
INTERNATIONAL STANDARD



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Leather — Determination of distension and strength of grain — Ball burst test

Cuir — Détermination de l'extension et de la résistance à la traction de la fleur d'un cuir — Méthode de la bille

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FOREWORD

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO Member Bodies). The work of developing International Standards is carried out through ISO Technical Committees. Every Member Body interested in a subject for which a Technical Committee has been set up 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.

Draft International Standards adopted by the Technical Committees are circulated to the Member Bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 3379 was drawn up by Technical Committee ISO/TC 120, *Leather*, and circulated to the Member Bodies in July 1974.

It has been approved by the Member Bodies of the following countries :

Austria	Germany	Portugal
Brazil	Hungary	Romania
Bulgaria	India	South Africa, Rep. of
Canada	Iran	Spain
Chile	Ireland	Turkey
Czechoslovakia	Israel	United Kingdom
Ethiopia	New Zealand	U.S.S.R.
France	Poland	

No Member Body expressed disapproval of the document.

This International Standard is based on method IUP/9 of the International Union of Leather Technologists' and Chemists' Societies.

Leather — Determination of distension and strength of grain — Ball burst test

1 SCOPE AND FIELD OF APPLICATION

This International Standard specifies a method for the determination of distension and strength of leather grain. The method is intended particularly for use with boot and shoe upper leather, but may also be applied to any light leather.

NOTE — For other than full grain leathers, the grain is taken to be that surface which has been dressed or otherwise finished in such a way as to simulate a grain, or is intended to be used in place of the grain of an ordinary leather.

2 REFERENCE

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

3 PRINCIPLE

A steel ball is pressed against the centre of the flesh side of a circular disk of leather securely clamped round its periphery. The pressure and the distension produced are recorded at grain crack and at burst (if bursting occurs).

4 APPARATUS

Use an instrument comprising the following parts (see also 7.2 and, for details of one suitable pattern of apparatus, figures 1 and 2) :

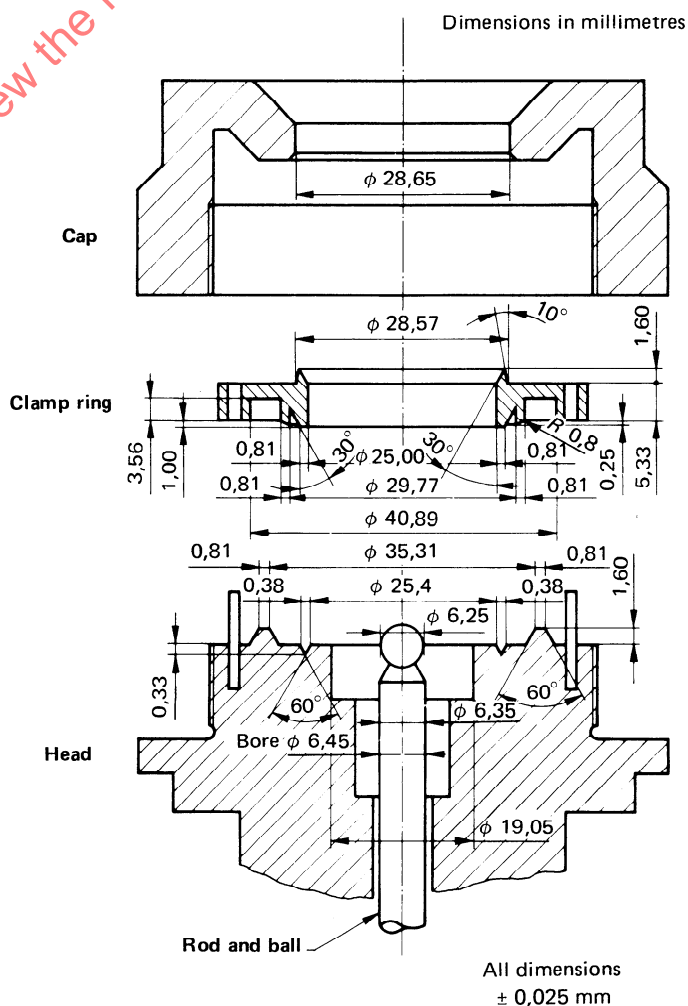
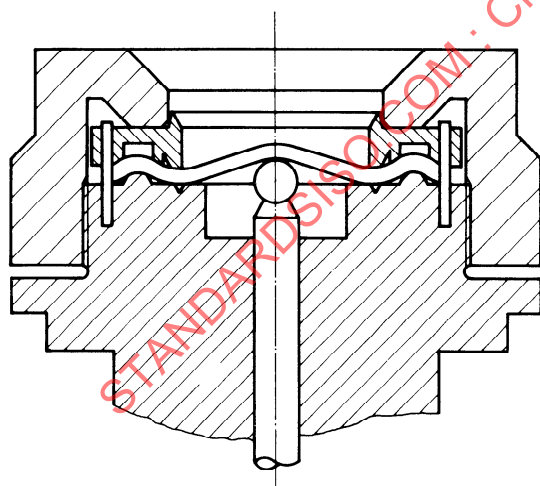


FIGURE 1 — Cross-section of clamping head with test piece in position

FIGURE 2 — Details of clamp and head

4.1 Clamp for holding securely the rim of a circular flat disk of leather, while leaving the central portion of the disk free to move.

The clamp shall hold the clamped area of the disk stationary when any force up to 800 N is applied to the centre of the disk. The clamp shall grip the piece sufficiently around its edge so that slipping during the determination is prevented. The boundary between the free and the clamped areas shall be sharply defined. The diameter of the free area shall be 25,0 mm.

4.2 Mechanism for thrusting a steel ball, without rotation, against the centre of the flesh side of the leather disk, and with a means for measuring the force applied. The relative speed of movement of the clamp and the ball shall produce a distension rate of 12 ± 2 mm/min.

The ball shall be 6,25 mm in diameter, and the accuracy of the force-measuring mechanism shall be such that the force at grain crack and at burst of the test piece is measured with an error not exceeding 3 %.

4.3 Means for measuring the distension of the leather disk.

The device used shall be calibrated directly in tenths of a millimetre, and the errors of the scale shall at no part of it exceed 0,05 mm.

The distension shall be taken as the distance through which the clamp moves relative to the ball in a direction normal to the plane occupied by the leather when the disk is clamped and is under zero force; no account shall be taken of the compression of the leather and of its decrease in thickness resulting from the application of force by the ball.

5 TEST PIECES

Cut the test pieces to the dimensions required for clamping them in the apparatus (see also 7.2 and figure 3), and condition them in accordance with ISO 2419.

6 PROCEDURE

6.1 Clamp the conditioned test piece in the instrument with its flesh surface adjacent to the ball, and its grain surface flat.

6.2 Increase the distension at a rate of approximately 0,2 mm/s, and watch the grain surface for the occurrence of a crack in the grain. When the grain crack occurs, note the force and distension (see 7.1) and continue the distension with as little delay as possible. If the disk bursts before the maximum force of the instrument is reached, note the force and distension at burst.

7 NOTES ON PROCEDURE

7.1 Calibrate periodically the mechanism used for the measurement of the force. Also, determine periodically the zero reading of the distension scale, and if it is in error apply the appropriate correction to each reading of the distension instrument.

7.2 Figures 1 and 2 show details of the clamping head and other parts of an instrument which is suitable for use with this method. Figure 3 shows the test piece used with this instrument. These additional details are optional; the only essential requirements concerning the apparatus and the test piece are those of clauses 4 and 5.

7.3 If there is a pause during the distension of a specimen, relaxation of stresses in it occurs, and the force reading tends to fall. It is for this reason that the force and distension at grain crack and burst should be measured with the minimum of delay.

The instrument should have a maximum-reading pointer to minimize errors of this kind and this should be used for the readings of force. Even so, the pause for reading should be as brief as possible.

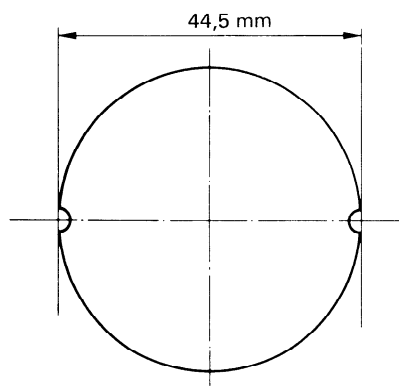


FIGURE 3 — Test piece (The indents on the edges locate the test piece in the instrument)

8 EXPRESSION OF RESULTS

8.1 If the test piece bursts, express as the results the force and distension at grain crack and at burst.

8.2 If the test piece does not burst, express as the results the force and distension at grain crack and the distension at the maximum applied force, stating that the test piece did not burst.

NOTE — In cases where a number of test pieces are tested, the individual result from each test piece shall be included (and not only the mean result).

9 TEST REPORT

The test report shall include the following particulars :

- a) a reference to this International Standard;
- b) results expressed in accordance with clause 8;
- c) any deviation from the prescribed method;
- d) reference of the lot;
- e) whether the test piece comes from a whole hide or skin, bend, shoulder or belly;
- f) if the leather is known to be other than full grain leather, a statement to this effect.

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