SRI LANKA STANDARD 357 : 2011
ISO 751 : 1998

METHOD OF TEST FOR THE DETERMINATION OF WATER-INSOLUBLE SOLIDS IN FRUIT AND VEGETABLE PRODUCTS

(First Revision)

SRI LANKA STANDARDS INSTITUTION

Sri Lanka Standard

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SLS 357 : 2011
ISO 751 : 1998

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Sri Lanka.

Sri Lanka Standards are subject to periodical revision in order to accommodate the progress made by industry. Suggestions for improvement will be recorded and brought to the notice of the Committees to which the revisions are entrusted.

This standard does not purport to include all the necessary provisions of a contract.

Sri Lanka Standard
METHOD OF TEST FOR THE DETERMINATION OF WATER-INSOLUBLE SOLIDS IN FRUIT AND VEGETABLE PRODUCTS
(First Revision)

NATIONAL FOREWORD

This Sri Lanka standard was approved by the Sectoral Committee on Agricultural and Food Products and was authorized for adoption and publication as a Sri Lanka Standard by the Council of the Sri Lanka Standards Institution on 2011-10-27.

This standard was first published in 1975, which has been derived from the International Organization for Standardization on the subject of testing fruit and vegetable products. This revision has been undertaken to update the standard to be in line with the latest ISO standard for fruit and vegetable products.

This standard is identical with ISO 751 : 1998, Fruit and vegetable products-Determination of water-insoluble solids, published by the International Organization for Standardization (ISO).

Terminology and Conventions:

The text of the International Standard has been accepted as suitable for publication, without deviation, as a Sri Lanka Standard. However, certain terminology and conventions are not identical with those used in Sri Lanka Standards. Attention is therefore drawn to the following:

a) Wherever the words “International Standard” appear referring to this standard should be interpreted as “Sri Lanka Standard”.

b) The comma has been used throughout as a decimal marker. In Sri Lanka Standards it is the current practice to use the full point on the base line as the decimal marker.

c) Wherever page numbers are quoted, they are ISO page numbers.

SLS 357:2011

INTERNATIONAL STANDARD

ISO 751

Second edition
1998-08-01

Fruit and vegetable products — Determination of water-insoluble solids

Produits dérivés des fruits et légumes — Détermination du résidu sec insoluble dans l'eau

Reference number
ISO 751:1998(E)

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 751 was prepared by Technical Committee ISO/TC 34*, Agricultural food products*, Subcommittee SC 3, *Fruit and vegetable products*.

This second edition cancels and replaces the first edition (ISO 751:1981), which has been technically revised.

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INTERNATIONAL STANDARD © ISO **ISO 751:1998(E)**

Fruit and vegetable products — Determination of water-insoluble solids

1 Scope

This International Standard specifies a method for the determination of the content of water-insoluble solids in the edible parts of fruit and vegetable products.

2 Principle

The water-soluble matter in a test portion is dissolved in water, followed by filtration, drying of the residue and weighing.

3 Apparatus

Usual laboratory apparatus and, in particular, the following.

3.1 Beakers, of capacity 250 ml or 400 ml.

3.2 Buchner funnel.

3.3 Filter paper, medium texture.

3.4 Indicator paper.

3.5 Weighing vessel.

3.6 Desiccator, containing an efficient desiccant.

3.7 Oven, capable of being maintained at 103 °C ± 2 °C.

3.8 Centrifuge.

3.9 Analytical balance, capable of weighing to the nearest 0,001 g.

4 Sampling

It is important the laboratory receive a sample which is truly representative and has not been damaged or changed during transport or storage.

Sampling is not part of the method specified in this International Standard. As there is no specific International Standard dealing with fruit and vegetable products, it is recommended that the parties concerned come to an agreement on the subject.

5 Preparation of test sample and of apparatus

5.1 Preparation of test sample

Separate and remove from the laboratory sample stalks, stones, hard seed-cavity walls and, whenever possible, pips (after thawing in the case of frozen or deep-frozen products). Mix the sample thoroughly.

Allow frozen or deep-frozen products to thaw in a closed vessel and add the liquid formed during this process to the product before mixing.

If it is desired to express the result in terms of the sample as received, weigh the latter before removing stalks, stones, etc. Weigh these after washing and drying and take them into account in the expression of results (see 8.2).

5.2 Preparation of apparatus

Place a filter paper (3.3) in the weighing vessel (3.5) and dry in the oven (3.7) set at 103 °C for 30 min. Cool in the desiccator (3.6) and weigh to the nearest 0,001 g.

6 Procedure

NOTE If it is required to check whether the repeatability requirement (clause 9) is met, carry out two single determinations in accordance with 6.1 to 6.2.

6.1 Test portion

Weigh, to the nearest 0,01 g, into a 250 ml beaker (3.1) (400 ml in the case of sweetened products) 10 g to 100 g of the test sample (5.1), according to the consistency of the product and the expected content of water-insoluble solids; for example:

— tomato concentrates 10 g

— jam, fruit preserves 25 g

— pulpy products 50 g

— fruit and vegetable juices 100 g

NOTE For liquid products, it is also possible to take the test portion by volume.

6.2 Determination

Add 100 ml to 150 ml of distilled water or water of equivalent purity to the beaker containing the test portion (6.1). Stir with a glass rod until a homogeneous mixture is obtained. Heat to boiling (in the case of sweetened products, see 7.3).

Pour the contents of the beaker quantitatively onto the dried filter paper (see 5.2) placed in the Buchner funnel (3.2) and filter (see 7.4). Wash the filter paper with a little hot water.

Transfer the filter paper and its contents quantitatively to the weighing vessel (see 5.2) and dry in the oven (3.7), set at 103°C, to constant mass; i.e. until the difference between two consecutive weighings, after 30 min in the oven followed by cooling in the desiccator for about 20 min, does not exceed 0,001 g. Carry out the weighings to the nearest 0,001 g.

7 Special cases

7.1 Grape juice

If crystals of potassium hydrogen tartrate are found to be present in grape juice, the quantity should be determined. For this purpose, using another test portion, collect the crystals on a filter, wash them with the same juice and then with 50 % (*V/V*) ethanol solution saturated with potassium hydrogen tartrate.

Dry and weigh the crystals. The mass of the crystals of potassium hydrogen tartrate shall be recorded in the test report.

7.2 Citrus products

A similar procedure should be followed when crystals of hesperiden or naringin are present in citrus products.

7.3 Sweetened products

For the analysis of sweetened products, add about 250 ml of water. Bring to the boil and boil gently for 5 min to 10 min.

7.4 Products difficult to filter

If it proves difficult to filter the product (products with high contents of pectin or protein), or in the case of products having high sugar contents (fruit preserves, jam, etc.), separate the solid matter by means of a centrifuge (3.8). Decant the clear liquid, recover the residue (deposit) with hot water and again centrifuge. Repeat these operations several times, until the washings are free from sugars, salts, acids, etc., then collect the residue obtained by centrifuging on the filter, as described in 6.2.

8 Expression of results

8.1 The content of water-insoluble solids in the edible parts of fruit and vegetable products, expressed as a percentage by mass, is equal to

$$(m_2 - m_1) \times \frac{100}{m_0}$$

where

m_0 is the mass, in grams, of the test portion (6.1);

m_1 is the mass, in grams, of the weighing vessel and dried filter paper (5.2);

m_2 is the mass, in grams, of the weighing vessel, filter paper and residue after drying (6.2).

8.2 It is also possible to express the result in relation to the sample as received (see 5.1) or, for liquid products, in grams per 100 ml for a test portion taken by volume.

9 Repeatability

The absolute difference between two independent single test results, obtained using the same method on identical test material in the same laboratory by the same operator using the same equipment within a short interval of time, will in not more than 5 % of cases be greater than 0,1 g of water-insoluble solids per 100 g of sample.

10 Test report

The test report shall specify:

— all information necessary for the complete identification of the sample;

— the sampling method used, if known;

— the test method used, together with reference to this International Standard;

— all operating details not specified in this International Standard, or regarded as optional, together with details of any incidents which may have influenced the test result(s);

— the test result(s) obtained;

— if the repeatability has been checked, the final quoted result obtained.

ICS 67.080.01

Descriptors: agricultural products, food products, plant products, fruit and vegetable products, tests, determination of content, insoluble matter, solids.

Price based on 4 pages

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Printed at SLSI (Printing Unit)

SRI LANKA STANDARDS INSTITUTION

The Sri Lanka Standards Institution (SLSI) is the National Standards Organization of Sri Lanka established under the Sri Lanka Standards Institution Act No. 6 of 1984 which repealed and replaced the Bureau of Ceylon Standards Act No. 38 of 1964. The Institution functions under the Ministry of Technology & Research.

The principal objects of the Institution as set out in the Act are to prepare standards and promote their adoption, to provide facilities for examination and testing of products, to operate a Certification Marks Scheme, to certify the quality of products meant for local consumption or exports and to promote standardization and quality control by educational, consultancy and research activity.

The Institution is financed by Government grants, and by the income from the sale of its publications and other services offered for Industry and Business Sector. Financial and Administrative control is vested in a Council appointed in accordance with the provisions of the Act.

The development and formulation of National Standards is carried out by Technical Experts and representatives of other interest groups, assisted by the permanent officers of the Institution. These Technical Committees are appointed under the purview of the Sectoral Committees which in return are appointed by the Council. The Sectoral Committees give the final Technical approval for the Draft National Standards prior to the approval by the Council of the SLSI.

All members of the Technical and Sectoral Committees render their services in an honorary capacity. In this process the Institution endeavours to ensure adequate representation of all view points.

In the International field the Institution represents Sri Lanka in the International Organization for Standardization (ISO), and participates in such fields of Standardization as are of special interest to Sri Lanka.

Printed at the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08