

Sampling and Chemical Testing of Leather

General instructions and recommendations

1 Scope

This method describes sampling from pieces of leather and chemical testing of leather samples.

2 Sampling

Each of the analytical methods described is applicable to any piece of leather of sufficient mass irrespective of where in the hide or skin the leather originated. Although 'Method of sampling' describes a procedure for taking samples from whole pieces of leather, in some cases the sample presented to the analyst is taken from other locations, or is of unknown origin and has an imperfectly recorded history. In practice, for example, analyses are required on manufactured leather goods or components. It is necessary when interpreting analytical results, or selecting specification limits, to take into account this factor and, where necessary, to make due allowance for any likely variation in properties over the extent of the original hide or skin.

3 Reagents

Unless otherwise stated, all reagents used should be of recognised reagent quality, and, except where stated otherwise, distilled or demineralized water should be used wherever water is required.

4 Duplication of tests

In some circumstances duplicate tests may be required. Agreement between duplicate results should be within the range stated under 'Repeatability' for the corresponding method.

5 Expression of analytical results

A report of analysis should include the values for volatile matter and grease content of the sample, as determined by SLC 3 and SLC 4 respectively. Calculation of the equivalent values on the sample free from grease and volatile matter can, if desired, be made thus:

$$T_{(x,y)} = \frac{100 T_{(x,y)}}{100 - (x + y)}$$

where $T_{(x,y)}$ is the equivalent result on sample free from grease and volatile matter

$T_{(x,y)}$ is the analytical result on sample with x% grease and y% volatile matter

x is the percentage grease in the analysed sample, as determined by SLC 4

and y is the percentage of volatile matter in the analysed sample, as determined by SLC 3.

Sampling

1 Introduction

This method is applicable to skins and hides of either light or heavy leathers.

In regard to the location of pieces for chemical tests, this method is in agreement with International Standard ISO 2418 'Leather - Laboratory samples - Location and identification'.

2 Location of pieces for chemical tests

2.1 General

Pieces selected for sampling shall be free from major defects, but slight defects, whether on the grain or the flesh side, are of no significance.

The sampling procedures described for skins, hides and sides (2.2), for bends and butts (2.3), for shoulders (2.4) and for bellies (2.5) are necessarily designed to allow concurrent physical and chemical testing, but the requirements for physical testing in accordance with SLP 2 shall always be given priority. In cases of dispute or arbitration, sampling for chemical testing shall be strictly as shown in Figs 1, 2, 3 and 4 and as described in 2.2, 2.3, 2.4 and 2.5, except that with very light leathers additional leather may be taken (if necessary to make up the mass required) from immediately adjacent to the prescribed areas (see Note 1). In other cases, when necessary to make up the mass required, the section to be taken for chemical tests may be enlarged or slightly displaced (see Notes 1 and 2).

In all cases where leather has been taken for chemical tests from positions other than those described in 2.2, 2.3, 2.4 and 2.5, a note of this fact shall be made in the test report. Furthermore, in cases of dispute or arbitration, a sketch shall be included to demonstrate the position from which extra leather was taken.

NOTE 1. The following minimum mass of material is necessary for a chemical analysis of leather:

for vegetable and combination tanned leathers	100 g,
for mineral tanned leathers	60 g.

NOTE 2. Uncontaminated trimmings from the samples taken for physical tests may be used for the chemical analysis except in cases of dispute or arbitration, but if this is done, the fact shall be noted in the report.

2.2 Whole skins, sides and hides

Fig 1 represents a skin or hide with the head removed. B is the root of the tail. A is a point on the backbone such that $AC = 2AB$. AD is a line perpendicular to BC. F is the mid-point of AD, and AE is of length 50 mm. The lines GH and JK, whose mid-points are E and F respectively, are parallel to BC, and each is of length equal to EF. $2HL = HK$.

Cut the pieces for chemical tests from the square HLMN (shaded in Fig 1). If necessary, cut material also from the corresponding place in the opposite half of the skin.

2.3 Bends (or butts)

Fig 2 represents a bend. B is the root of the tail and A is a point on the backbone BC equidistant from B and C. AD is a line perpendicular to BC. F is the mid-point of AD, and AE is of length 50 mm. The lines GH and JK, whose mid-points are E and F respectively, are parallel to BC, and each is of length equal to EF. $2HL = HK$.

Cut pieces for chemical tests from the square HLMN (shaded in Fig 2).

2.4 Shoulders

Fig 3 represents a side before the removal of belly and shoulder. P (Figs 3 and 4) is the mid-point of RS. DC (Fig 3) is a line parallel to, and 20 mm distant from, RS, and PCB is a line through P parallel to the backbone. DA is a line parallel to, and 50 mm distant from, the backbone, and of length equal to half the length of DC. AB is parallel to DC. $2AE = AB$.

Cut the pieces for chemical tests from the rectangle AEFG (shaded in Fig 3).

2.5 Bellies

Q (Fig 4) is the mid-point of the line TU. Cut two square pieces, each with side length of approximately 10 cm, from locations as close to point Q as possible, but avoiding inclusion of leather within 20 mm of line TU if this line existed as a cut edge prior to sampling. Arrange the area sampled for chemical tests (shaded squares VWXY in Fig 4) to be adjacent to and each side of the area reserved for physical tests.

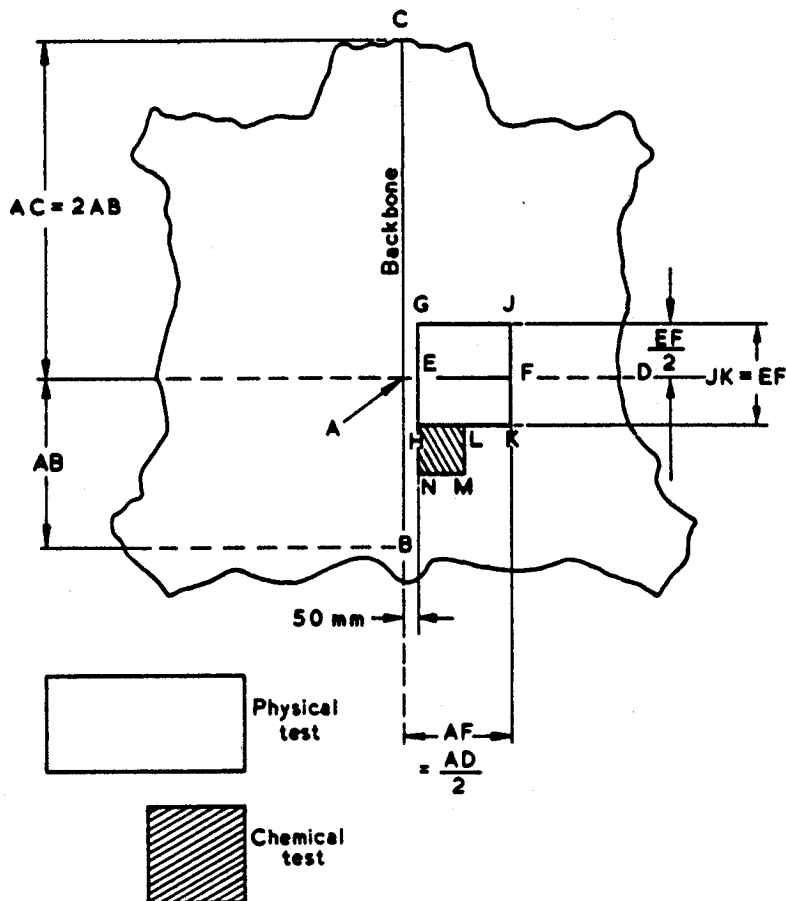


Fig 1 Sampling location for whole skins, sides, and hides

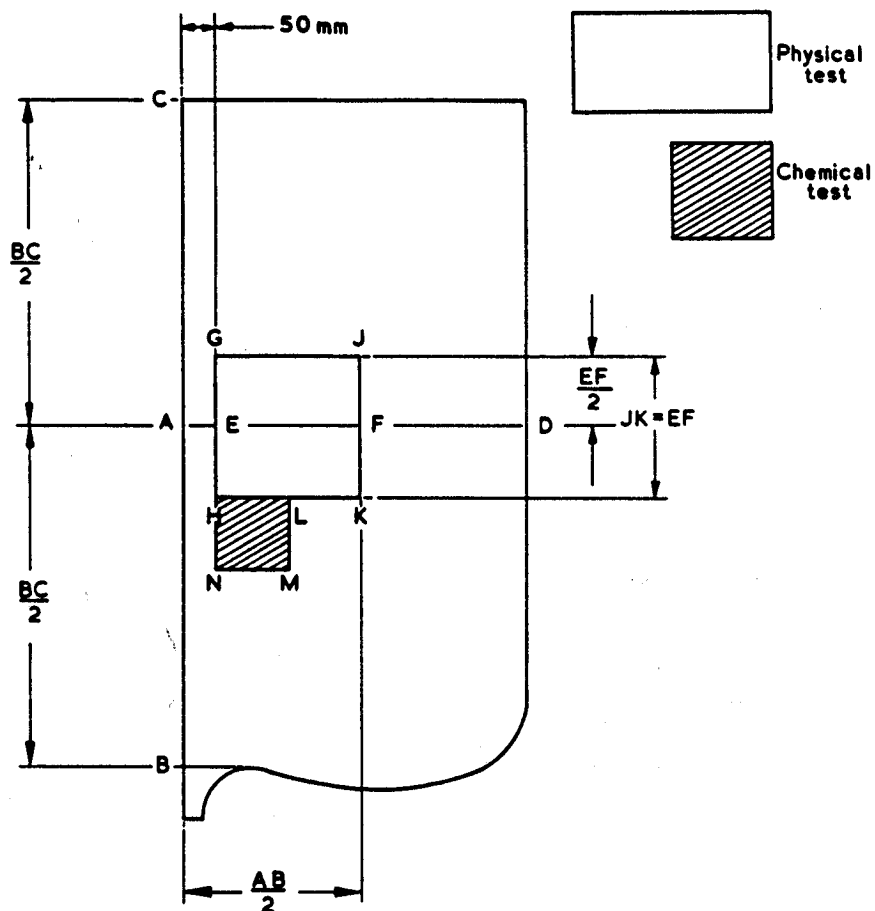


Fig 2 Sampling location for bends (or butts)

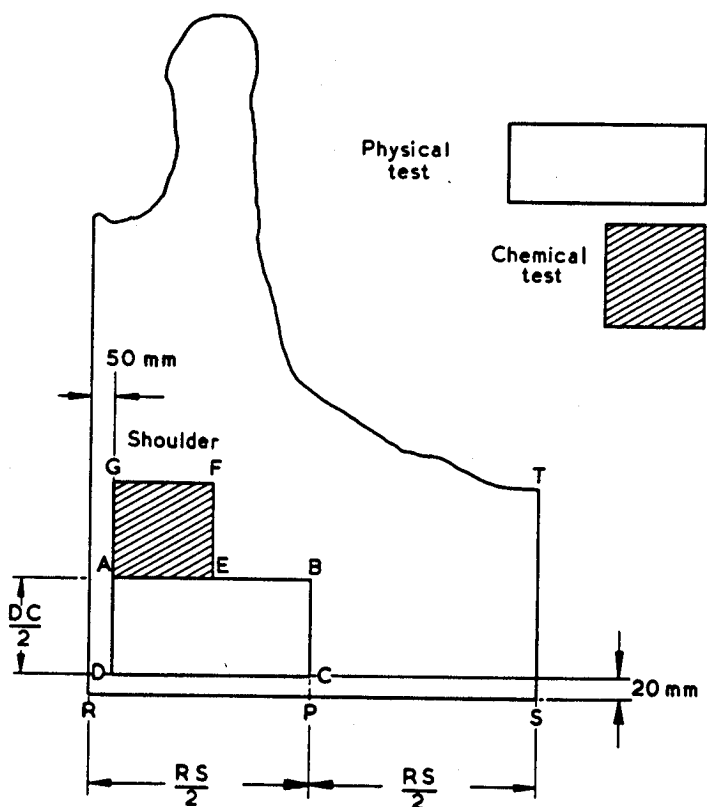


Fig 3 Sampling location for shoulders

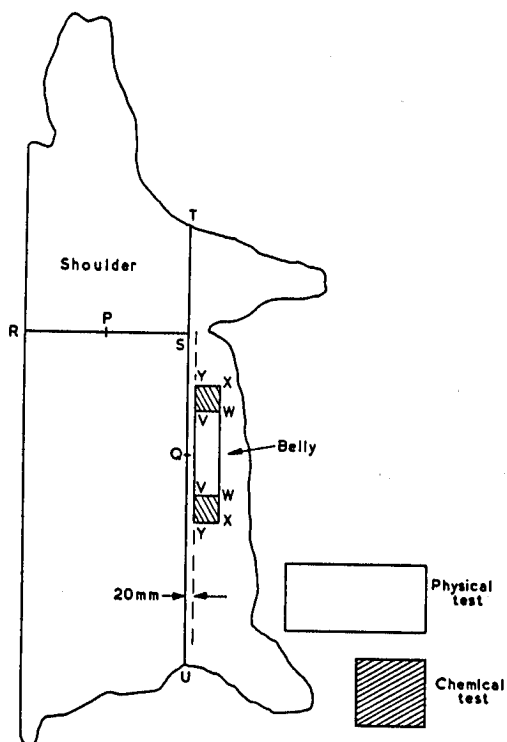


Fig 4 Sampling locations for bellies

2.6 Number of pieces to be sampled and analysed
Sample three pieces (skins, hides, sides, butts, bends, shoulders, or bellies) and carry out at least a duplicate analysis on an average sample. If for any reason this procedure cannot be followed, the relevant details shall be noted in the test report.

2.7 Sample report
The report shall include:

- (a) a reference to the method of sampling
- (b) details of any deviation from the specified general procedure, in particular, with respect to:
 - (1) inclusion of leather from positions other than those specified
 - (2) inclusion of trimmings from samples taken for physical tests
 - (3) the number of pieces sampled, where this is not in accordance with the procedure described in 2.6
- (c) identification details of the sample.