International Standard 6479

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Shelled sweet kernels of apricots — Specification

Amandes douces d'abricots décortiquées — Spécifications

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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 6479 was developed by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the member bodies in February 1983.

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

Austria	Korea, Dem. P. Rep. of	Romania
Czechoslovakia	Korea, Rep. of	South Africa, Rep. of
Hungary	New Zealand	Tanzania
India	Philippines	Turkey
Iran	Poland	USSR
Iraq	Portugal	Yugoslavia

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

USA

Printed in Switzerland

Shelled sweet kernels of apricots — Specification

1 Scope and field of application

This International Standard specifies requirements for sweet kernels, obtained from fruits of the apricot tree (*Prunus armeniaca* Linnaeus), shelled for human consumption.

2 Definitions

For the purpose of this International Standard, the following definitions apply.

2.1 pest-infested kernels : Kernels damaged by insect and/or mite infestation.

2.2 shrivelled and immature kernels : Hollow or shrunken[1] kernels (such kernels are usually smaller in size and lighter in mass than normal kernels).

2.3 spoiled kernels : Kernels that are unsound, brown, discoloured and/or stained and such kernels that are glassy in the inner part.

2.4 broken pieces : Pieces of kernels which are smaller than two-thirds of the size of whole kernels.

2.5 moisture content (of shelled sweet kernels of apricots) : Conventionally, the loss in mass of the product, determined under the operating conditions specified in annex B of this International Standard, and expressed as a percentage by mass.

2.6 sulfur dioxide content (of shelled sweet kernels of apricots) : The quantity of sulfur dioxide determined by the method specified in annex C of this International Standard, and expressed in parts per million by mass.

3 Grading

Shelled sweet kernels of apricots shall be graded according to the number of kernels per 100 g and the other criteria given in the table.

Table — Requirements for grades of shelled sweet kernels of apricots

Grade designation	Number of kernels per 100 g	Extraneous matter content % (*m*/*m*) max.	Spoiled and pest-infested kernels % (*m*/*m*) max.	Shrivelled and immature kernels % (*m*/*m*) max.	Broken pieces % (*m*/*m*) max.	Bitter kernels % max.	Sound kernels % (*m*/*m*) min.	Sulfur dioxide content mg/kg max.
1	⩽ 220	0,5	1	0,5	2	2	95	2 000
2	221 to 320	1	2	1	4	4	88	2 000
3	⩾ 321	1,5	4	2	6	7	79	2 000

1) Shrinkage is a sign of immaturity.

4 Requirements

4.1 Freedom from moulds, insects, etc.

Shelled sweet kernels of apricots shall be free from moulds, living insects and mites visible to the naked eye (corrected if necessary, for abnormal vision) or with such magnification as may be necessary in any particular case. If the magnification exceeds X 10, this fact shall be stated in the test report.

4.2 Extraneous matter

The proportion of extraneous matter, such as dirt, stone, hard shells, dead insects and any other foreign matter in shelled sweet kernels of apricots, shall not exceed the value given in the table for the relevant grade.

4.3 Pest-infested, shrivelled and immature, spoiled kernels and broken pieces

The proportion of pest-infested, shrivelled and immature, spoiled kernels and broken pieces shall not exceed the values given in the table for the relevant grade.

4.4 Bitter kernels

The proportion of bitter kernels shall not exceed the value given in the table for the relevant grade.

4.5 Moisture content

The moisture content of shelled sweet kernels of apricots shall not exceed 5 % (m/m) for each grade.

5 Sampling

Methods of sampling dry and dried fruit and vegetable products will form the subject of a future International Standard.

6 Methods of test

Samples of shelled sweet kernels of apricots shall be tested for conformity of the product to the requirements of this International Standard by the methods of test specified in annexes A, B and C.

7 Packing and marking

7.1 Packing

Shelled sweet kernels of apricots shall be packed in clean and sound containers made of a material which does not affect the product. If wooden boxes are used, the insides shall be covered with a suitable paper.

If packed for direct consumption, small consumer packages shall be used. The quantities packed in such packages may be 0,5 — 1,0 or 2,5 kg net mass, and, if required, more or less. A suitable number of such packages shall be placed in large wooden or cardboard cases. The size of the cases and the number of small packages packed in each case shall be agreed between the purchaser and the supplier, but the mass of the cases shall not exceed 25 kg.

7.2 Marking

The following particulars shall be marked or labelled on each container and case :

a) name of the material, and trademark or brand name, if any;

b) name and address of the manufacturer or packer;

c) batch or code number;

d) net mass;

e) grade of the material (see clause 3);

f) producing country;

g) any other marking required by the purchaser.

Annex A

Determination of contents of spoiled and pest-infested and shrivelled and immature kernels, and extraneous matter content

A.1 Procedure

Weigh, to the nearest 0,02 g, a test portion of about 500 g. Examine the test portion visually and carefully separate the spoiled and pest-infested, and shrivelled and immature, kernels, and extraneous matter, by hand or using tweezers. Weigh each of the categories separately, to the nearest 0,02 g.

A.2 Expression of results

The respective content of each category, expressed as a percentage by mass, is equal to

$$\frac{m_1}{m_0} \times 100$$

where

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

m_1 is the mass, in grams, of the category concerned.

Annex B

Determination of moisture content

B.1 Principle

Heating and drying a test portion at 70 ± 1 °C at a pressure of 100 mmHg[1]. Weighing, and determination of the loss in mass.

B.2 Apparatus and material

Usual laboratory equipment, and in particular

B.2.1 Electrically heated constant-temperature oven, capable of being maintained at 70 ± 1 °C at a pressure of 100 mmHg.

B.2.2 Dish, with a tight-fitting lid, of corrosion-resistant metal, and of diameter about 85 mm.

B.2.3 Fruit chopper, made of a material which does not absorb moisture.

B.2.4 Desiccator, containing an efficient desiccant.

B.2.5 Steam-bath.

B.2.6 Analytical balance.

B.2.7 Asbestos, finely divided.

WARNING — Attention is drawn to the dangers involved in the use of asbestos.

B.3 Procedure

B.3.1 Preparation of the test sample

Take approximately 50 g of sample and pass it through the fruit chopper (B.2.3) three times, each time mixing thoroughly afterwards.

B.3.2 Test portion

Weigh, to the nearest 0,02 g, about 5 g of the prepared sample.

B.3.3 Determination

Place about 2 g of the finely divided asbestos (B.2.7) into the dish (B.2.2), which has been previously dried with its lid. Weigh the dish, asbestos and lid. Add the test portion, spreading it as evenly as possible over the asbestos in the bottom of the dish. Moisten the test portion and the asbestos thoroughly with a few millilitres of hot water, then mix the test portion and asbestos together using a spatula. Wash the spatula with hot water, to return any particles adhering to it to the dish. Heat the uncovered dish on the steam-bath (B.2.5) to evaporate the water. When the water has been completely evaporated, put the dish, with its lid alongside, in the oven (B.2.1), maintained at 70 ± 1 °C, and continue drying for 6 h under a pressure not exceeding 100 mmHg. Take care not to open the oven during this period.

NOTE — The dish should be placed in direct contact with the metal shelf of the oven.

During drying, admit to the oven a slow current of air, which has been dried by passing it through sulfuric acid at a rate of about 2 bubbles per second. After the drying period, remove the dish from the oven, cover it immediately with its lid and place it in the desiccator (B.2.4). Allow to cool to ambient temperature and weigh it to the nearest 0,02 g.

B.3.4 Number of determinations

Carry out two determinations on test portions taken from the same test sample.

B.4 Expression of results

The moisture content of the sample, expressed as a percentage by mass, is equal to

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

where

m_0 is the mass, in grams, of the dish, asbestos and lid;

m_1 is the mass, in grams, of the dish, asbestos, lid and test portion before drying;

m_2 is the mass, in grams, of the dish, asbestos, lid and test portion after drying.

Take as the result the arithmetic mean of the values obtained in the two determinations (B.3.4), provided that the requirement for repeatability (see B.5) is satisfied.

Report the result to one decimal place.

B.5 Repeatability

The difference between the values obtained in the two determinations (B.3.4), carried out simultaneously or in rapid succession by the same analyst using the same apparatus in the same laboratory, shall not exceed 0,3 % (m/m).

1) 1 mmHg = 133,322 Pa

B.6 Test report

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

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

Annex C

Determination of sulfur dioxide content (Molecular absorption spectrometric method)

C.1 Principle

Mixing a test portion with water and addition of sodium hydroxide solution. Addition of sulfuric acid solution and sodium chloride/mercury(II) chloride mixed solution, then transfer of an aliquot portion to a test tube containing *p*-rosaniline hydrochloride. Spectrometric measurement of the absorbance of the solution obtained at a wavelength of 550 nm.

C.2 Reagents

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

C.2.1 Formaldehyde, 0,015 % solution, prepared by diluting 40 % formaldehyde solution in two steps, i.e. 1 + 100 and 75 + 2 000.

C.2.2 ***p*-rosaniline hydrochloride,** 0,1 g/l solution.

Weigh 100 mg of acid-bleached *p*-rosaniline into a 1 000 ml one-mark volumetric flask containing 200 ml of water. Add 160 ml of hydrochloric acid diluted 1 + 1 and dilute to the mark. Allow to stand for 12 h before use.

C.2.3 Sodium chloride/mercury(II) chloride, mixed solution.

Place 23,4 g of sodium chloride and 54,3 g of mercury(II) chloride in a 2 000 ml one-mark volumetric flask. Dissolve in about 1 900 ml of water and dilute to the mark.

WARNING — Mercury salts are toxic. Use skin and respiratory protection when handling solid mercury salts and skin protection when handling concentrated aqueous solutions.

C.2.4 Sodium hydrogen sulfite, standard solution corresponding to 0,1 g of SO_2 per litre.

In a 1 000 ml one-mark volumetric flask, dissolve about 170 mg of sodium hydrogen sulfite in water and dilute to the mark.

Standardize the solution using 0,01 mol/l standard volumetric iodine solution before use.

1 ml of this standard solution contains approximately 100 µg of SO_2.

C.2.5 Sulfuric acid, 0,25 mol/l solution.

C.2.6 Sodium hydroxide, 0,5 mol/l solution.

C.3 Apparatus

Usual laboratory equipment, and in particular

C.3.1 Spectrometer, capable of measuring absorbance at a wavelength of 550 nm.

C.3.2 Fruit chopper, made of a material which does not absorb moisture.

C.3.3 One-mark volumetric flasks, of capacity 100 ml.

C.3.4 Blender, having a capacity of at least 300 ml.

C.3.5 Pipette, free-running, of capacity 10 ml.

C.4 Procedure

C.4.1 Preparation of the test sample

Take approximately 50 g of sample and pass it through the fruit chopper (C.3.2) three times, each time mixing thoroughly afterwards.

C.4.2 Test portion

Weigh, to the nearest 0,02 g, about 10 g of the prepared test sample.

C.4.3 Determination

Transfer the test portion to the blender (C.3.4) with 290 ml of water. Cover and blend for 2 min. Take a 10 ml aliquot portion from the bottom of the blender, using the pipette (C.3.5), and transfer to a 100 ml one-mark volumetric flask (C.3.3) containing 4 ml of the sodium hydroxide solution (C.2.6). Swirl and mix for about 13 to 30 s. Add 4 ml of the sulfuric acid solution (C.2.5) and 20 ml of the sodium chloride/mercury(II) chloride solution (C.2.3) and dilute to the mark. Transfer 2 ml of this solution to a 200 ml test tube containing 5 ml of the *p*-rosaniline hydrochloride (C.2.2). Add 10 ml of the formaldehyde solution (C.2.1), mix and maintain at 22 °C for 30 min. Measure the absorbance at a wavelength of 550 nm, using as the reference liquid the blank test solution (see C.4.4).

NOTE — If the same cell is used for successive determinations, clean it between measurements with hydrochloric acid diluted 1 + 1 and water.

C.4.4 Blank test

Carry out a blank test in parallel with the determination, using the same procedure and the same quantities of reagents as used for the determination, but omitting the 10 ml aliquot portion taken from the blender.

C.4.5 Preparation of the calibration graph

Place 5 ml of the sodium chloride/mercury(II) chloride solution (C.2.3) into each of a series of 100 ml one-mark volumetric flasks (C.3.3). Then add 0; 1,0; 2,0; 3,0 etc. ml of the standard sodium hydrogen sulfite solution (C.2.4), according to the expected sulfur dioxide content of the sample. Dilute to the mark and mix.

Transfer 5,0 ml portions of each of these standard matching solutions to 200 ml test tubes containing 5 ml of the *p*-rosaniline hydrochloride solution (C.2.2). Add 10 ml of the formaldehyde solution (C.2.1), mix and maintain at 22 °C for 30 min. Measure the absorbance of each solution at a wavelength of 550 nm, using as the reference liquid the zero term (solution containing 0 ml of the standard sodium hydrogen sulfite solution).

Plot a graph having, for example, the sulfur dioxide contents expressed in parts per million by mass, of the standard matching solutions as abscissae and the corresponding values of absorbance as ordinates.

C.4.6 Number of determinations

Carry out two determinations on 10 ml aliquot portions originating from the same test portion.

C.5 Expression of results

Read the sulfur dioxide content, in parts per million by mass, directly from the calibration curve.

Take as the result the arithmetic mean of the values obtained in the two determinations (C.4.6), provided that the requirement for repeatability (see C.6) is satisfied.

C.6 Repeatability

The difference between the values obtained in the two determinations (C.4.6), carried out simultaneously or in rapid succession by the same analyst, using the same apparatus in the same laboratory on the same test portion, shall not exceed 5 % of the mean value.

C.7 Test report

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

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