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भारतीय मानक मसौदा

चामोइस चमड़ा — विशिष्टि

(*IS 1017 का तीसरा पुनरीक्षण*)

Draft Indian Standard

Chamois Leather — Specification

(*Third Revision of IS 1017)*

(ICS 59.140.20)

Leather, Tanning Materials and Allied Products Sectional Committee, CHD 17	**Last Date for Comments:** 21st August 2025

FORWORD

(*Formal clause will be added later*)

This standard was first published in 1957 and subsequently revised in 1966 and 1983. In the first revision, Amendment No. 1 was incorporated, and the scope of the standard was enlarged to include chamois leather used as linings in orthopaedic appliances. Consequent upon the supersession of IS 1016, and at the specific request of the Ministry of Defence, the second revision was undertaken to update the methods of test with reference to Indian Standards and to recast the text.

This revision has been taken up in order to bring out the standard in latest style and format of the Indian Standards. The relevant clauses and test methods have been added and the references have been updated.is rationalised with the updated methods of test and clauses.

Chamois leather is produced in India mostly from goatskin though in foreign countries it is made from sheepskin and to a limited extent from calf and deer skins also. Chamois leather is available in different grades depending on the end use. Grade I of chamois leather is used by the defence services and in engineering industries for filtering petrol to remove moisture, while the other grades are mainly used for polishing and cleaning purposes. Chamois leather is also used in the manufacture of ladies hand gloves, apparel use, lining of binocular cases and in packing ammunition. As lining leather, chamois leather finds application in the manufacture of orthopaedic appliances.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off m accordance with IS 2: 2022‘Rule for rounding off numerical value (*second revision)’*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Draft Indian Standard

CHAMOIS LEATHER — SPECIFICATION

(*Third Revision*)

1 SCOPE

This standard prescribes the requirements, the method of sampling and test for chamois leather used for filtering petrol, cleaning optical instruments and polished surfaces, glove manufacture, orthopaedic purposes, apparel use, and lining or padding of leather goods.

2 REFERENCES

The standards listed in Annex A contain provisions, which through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying these most recent editions of these standards.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1640 shall apply.

4 GRADES

This standard specifies three grades of materials as follows:

a) *Grade 1*— Heavy quality suitable for petrol filtration and glove manufacture;
b) *Grade 2*— Heavy quality suitable for polishing surfaces; and
c) *Grade 3*— Light quality suitable for general use, orthopaedic purpose and apparel use, etc.

5 DESCRIPTION

5.1 Grade 1

The material shall be free from physical defects, namely, holes, scratches, cuts and hard, thin or uneven patches. It shall be free from any stitching.

5.2 Grade 2

The material shall be reasonably free from physical defects, namely, holes, scratches and cuts. Cuts and holes shall be properly sewn and shall not affect the serviceability of the skin. The number of stitching shall be not more than 10/m^2. It shall also be suitable for cleaning polished surfaces without leaving any scratch on the surface.

5.3 Grade 3

The material shall be the same as Grade 2, but shall be lighter in substance (*see* Table 2).

6 REQUIREMENTS

6.1 Raw Material — The material shall be goatskins or sheepskins.

6.2 Tanning

The material shall be manufactured by straight oil tannage by using oils like cod or other fish oil or linseed oil having high iodine value (more than 140) or combination tannage, by using aldehyde tanning agent and oil.

6.3 Finishing

The material, after stuffing with oil followed by oxidation, shall be degreased. It shall be wrung out, dried and buffed on both side to produce a velvety nap. It shall be free from dust particles as far as possible.

Note — No degreasing shall be done by solvent.

6.3.1 The material shall not be chemically bleached or dyed.

6.4 Size

Unless otherwise required, chamois leather shall be supplied either in rectangular or natural shape, as agreed to between the purchaser and the supplier. If supplied in natural shape, the edges shall be well trimmed and the area of the skins measured either by a measuring machine or by planimeter.

6.5 Chemical Requirements

The material shall comply with the chemical requirements given in Table 1 when tested by the methods prescribed in IS 582. Reference to the relevant clauses of IS 582 and its sub-sections is given in col 6 of table 1.

Table 1 Chemical Requirements for Chamois Leather

(*Clauses* 6.5 *and* 8.2)

S.L No	Characteristics	Requirements			Method of Test IS 582
		Grade 1	Grade 2	Grade 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Solvent extractable substance, percent by mass, *Max*	2.5 to 5.0	2.5 to 5.0	2.5 to 5.0	IS 582 (Part 14)
ii)	Combined oil, percent by mass, *Min*	0.5 to 3.0	0.5 to 3.0	0.5 to 3.0	LC:15 of IS 582
iii)	Water soluble matter, percent by mass, *Max*	3.0	2.5 to 5.0	2.0 to 5.0	IS 582 (Part 2)
iv)	Ash, percent by mass, *Max*	3.0	5.0	5.0	IS 582 (Part 3)
v)	Hide substance, percent by mass, *Min*	60.0	60.0	60.0	IS 582 (Part 12)

Note- All requirements shall be calculated on zero percent volatile matter basis

6.6 Physical Requirements

The material shall also comply with the physical requirements given in Table 2 when tested by the method prescribed in Annex B to G of this standard. Reference to the relevant annex is given in col 6 of the table.

Table 2 Physical Requirements for Chamois Leather

(Clause 6.6 *and* 8.3*)*

Sl No.	Characteristics	Requirements			Method of Test (Ref to Annex)
		Grade 1	Grade 2	Grade 3	
(1)	(2)	(3)	(4)	(5)	(6)
i)	Mass per unit area, g/m^2	306 to 380	306 to 380	306 to 380	B
ii)	Water absorption, percent increase in mass, after 30 min, *Min*	200	200	200	C

iii)	Sink test (period)	10 sec to 3 min	10 sec to 3 min	10 sec to 3 min	D
iv)	Wet exposure test	Shall not be unduly slimy in wet condition and not hard or stiff after drying	Shall not be unduly slimy in wet condition and not hard or stiff after drying		E
v)	Petrol filtration test	Shall be capable of separating water from the petrol-water mixture and shall retain the separated water for a period not less than 90 seconds after all the petrol has filtered out			F (See also G)

6.7 Specific Requirements for Orthopaedic Purposes

In addition to the requirements prescribed under **6.5** and **6.6**, except for water soluble matter and ash content which shall not exceed 3.0 percent, in both the cases, for all grades, the material for orthopaedic purposes shall comply with the following requirements.

6.7.1 *Free Formaldehyde*

Free formaldehyde in the material shall not exceed 0.1 percent by mass, when tested in accordance with LC: 14 of IS 582.

6.7.2 *pH of Water Extract*

The p*H* of the water extract shall be between 4.5 to 8.0, when tested in accordance with IS 582(Part 9).

6.7.3 *Water Soluble Chlorides*

An aqueous extract of the material shall not contain more than 0.5 percent by mass of sodium chloride when tested in accordance with LC: 19 of IS 582.

6.7.4 *Water Soluble Sulphates*

An aqueous extract of the material shall not contain more than 0.25 percent by mass of sodium sulphate when tested in accordance with LC: 20 of IS 582.

6.8 Optional Requirements for Defence Purpose

In addition to the requirements given under **6.5** and **6.6**, chamois leather for certain defence purpose shall comply with the requirements given in **6.7.2**, **6.7.3** and **6.7.4**. The indenter shall clearly indicate this requirement while indenting the material.

7 MARKING AND PACKING

7.1 Packing

The leather shall be packed as agreed to between the purchaser and the supplier

7.2 Marking

On each piece of the leather, its area in dm^2 is marked.

7.3 The package shall be marked with the name of the manufacturer, grade, recognised trade mark (if any), number of pieces, month and year of manufacture etc.

7.3.1 *BIS Certification Marking*

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the Bureau of *Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the products may be marked with the Standard Mark.

8 SAMPLING

8.1 The scale of sampling, and the position of sampling of test pieces shall be followed as prescribed in IS: 5868 or the latest edition. Similarly, conditioning of the test specimens shall be as per LP:0 of the IS 5914. The Criteria for conformity shall be as prescribed in **8.2** to **8.4**.

8.2 For ascertaining the conformity of the lot to the chemical requirements as stipulated, the test result of the prepared sample shall lie within the specific value in each case, as given in Table 1

8.3 In case of physical requirements namely the sink test, and mass of the chamois leather, the value $X \pm 2s$ shall lie within the specified value given in Table 2. In the case of water absorption and petrol filtration tests, $X - 2s$ shall be equal to or greater than minimum specified in Table 2. All the samples drawn and tested for surface defects and wet exposure test shall satisfy the respective requirements where '*X'* is the mean and '*s'* is the standard. Refer Annex H for the calculation of these factors.

8.4 If the lot doesn't comply with any one of the characteristics of **8.2** and **8.3**, it shall be rejected.

ANNEX A
(*Clause* 2)
LIST OF REFFERED STANDARDS

IS/ ISO No.	*Title*
IS 582 : 1970	Methods of chemical testing of leather (*first revision*)
582	Methods of chemical testing of leather (*first revision*)
(Part 2): 2024/ ISO 4098 : 2018	Determination of water-soluble matter, water-soluble inorganic matter and water-soluble organic matter (*first revision*)
(Part 3): 2017 ISO 4047 : 1977	Determination of sulphated total ash and sulphated water - Insoluble ash (*second revision*)
(Part 9): 2022/ ISO 4045 : 2018	Determination of *p*H and difference figure
(Part 12): 2022 ISO 5397:1984	Determination of nitrogen content and hide substance Titrimetric method
(Part 14): 2022/ ISO 4048:2018	Determination of matter soluble in dichloromethane and free fatty acid content
IS 1640 : 2007	Glossary of terms relating to hides, skins and leather (*first revision*)
IS 5868 : 1983	Method of sampling for leather (*first revision*)
IS 5914 : 1970	Methods of physical testing of leather

ANNEX B

[*Clause* 6.6, *Table* 2, *Sl No* (i)]

DETERMINATION OF MASS PER UNIT AREA

B-1 TEST SPECIMEN

All the pieces of leather sample shall be tested.

B-2 CONDITIONING

All the pieces of leather sample shall be conditioned as prescribed in LP: 0 of IS 5914.

B-3 PROCEDURE

B-3.1 Take all pieces of leather to be sampled as prescribed in **8.1**. Weight them and measure their area preferably by a leather measuring machine if available, otherwise by band. If, however, the leather pieces be of rectangular shape, measure the area by means of a tape, without having recourse to a measuring machine, as in **B-3.2**.

B-3.2 Measure the length LL' and the breadth WW' (*see* Fig. 1) by means of a tape.

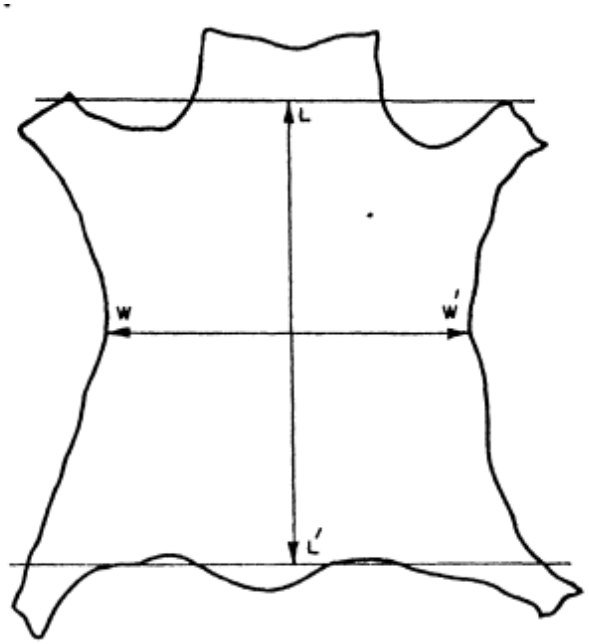

FIG.1 MEASUREMENT OF AREA

B-4 CALCULATION

Calculation the arithmetic means of the mass per square metre of all the test specimens and their standard deviations as given in Annex H. Report the average mass per square metre of the leather as $\bar{X} \pm 2s$ where $\bar{X}$ is the mean value.

ANNEX C
[*Clause* 6.6, *Table* 2, *Sl No*. (ii)]
DETERMINATION OF WATER ABSORPTION

C-1 TEST SPECIMEN

One test per sample piece selected as prescribed in **8.1** shall be taken for the determination of water absorption. Samples for test shall be representative of the butts, bellies and shoulders in equal proportion to the leather pieces selected. Cut a disc from the sample piece with a circular diameter of 3 cm.

C-2 CONDITIONING OF TEST SPECIMEN

Prior to evaluation, test specimen shall be conditioned as prescribed in LP: 0 of IS 5914.

C-3 PROCEDURE

Weigh the conditioned test specimen; soak in 25 ml of distilled water at 21°C in a tared covered dish for 30 min. Remove the test specimen with forceps, draining the adhering water back into the dish for 2 min. Do not blot the piece. Weigh the sample and evaporate the aqueous solution to dryness and weigh the residue.

C-4 CALCULATION

$$water\ absorption\ in\ 30\ min, percent\ by\ mass = \frac{(M_2 - R - M_1)}{M_1} \times 100$$

where,

M_1 = mass in g of conditioned test specimen;
M_2 = mass in g of sample after immersion in water; and
R = mass in g of residue after 30 min immersion.

Calculate the arithmetic mean of the water absorption of all the test specimens and their standard deviation s as given in Annex H. Report the average water absorption of the bulk of leather as $\bar{X} \pm 2s$ where $\bar{X}$ is the mean value.

ANNEX D
[*Clause* 6.6, *Table* 2, *SI No*. (iii)]
SINKING TEST

D-1 TEST SPECIMEN

One test per sample piece selected in accordance with **8.1** shall be taken for the determination of sinking test. Samples for test shall be representative of the butts, bellies and shoulders in equal proportion of the leather pieces selected. Cut a piece of 11 cm × 1 cm size from the sample piece with a sharp knife,

D-2 CONDITIONING OF TEST SPECIMEN

Prior to evaluation test specimen shall be conditioned as prescribed in LP: 0 of IS 5914.

D-3 PROCEDURE

Fill water to a height of 19 cm in a two-litre beaker. Place the test specimen on the surface of water carefully and then note the time taken for the test specimen to sink completely to the bottom of the beaker.

NOTE — If there be present any uncombined oil inside the leather, the leather will be lighter in mass and consequently will take longer time to sink.

D-4 CALCULATION

Calculate arithmetic mean of the time taken by all the test specimens to sink and their standard deviation s as given in Annex H. Report average sinking time of the bulk leather $\bar{X} \pm 2s$ as where is the mean value.

ANNEX E

[*Clause* 6.6, *Table* 2, *Sl No*. (iv)]

TEST FOR WET EXPOSURE

E-1 TEST SPECIMEN

One test per sample piece selected is accordance with **8.1** shall be taken for the determination of wet exposure test. The samples per test shall be representative of the butts, bellies and shoulders in equal proportion of the leather pieces selected. Cut a test piece approximately 7.5 cm square.

E-2 PROCEDURE

Introduce the test piece in a 250 ml flask containing 100 ml of distilled water. Place the flask in a thermostatically controlled oven at a temperature of 45 °C ± 1 °C. Maintain the flask containing the specimen at this temperature for seven days. Take out the specimen after seven days and examine for sliminess. Dry the test piece at room temperature. Pull out the dry piece and compare its feel and appearance with an original piece cut to the same dimensions as the test specimen.

ANNEX F

[*Clause* 6.6, *Table* 2, SI No. (v)]

TEST FOR PETROL FILTRATION

F-1 TEST SPECIMEN

All pieces of leather sample shall be tested.

F-2 PROCEDURE

F-2.1 Prepare a mixture of petrol and water using 430 ml of gasoline (70 octane) and 30 ml of water.

F-2.2 Take a full-size skin, and wet it in dry gasoline (70 octane). Squeeze the skin and insert it on a glass funnel 18 cm in diameter. Pour the petrol-water mixture through the skin and record with the help of an stop watch the time required for the first drop of water to pass through the skin after all the petrol has passed through. The time shall be reckoned from the commencement of the test.

F-3 CALCULATION

Calculate the arithmetic mean of the time taken for the first drop of water to pass through, and their standard deviation *s* as given in Annex H.

ANNEX G

[*Clause* 6.6, *Table* 2, *SI No*. (vi)]

CARE AND MAINTENANCE OF CHAMOIS LEATHER FOR PETROL FILTRATION

G-1 PERIODIC TESTING

Examine the chamois leathers for holes, drift and moisture immediately before and after they are used for petrol filtration. If chamois leather is used regularly (every day) subject it to petrol filtration test (*see* Table 2) once every 14 days and once every 2 months if the chamois leather is used occasionally. Maintain records of all such test and their results for individual chamois leather.

G-2 STORAGE

Roll round a rod and store spare chamois leather in cylindrical containers which should be free from dampness. Do not fold, store, damp or wet chamois leather.

G-3 INSPECTION

After a chamois leather has been used for filtering petrol to remove dirt and swarf, etc. Such things are difficult to spot if the chamois leather is dirty. The skins may be inspected in direct sunlight, which will help to show up certain types of particles by reflection.

ANNEX H

(*Clause* 8.3, B-4, C-4, D-4, *and*, F-3)

METHOD FOR THE CALCULATION OF MEAN VALUE AND STANDARD DEVATION OF TEST RESUTLS

H-1 ARITHMETIC MEAN

The arithmetic mean *X* of *n* test observations is given by:

$$\frac{\mathrm{x} = X_1 + X_2 + X_3 \ldots\ldots\ldots\ldots + X_n}{n} = \frac{1}{n}\sum_{i=1}^{n} X_1$$

Where,

X_1, X_2, X_3……. are the test results of individual sample, and

n= the total number of test observations.

H-2 STANDARD DEVIATION

The standard deviation *s* of *n* test observation $X_1, X_2, \ldots\ldots n$

$$s = \frac{\sqrt{\sum_{i=1}^{n}(X_i - \bar{X})^2}}{n}$$

$$= \sqrt{\frac{1}{n}\sum_{i=1}^{n} \boldsymbol{Xi^2} - \bar{\boldsymbol{X}}^{\boldsymbol{2}}}$$