

SRI LANKA STANDARD 349 : 2011
ISO 763 : 2003

**METHOD OF TEST FOR THE DETERMINATION OF
ASH INSOLUBLE IN HYDROCHLORIC ACID
IN FRUIT AND VEGETABLE PRODUCTS**
(First Revision)

SRI LANKA STANDARDS INSTITUTION

Sri Lanka Standard
METHOD OF TEST FOR THE DETERMINATION OF ASH INSOLUBLE IN
HYDROCHLORIC ACID IN FRUIT AND VEGETABLE PRODUCTS
(First Revision)

SLS 349 : 2011
ISO 763 : 2003

Gr.B

Copyright Reserved
SRI LANKA STANDARDS INSTITUTION
17, Victoria Place,
Elvitigala Mawatha,
Colombo 8,
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.

© **SLSI 2011**

All right reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the SLSI

Sri Lanka Standard
METHOD OF TEST FOR THE DETERMINATION OF ASH INSOLUBLE IN
HYDROCHLORIC ACID 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 763 : 2003, Fruit and vegetable products-Determination of ash insoluble in hydrochloric acid 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.

INTERNATIONAL STANDARD

ISO 763

Second edition
2003-12-01

Fruit and vegetable products — Determination of ash insoluble in hydrochloric acid

*Produits dérivés des fruits et légumes — Détermination des cendres
insolubles dans l'acide chlorhydrique*



Reference number
ISO 763:2003(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.

© ISO 2003

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 763 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 3, *Fruit and vegetable products*.

This second edition cancels and replaces the first edition (ISO 763:1982), which has been technically revised.

Fruit and vegetable products — Determination of ash insoluble in hydrochloric acid

1 Scope

This International Standard specifies a method for the determination of the hydrochloric-acid-insoluble ash yielded by fruit and vegetable products.

The method serves for the determination of siliceous impurities, together with the silica endogenous to the plant.

NOTE A method for the determination of mineral impurities generally originating from the soil is specified in ISO 762¹⁾.

2 Principle

A test portion is incinerated at approximately 525 °C and the mineral matter insoluble in dilute hydrochloric acid is separated.

3 Reagents

Use only reagents of recognized analytical grade, unless otherwise specified, and distilled or demineralized water or water of equivalent purity.

3.1 Hydrochloric acid, 10 % (by mass) solution.

3.2 Silver nitrate, approximately 17 g/l solution.

4 Apparatus

Usual laboratory apparatus and, in particular, the following.

4.1 Blender.

4.2 Muffle furnace, capable of being maintained at 525 °C ± 25 °C.

4.3 Boiling water bath.

4.4 Drying oven, capable of being maintained at 103 °C ± 2 °C.

4.5 Desiccator, containing an efficient desiccant.

4.6 Incineration dishes, made of quartz or platinum.

1) ISO 762, *Fruit and vegetable products — Determination of mineral impurities content*.

4.7 Filter paper, ashless.

4.8 Analytical balance, capable of weighing to the nearest 0,000 2 g.

5 Sampling

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

6 Preparation of test sample

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. Before taking the test portion, thoroughly mix the laboratory sample using, if necessary, the blender (4.1).

7 Procedure

7.1 Preparation of first dish

Heat an empty dish (4.6) in the furnace (4.2) set at the incineration temperature. Allow it to cool in the desiccator (4.5) then weigh to the nearest 0,000 2 g. Repeat until a constant mass is achieved.

7.2 Test portion

Weigh, to the nearest 0,01 g, in the previously prepared dish (7.1), 4 g to 25 g of the test sample (Clause 6) according to the water content of the product. For liquid products, the test portion may be taken by volume (see 8.2).

7.3 Determination

7.3.1 Drying

Place the dish and its contents in the boiling water bath (4.3) and evaporate the water present in the product. Dry in the oven (4.4) set at 103 °C. This drying is not necessary for dry products.

7.3.2 Incineration

After drying (if appropriate), carbonize and then completely incinerate the product in the furnace (4.2) set at 525 °C; the ash may still be grey after incineration.

Pre-incineration at a distinctly lower temperature before placing in the furnace is sometimes necessary for products with a high sugar content in order to avoid foaming and subsequent loss of foam. For that purpose, slowly heat the dried sample on the hot plate until carbonization of the most of the organic matter.

It is recommended to decrease the salt content of products containing more than 2 % of sodium chloride by the following method. Pre-incinerate the sample then wash the carbonaceous residue several times with small amounts of hot distilled water.

7.3.3 Treatment with hydrochloric acid

Allow the sample to cool in the desiccator (4.5). After cooling, add 10 ml to 25 ml of the hydrochloric acid solution (3.1). Cover with a watch-glass and heat in the boiling water bath (4.3) for 15 min ± 2 min.

Transfer the residue to the ashless filter paper (4.7) placed in a funnel. Rinse the dish with hot water and transfer the contents of the dish to the filter paper. Wash the filter paper and its contents until there is no trace of chloride ions in the liquid flowing from the funnel [test with the silver nitrate solution (3.2)].

7.3.4 Preparation of the second dish

Prepare a new dish (4.6) as specified in 7.1 or clean the first dish. Heat it in the muffle furnace (4.2) to the incineration temperature. Allow it to cool in the desiccator then weigh to the nearest 0,000 2 g. Repeat until a constant mass is achieved.

7.3.5 Drying and incineration

Place the filter paper and residue in the dish. Dry in the oven (4.4) set at 103 °C, then incinerate in the muffle furnace (4.2), set at 525 °C, for 30 min ± 2 min.

Cool in the desiccator (4.5), then weigh to the nearest 0,000 2 g. Repeat until a constant mass is achieved.

8 Expression of results

8.1 Method of calculation

The ash insoluble in hydrochloric acid, w , expressed as a percentage by mass, is given by the formula

$$w = \frac{m_2 - m_3}{m_0 - m_1} \times 100 \%$$

where

m_0 is the mass, in grams, of the dish and test portion (7.2);

m_1 is the mass, in grams, of the empty dish (7.1);

m_2 is the mass, in grams, of the dish and acid-insoluble ash (7.3.5);

m_3 is the mass, in grams, of the second empty dish (7.3.4).

Report the results to two decimal places.

8.2 Other method of expression

For liquid products, it is possible to express the result in grams per 100 ml of product, by taking the test portion (7.2) by volume and by replacing the denominator ($m_0 - m_1$) in the equation (see 8.1) by V , the volume of the test portion.

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 0,01 g of ash insoluble in hydrochloric acid per 100 g of sample.

10 Test report

The test report shall specify:

- a) all information necessary for the complete identification of the sample;
- b) the sampling method used, if known;
- c) the test method used, with reference to this International Standard;
- d) 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);
- e) the test result(s) obtained or, if the repeatability has been checked, the final quoted result obtained.

SLS CERTIFICATION MARK

The Sri Lanka Standards Institution is the owner of the registered certification mark shown below. Beneath the mark, the number of the Sri Lanka Standard relevant to the product is indicated. This mark may be used only by those who have obtained permits under the SLS certification marks scheme. The presence of this mark on or in relation to a product conveys the assurance that they have been produced to comply with the requirements of the relevant Sri Lanka Standard under a well designed system of quality control inspection and testing operated by the manufacturer and supervised by the SLSI which includes surveillance inspection of the factory, testing of both factory and market samples.

Further particulars of the terms and conditions of the permit may be obtained from the Sri Lanka Standards Institution, 17, Victoria Place, Elvitigala Mawatha, Colombo 08.



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.