SLOVENSKI STANDARD
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Sadni in zelenjavni proizvodi - Določanje v klorovodikovi kislini netopnega pepela

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

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67.080.01	Sadje, zelenjava in njuni proizvodi na splošno	Fruits, vegetables and derived products in general

SIST ISO 763:1995 **en**

International Standard 763

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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

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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 763 was developed by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the member bodies in November 1980.

It has been approved by the member bodies of the following countries:

Australia	Iran	New Zealand
Austria	Iraq	Peru
Brazil	Ireland	Philippines
Bulgaria	Israel	Poland
Canada	Italy	Portugal
Czechoslovakia	Kenya	Romania
Egypt, Arab Rep. of	Korea, Dem.P.Rep. of	South Africa, Rep. of
France	Korea, Rep. of	Sri Lanka
Germany, F.R.	Malaysia	Thailand
Hungary	Mexico	USSR
India	Netherlands	Yugoslavia

No member body expressed disapproval of the document.

This International Standard cancels and replaces ISO Recommendation R 763-1971, of which it constitutes a technical revision.

Printed in Switzerland

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

1 Scope and field of application

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

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

The method for the determination of mineral impurities, generally originating from the soil, is described in ISO 762.

2 Reference

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

3 Principle

Incineration of a test portion at 525 °C, and separation of the mineral matter insoluble in dilute hydrochloric acid solution.

4 Reagents

All reagents shall be of recognized analytical quality. The water used shall be distilled water or water of at least equivalent purity.

4.1 Hydrochloric acid, 10 % (*m*/*m*) solution.

4.2 Silver nitrate, approximately 17 g/l solution.

5 Apparatus

Usual laboratory apparatus, and in particular

5.1 Blender.

5.2 Muffle furnace, capable of being controlled at 525 ± 25 °C.

5.3 Boiling water bath.

5.4 Drying oven, capable of being controlled at 103 ± 2 °C.

5.5 Desiccator, containing an efficient desiccant.

5.6 Dishes, of silica or platinum.

5.7 Ashless filter paper.

5.8 Analytical balance.

6 Procedure

6.1 Preparation of test sample

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

6.2 Preparation of the first dish

Heat an empty dish (5.6) in the furnace (5.2), controlled at the incineration temperature, allow to cool in the desiccator (5.5) and weigh to the nearest 0,000 2 g.

6.3 Test portion

Weigh, to the nearest 0,01 g, in the previously prepared dish (see 6.2), 4 to 25 g of the test sample (6.1) according to the water content of the product. For liquid products, the test portion may be taken by volume (see 7.3).

6.4 Determination

6.4.1 Drying

Place the dish and its contents on the boiling water bath (5.3) and evaporate the water present in the product. Dry in the oven (5.4) controlled at 103 ± 2 °C. This drying is not necessary for dry products.

6.4.2 Incineration

After drying (if appropriate), carbonize and then completely incinerate the product in the furnace (5.2), controlled at 525 ± 25 °C; the ash may still be grey after incineration.

NOTE — 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.

6.4.3 Treatment with hydrochloric acid

Allow to cool in the desiccator (5.5). After cooling, add 10 to 25 ml of the hydrochloric acid solution (4.1), cover with a watch-glass and heat on the boiling water bath (5.3) for 15 min.

Transfer the residue to the ashless filter paper (5.7) 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 (4.2)].

6.4.4 Preparation of the second dish

Prepare a new dish (5.6) as specified in 6.2, or clean the first dish, heat it in the muffle furnace (5.2) to the incineration temperature, allow to cool in the desiccator and weigh to the nearest 0,000 2 g.

6.4.5 Drying and incineration

Place the filter paper and residue in the dish, dry in the oven (5.4), controlled at 103 ± 2 °C, and incinerate for 30 min in the muffle furnace (5.2), controlled at 525 ± 25 °C.

Cool in the desiccator (5.5), and weigh to the nearest 0,000 2 g.

6.5 Number of determinations

Carry out at least two determinations on the same test sample (6.1).

7 Expression of results

7.1 Method of calculation and formula

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

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

where

m_0 is the mass, in grams, of the dish and test portion (6.3);

m_1 is the mass, in grams, of the empty dish (see 6.2);

m_2 is the mass, in grams, of the dish and acid-insoluble ash (6.4.5);

m_3 is the mass, in grams, of the empty dish (see 6.4.4).

Take as the result the arithmetic mean of the values obtained in two determinations (6.5), provided that the requirement for repeatability (see 7.2) is satisfied. Report the result to two decimal places.

7.2 Repeatability

The difference between the values obtained in two determinations, carried out simultaneously or in rapid succession by the same analyst, shall not exceed 0,01 g of ash insoluble in hydrochloric acid per 100 g of sample.

7.3 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 (6.3) by volume and by replacing the denominator ($m_0 - m_1$) in the formula (7.1) by V, the volume of the test portion.

8 Test report

The test report shall show the method used and the result obtained, indicating clearly the method of expression used. It shall also mention any operating conditions not specified in this International Standard, or regarded as optional, as well as any incidents that may have influenced the result.

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