International Standard 762

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Fruit and vegetable products — Determination of mineral impurities content

Produits dérivés des fruits et légumes — Détermination de la teneur en impuretés minérales d'origine terreuse

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Foreword

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

The member body of the following country expressed disapproval of the document on technical grounds :

Portugal

This International Standard cancels and replaces ISO Recommendation R 762-1968, of which it constitutes a technical revision.

Fruit and vegetable products — Determination of mineral impurities content

1 Scope and field of application

This International Standard specifies a method for the determination of the mineral impurities content (impurities generally originating from the soil) of fruit and vegetable products.

2 Principle

Separation of organic matter by flotation and of heavy impurities by sedimentation, incineration of the sediment at approximately 600 °C, and weighing of the residue obtained.

3 Reagents

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

3.1 Sodium chloride, approximately 15 % (*m*/*m*) solution.

3.2 Silver nitrate, approximately 17 g/l solution.

4 Apparatus

Usual laboratory equipment, and in particular

4.1 Blender.

4.2 Beakers, of capacities 800 and 2 000 ml.

4.3 Ashless filter paper.

4.4 Incineration dishes, of quartz, porcelain or platinum.

4.5 Muffle furnace, capable of being controlled at 600 ± 10 °C.

4.6 Desiccator, provided with an efficient desiccant.

4.7 Balance.

5 Procedure

5.1 Preparation of the test sample

5.1.1 General case

Before taking the test portion, thoroughly mix the entire 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.

5.1.2 Dried products

Mix well.

Weigh 100 g of the product, transfer to a 800 ml beaker (4.2) and add 400 ml of water. Bring to the boil, then leave overnight at room temperature to allow the product to rehydrate.

5.2 Test portion

5.2.1 General case

Rapidly weigh 500 g of the test sample (5.1.1). If the mass of this sample is less than 500 g, weigh all of it.

5.2.2 Dried products

Use all of the product taken in 5.1.2 as the test portion.

5.3 Determination

5.3.1 Separation of sediments

Transfer the test portion (5.2.1) or the mixture (5.1.2) into a 2 000 ml beaker (4.2). Add water until the beaker is almost completely full and mix by agitating, if necessary using a stirring rod.

Leave for about 10 min and pour the upper layer and the water into a second 2 000 ml beaker (4.2).

Again fill the first beaker with water, mix, agitate and leave for 10 min. Fill the second beaker with water, mix, agitate and leave for 10 min. Then pour the upper layer from the second beaker into another 2 000 ml beaker (4.2) and the upper layer from the first beaker into the second beaker. Repeat these operations carefully, pouring the upper layer of the third beaker into the sink, until all the floating fruit pulp has been discarded. Combine all the sediments in the first beaker.

Eliminate seeds or fruit pulp which may have settled by treating the sediments with warm sodium chloride solution (3.1). Remove the sodium chloride by washing with warm water, verifying the absence of chloride ions by testing the washings with the silver nitrate solution (3.2). Quantitatively transfer the remaining residue to the ashless filter paper (4.4), placed in a funnel (4.3), and rinse with water.

5.3.2 Preparation of the dish

Heat the empty dish (4.4) in the muffle furnace (4.5), controlled at 600 ± 10 °C, allow to cool in the desiccator (4.6) and weigh to the nearest 0,000 2 g.

5.3.3 Incineration

Transfer the filter paper and residue to the prepared incineration dish (see 5.3.2).

Heat the incineration dish for a few minutes over the Bunsen burner (4.6), then transfer it to the muffle furnace (4.7), controlled at 600 ± 10 °C, and incinerate for about 1 h. Cool in the desiccator (4.6) and weigh to the nearest 0,000 2 g.

5.4 Number of determinations

Carry out at least two determinations on the same test sample (5.1).

6 Expression of results

6.1 Method of calculation and formula

The mineral impurities content, expressed as a percentage by mass, is given by the formula

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

where

m_0 is the mass, in grams, of the test portion (5.2);

m_1 is the mass, in grams, of the empty dish (see 5.3.2);

m_2 is the mass, in grams, of the dish and incinerated residue (see 5.3.3).

Take as the result the arithmetic mean of the values obtained in two determinations (5.4), provided that the requirement for repeatability (see 6.2) is satisfied.

Report the result to two decimal places.

6.2 Repeatability

The difference between the values obtained in two determinations, carried out simultaneously or in rapid succession by the same analyst, shall not exceed 3 % (relative).

7 Test report

The test report shall show the method used and the result obtained. It shall also mention all 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 the information necessary for the complete identification of the sample.