



SLOVENSKI STANDARD
SIST EN 1135:1996

01-avgust-1996

Sadni in zelenjavni sokovi - Ugotavljanje pepela

Fruit and vegetable juices - Determination of ash

Frucht- und Gemüsesäfte - Bestimmung der Asche

Jus de fruits et de légumes - Détermination des cendres

Ta slovenski standard je istoveten z: EN 1135:1994

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ICS:

67.160.20 Brezalkoholne pijače Non-alcoholic beverages

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en

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EUROPEAN STANDARD

EN 1135

NORME EUROPÉENNE

EUROPÄISCHE NORM

October 1994

UDC 663.81/.82:620.1:543.822

Descriptors: food products, beverages, fruit and vegetable juices, chemical analysis, determination of content, ashes

English version

Fruit and vegetable juices - Determination of ash

Jus de fruits et de légumes - Détermination des cendres

Frucht- und Gemüsesäfte - Bestimmung des Asche

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CENEuropean Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

Foreword

This European Standard has been prepared by the Technical Committee CEN/TC 174 "Fruit and vegetable juices - Methods of analysis", the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a National Standard, either by publication of an identical text or by endorsement, at the latest by April 1995, and conflicting national standards shall be withdrawn at the latest by April 1995.

Annexes designated "informative" are given only for information. In this standard annexes A and B are informative.

According to the CEN/CENELEC Internal Regulations, the following countries are bound to implement this European Standard: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom.

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1 Scope

This European standard specifies a method for the determination of ash of fruit and vegetable juices and related products.

2 Normative references

This European standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

- ISO 5725:1986 Precision of test methods - Determination of repeatability and reproducibility for a standard test method by inter-laboratory tests
- ISO 3696:1987 Water for analytical laboratory use - Specification and test methods

3 Definition

For the purposes of this standard, the following definition applies:

Ash

The residue of a fruit or vegetable juice or related product obtained when the organic constituents and water are completely removed by calcination, expressed in g/l.

4 Principle

The ash is determined gravimetrically after calcination of the test sample in a muffle furnace at $525 \pm 25 \text{ }^\circ\text{C}$.

5 Reagents

Use only water in accordance with at least grade 2 of ISO 3696.

6 Apparatus

Usual laboratory apparatus and, in particular, the following :

- 6.1 **Platinum dish**, approximate diameter 80 mm, with a flat bottom.

6.2 Water bath

6.3 Muffle furnace, capable of maintaining a temperature of $525\text{ °C} \pm 25\text{ °C}$.

6.4 Desiccator

6.5 Analytical balance, accurate to 0,1 mg.

7 Procedure

7.1 Preparation of the test sample

Normally products shall not be pretreated and their analysis by this method shall be on a volumetric basis, results being expressed per litre of sample. The analysis of concentrated products may also be carried out on a volumetric basis, after dilution to a known relative density. In this case, the relative density shall be indicated. Based on a weighed sample and taking the dilution factor for analysis into account, the results may also be expressed per kilogram of product. In products with high viscosity and/or very high content of cells (for example pulp), determination on the basis of a weighed test sample is the usual procedure.

7.2 Test procedure

Evaporate 25 ml (or 25 g ; see 7.1) of test sample to dryness in the previously weighed platinum dish (mass m_a ; 6.1), using the water bath (6.2). Other suitable means of evaporating the water contained in the test sample may be used, providing they do not lead to loss of inorganic constituents.

In a fume cupboard slowly heat the dry residue on a hot plate until the greater part of the organic constituents has burned away. Calcine in the muffle furnace (6.3) at a temperature of $525\text{ °C} \pm 25\text{ °C}$ until the organic constituents are completely removed and the residue is white. The temperature of the furnace shall be monitored using a suitable measuring device. Allow the platinum dish with the residue to cool to ambient temperature in the desiccator (6.4) and weigh immediately (mass m_b).

Sometimes the organic constituents do not burn away completely. In such cases, moisten the ash with water and repeat the evaporation and calcination steps. If necessary, repeat this procedure several times.

8 Calculation

Calculate the ash of the test sample in grams per litre as follows

$$\text{Ash} = 40 \times (m_b - m_a)$$

where :

- 40 is the conversion factor from 25 ml to 1000 ml (or 25 g to 1 kg, see clause 7.1) ;
- m_b is the mass of the platinum dish with ash, in grams ;
- m_a is the mass of the empty platinum dish, in grams.

Take into account the dilution factor and the relation of the value to mass or volume. If a concentrated product has been diluted to single strength, report the relative density of the single strength sample.

Express the ash in grams per litre to two decimal places.

9 Precision

Details of the interlaboratory test on the precision of the method are summarized in annex B. The values derived from the interlaboratory test may not be applicable to analyte concentration ranges and matrices other than given in annex B.

9.1 Repeatability

The absolute difference between two single test results found on identical test material by one operator using the same apparatus within the shortest feasible time interval will exceed the repeatability value r in not more than 5 % of the cases.

The values are :

$$\rho \leq 4 \text{ g/l} : r = 0,09 \text{ g/l}$$

$$\rho > 4 \text{ g/l} : r = 0,14 \text{ g/l}$$

where :

ρ is the measured ash, calculated as mean value from the two single test results.

9.2 Reproducibility

The absolute difference between two single test results on identical test material reported by two laboratories will exceed the reproducibility value R in not more than 5 % of the cases.

The values are:

$$\rho \leq 4 \text{ g/l} : R = 0,13 \text{ g/l}$$

$$\rho > 4 \text{ g/l} : R = 0,29 \text{ g/l}$$

where :

ρ is the measured ash, calculated as mean value from the two single test results

10 Test report

The test report shall contain the following data:

- all information necessary for the identification of the sample (kind of sample, origin of sample, designation) ;
- a reference to this european standard ;
- the date and type of sampling procedure (if possible) ;
- the date of receipt ;
- the date of test ;
- the test results and units in which they have been expressed ;
- whether the repeatability of the method has been verified ;
- any particular points observed in the course of the test ;
- any operations not specified in the method or regarded as optional, which might have affected the results

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Annex A (informative)**Bibliography**

[1] Determination of ash: No 9, 1989. - In: Analyses [Collection] / International Federation of Fruit Juice Producers. - Loose-leaf edition, as of 1989. - Zug: Swiss Fruit Union.

[2] Untersuchung von Lebensmitteln : Bestimmung der Asche in Fruchtsäften : L 31.00-4, 1980-05 [Food Analysis : Determination of ash content : L 31.00-4, 1980-05] - In Amtliche Sammlung von Untersuchungsverfahren nach § 35 LMBG : Verfahren zur Probenahme und Untersuchung von Lebensmitteln, Tabakerzeugnissen, kosmetischen Mitteln und Bedarfsgegenständen, Bundesgesundheitsamt [In : Collection of Methods of sampling and analysis of foods, tobacco products, cosmetics and commodity goods/Federal Health office] - Loseblattausgabe, Stand 31.12.1991, Bd I [Loose-leaf edition, as of 1991-12-31, Vol. I] - Berlin, Köln : Beuth Verlag GmbH.

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