART 5 DETERMINATION OF TEAR LOAD

SECTION 2 DOUBLE EDGE TEAR

1 Scope

This part of ISO 3377 specifies a method for determining the tear strength of leather using a double edged tear. The method is sometimes described as the Baumann tear. It is applicable to all types of leather.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 7500-1, *Metallic materials — Verification of static uniaxial testing machines — Part 1: Tension/compression testing machines – Verification and calibration of the force-measuring system*

3 Principle

A rectangular test piece with a hole of specified shape is placed over the turned up ends of a pair of holders attached to the jaws of a tensile testing machine. The highest force exerted during tearing of the test piece is recorded.

4 Apparatus

4.1 Tensile testing machine, with:

— a force range appropriate to the specimen under test;

— a means of recording the force to an accuracy of at least 2 % as specified by Class 2 of ISO 7500-1;

— a uniform speed of separation of the jaws of 100 mm/min ± 20 mm/min.

4.2 Test piece holders, such as shown in Figure 1, each consisting of a strip of steel 10 mm ± 0,1 mm wide and 2 mm ± 0,1 mm thick, bent through a right angle at one end to form a rigid strip with a minimum length of 12 mm ± 0,1 mm. The holders either fit into or replace the jaws of the tensile testing machine (4.1).

4.3 Thickness gauge, as specified in ISO 2589.

4.4 Press knife, as specified in ISO 2419, capable of cutting a test piece as shown in Figure 2 in one operation. All parts of the press knife shall lie in the same plane.

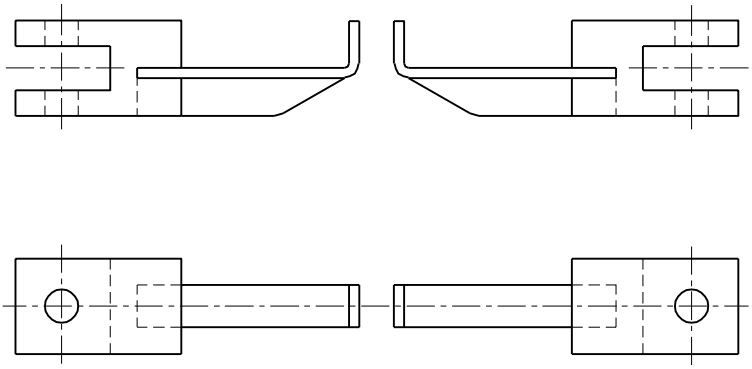
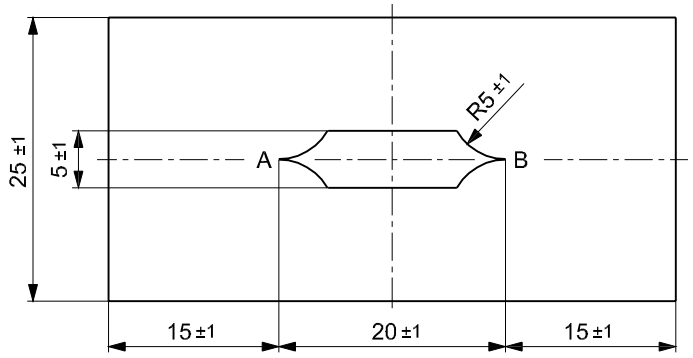


Figure 1 — Test piece holders

Dimensions in millimetres



Key

R radius

Figure 2 — Test piece for double edge tear

5 Sampling and sample preparation

5.1 Sample in accordance with ISO 2418. From the sample, cut six test pieces in accordance with ISO 2419, three test pieces with the longer sides parallel to the backbone and three test pieces with the longer sides perpendicular to the backbone.

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

5.2 Condition the test pieces in accordance with ISO 2419.

5.3 Measure the thickness of the test pieces in accordance with ISO 2589.

6 Procedure

6.1 Adjust the apparatus so that the turned up ends of the test piece holders are lightly touching each other. Slip the test piece over the turned up ends so that the ends protrude through the slot with the width of the turned up ends parallel to the straight edges of the slot. Press the test piece firmly onto the holders.

6.2 Run the tensile test machine until the test piece is torn apart and record the maximum force reached during tearing.

6.3 Repeat 6.1 and 6.2 for other test pieces.

7 Test report

The test report shall include the following:

a) a reference to this part of ISO 3377, i.e. ISO 3377-2;

b) the thickness of the leather in mm;

c) the mean tear load in newtons (N) with the long edge of the test piece cut parallel to the backbone;

d) the mean tear load in newtons (N) with the long edge of the test piece cut perpendicular to the backbone;

e) the average tear load [i.e. the arithmetic mean of c) and d)];

f) the standard atmosphere used for conditioning and testing, as given in ISO 2419;

g) any deviations from the method specified in this part of ISO 3377;

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

(*Continued from second cover*)

IS No.	*Title*
Sec 2	Vamp flex method (*under preparation*).
Part 7	Determination of resistance to grain cracking and grain crack index (*under preparation*)

The text of ISO Standard has been approved as suitable for publication as an Indian Standard without deviations. Certain conventions and terminologies are, however, not identical to those used in Indian Standards. Attention is particularly drawn to the following:

a) Wherever the words 'International Standard' appear referring to this standard, they should be read as 'Indian Standard'; and

b) Comma (,) has been used as a decimal marker in the International Standard, while in Indian Standards, the current practice is to use a point (.) as the decimal marker.

In this adopted standard, reference appears to certain International Standards for which Indian Standards also exist. The corresponding Indian Standards, which are to be substituted in their respective places, are listed below along with their degree of equivalence for the editions indicated:

International Standard	*Corresponding Indian Standard*	*Degree of Equivalence*
ISO 7500-1 : 2018 Metallic materials — Calibration and verification of static uniaxial testing machines — Part 1: Tension/ compression testing machines — Calibration and verification of the force-measuring system	IS 1828 Part 1 : 2022/ISO 7500-1 : 2018 Metallic materials — Calibration and verification of static uniaxial testing machines: Part 1 Tesnsion/compression testing machines — Calibration and verification of the force measuring system	Identical

The technical committee has reviewed the provisions of the following International Standards referred in this standard and has decided that they are acceptable for use in conjugation with this standard:

International Standard	*Title*
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

Conditioning and test atmospheres stipulated in this standard may not be applicable to tropical/ subtropical countries like India. The applicable Standard Atmospheric Conditions (SAC) for Indian Conditions are (27 ± 2) ºC and (65 ± 5) percent relative humidity and may be observed while using this standard.

In reporting the result of a test or analysis made in accordance with this standard, if the final value, observed or calculated, is to be rounded off, it shall be done in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'.

Bureau of Indian Standards

BIS is a statutory institution established under the *Bureau of Indian Standards Act*, 2016 to promote harmonious development of the activities of standardization, marking and quality certification of goods and attending to connected matters in the country.

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Review of Indian Standards

Amendments are issued to standards as the need arises on the basis of comments. Standards are also reviewed periodically; a standard along with amendments is reaffirmed when such review indicates that no changes are needed; if the review indicates that changes are needed, it is taken up for revision. Users of Indian Standards should ascertain that they are in possession of the latest amendments or edition by referring to the website-www.bis.gov.in or www.standardsbis.

This Indian Standard has been developed from Doc No.: CHD 17 (21974).

Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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