INTERNATIONAL STANDARD

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Tea — Determination of water extract

Thé — Détermination de l'extrait à l'eau

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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 9768 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*.

This first edition of ISO 9768 cancels and replaces ISO 1574:1980, of which it constitutes a technical revision.

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Tea — Determination of water extract

1 Scope

This International Standard specifies a method for the determination of the water extract from unground tea.

NOTE 1 Special sample preparation for very large leaf green and black teas may be required. Further work to determine the precise method of sample preparation for these teas is being undertaken.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was 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 edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1573:1980, *Tea — Determination of loss in mass at 103 °C.*

3 Definition

For the purposes of this International Standard, the following definition applies.

water extract: The soluble matter extracted from a test portion by boiling water, under the conditions specified in this International Standard, expressed as a percentage by mass on the dry basis.

4 Principle

Extraction of soluble matter from a test portion of the product by means of water boiling under reflux. Filtration, washing, drying and weighing of the hot-water-insoluble residue. Calculation of the water extract.

5 Apparatus

Usual laboratory apparatus and, in particular, the following.

5.1 Oven, constant-temperature and fan-assisted, capable of being controlled at 103 °C ± 2 °C.

5.2 Crucible, made of sintered borosilicate glass, of porosity grade P160, 40 mm in diameter and of 70 ml capacity.

5.3 Desiccator, containing an efficient desiccant.

5.4 Flask, of 500 ml capacity, fitted with a reflux condenser.

5.5 Filter flask, of 1 litre capacity, for vacuum filtration.

6 Test sample

Use an unground test sample of known dry matter content, determined using the method specified in ISO 1573.

7 Procedure

7.1 Preparation of the crucible

Heat the clean crucible (5.2) for 1 h in the oven (5.1) at 103 °C ± 2 °C. Cool in the desiccator (5.3) and weigh to the nearest 0,001 g.

7.2 Test portion

Weigh, to the nearest 0,001 g, 2 g of the unground test sample (clause 6) into the flask (5.4).

7.3 Determination

Add to the test portion (7.2) 200 ml of hot distilled water, or water of at least equivalent purity, and reflux over low heat for 1 h, rotating the flask oc-

casionally. Filter hot under vacuum through the prepared crucible (7.1) using the filter flask (5.5). Repeatedly wash out the flask with hot distilled water, transferring all the insoluble residue into the crucible. Finally, wash the residue with 200 ml of hot distilled water. Dry the residue by suction. Heat the crucible and its contents in the oven (5.1) controlled at 103 °C ± 2 °C for 16 h (i.e. overnight). Cool in the desiccator (5.3) and weigh to the nearest 0,001 g.

7.4 Number of determinations

Carry out two determinations on the same unground test sample (clause 6).

8 Expression of results

The water extract yielded by the unground test sample, expressed as a percentage by mass on the dry basis, is given by the formula

$$\frac{(m_0 \times RS) - (m_1 \times 100)}{m_0 \times RS} \times 100$$

where

m_0 is the mass, in grams, of the test portion;

m_1 is the mass, in grams, of the dried insoluble residue;

RS is the dry matter content, expressed as a percentage by mass, of the unground test sample. It is equal to 100 minus the loss in mass at 103 °C determined using the method specified in ISO 1573.

Take as the result the arithmetic mean of the values of the two determinations, provided that the requirement for repeatability (see 9.2) is satisfied.

9 Precision

9.1 Statistical results of inter-laboratory tests

Four inter-laboratory tests, carried out between 1984 and 1989 under the auspices of the International Organization for Standardization, gave the statistical results (evaluated in accordance with ISO 5725[1]) shown in table 1.

Table 1 — Statistical results of inter-laboratory tests

Year	1984	1986	1988	1989
Number of laboratories	7	21	16	10
Number of samples	3	6	6	3
Repeatability, r	0,877 to 1,259	0,677 to 1,114	1,37 to 1,60	0,50 to 0,63
Reproducibility, R	1,252 to 1,422	1,871 to 2,934	4,69 to 6,19	1,02 to 1,45

9.2 Repeatability

The difference between the values of two determinations, carried out in rapid succession (or simultaneously) by the same operator using the same apparatus on the same test sample, shall not exceed 1,0 % (m/m).

9.3 Reproducibility

The difference between the values of the final result obtained by two laboratories using this method for the analysis of the same laboratory sample is not expected to exceed 2,5 % (m/m) (95 % confidence level).

10 Test report

The test report shall specify the method used and the result obtained. It shall also mention all operating details not specified in this International Standard, or regarded as optional, together with details of any incidents which may have influenced the result.

The test report shall include all information necessary for the complete identification of the sample.

1) ISO 5725:1986, *Precision of test methods — Determination of repeatability and reproducibility for a standard test method by inter-laboratory tests.*