
Sadni in zelenjavni sokovi - Ugotavljanje pH vrednosti

Fruit and vegetable juices - Determination of the pH-value

Frucht- und Gemüsesäfte - Bestimmung des pH-Wertes

Jus de fruits et de légumes - Mesure du pH

Ta slovenski standard je istoveten z: EN 1132:1994

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ICS:

67.160.20 Brezalkoholne pijače Non-alcoholic beverages

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EUROPEAN STANDARD

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Descriptors: food products, beverages, fruit and vegetable juices, chemical analysis, measurements, pH

English version

**Fruit and vegetable juices - Determination of the
pH-value**Jus de fruits et de légumes - Mesure du pH Frucht- und Gemüsesäfte - Bestimmung des
pH-Wertes

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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of an identical text or by endorsement, at the latest by April 1995, and conflicting national standards shall be withdrawn at the latest by April 1995.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 the pH-value 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

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

pH value : The negative common logarithm of the concentration of hydrogen ions in moles per litre of solution. <https://standards.itih.ai/catalog/standards/sist/2e519aea-a263-4b1d-b728-ed3114218450/sist-en-1132-1996>

4 Principle

The pH value of the sample is measured potentiometrically.

5 Reagents

5.1 General

Use only reagents of recognized analytical grade and only degassed water in accordance with at least grade 3 of ISO 3696:1987.

5.2 Buffer solution with a pH of 6,88 at 20 °C

Dry anhydrous potassium dihydrogen phosphate, KH_2PO_4 , and anhydrous disodium hydrogen phosphate, Na_2HPO_4 , at $120\text{ °C } 0 \pm 10\text{ °C}$ to constant mass. After cooling in a desiccator (6.5), weigh 3,40 g KH_2PO_4 and 3,55 g Na_2HPO_4 and dissolve in approximately 800 ml water, then make up to 1000 ml at a temperature of 20 °C. This solution is stable for about 1 month.

5.3 Buffer solution with a pH of 3,57 at 20 °C.

Dissolve 30 g potassium hydrogen tartrate, $\text{KHC}_4\text{H}_4\text{O}_6$, in about 1 l water. Shake the container vigorously to give a saturated solution. Remove the undissolved residue by filtration. This solution contains at least 5,7 g $\text{KHC}_4\text{H}_4\text{O}_6$.

It is preferable to prepare this solution on the day of use, since it deteriorates. The solution may be preserved by the addition of 0,05 g thymol per 100 ml of solution. It is then stable for about 2 months at 20 °C.

5.4 Commercially available buffer solutions (alternative to 5.2 and 5.3).

Commercially available buffer solutions with pH values similar to (5.2) and (5.3) may also be used. Observe the buffer solution manufacturer's instructions for their preparation, storage and date of expiry.

6 Apparatus

Usual laboratory apparatus and, in particular, the following :

6.1 pH meter accurate to at least 0,05 pH units

6.2 pH glass electrode

6.3 Reference electrode e.g. calomel electrode.

6.4 Combination pH glass electrode (alternative to 6.2 and 6.3).

6.5 Dessiccator with drying agent.

7 Procedure

7.1 General

The pH meter and electrodes shall be calibrated and serviced according to the instrument manufacturer's instructions.

The pH-value of the sample is normally measured at $20\text{ °C} \pm 2\text{ °C}$. If the pH-meter possesses a temperature compensation facility, the measurement may be made at a temperature other than 20 °C but in any case between 10 °C and 30 °C and according to the instrument manufacturer's instruction.

Before each measurement or calibration step, rinse the electrode(s) well with water and remove adhering water with a filter paper.

Calibration and measurement should be carried out while gently stirring the solution or test sample.

7.2 Preparation of the test sample

If the sample contains appreciable quantities of carbon dioxide, degas it by shaking the sample in a stoppered conical flask (removing the stopper from time to time), or by using vacuum or ultrasound treatment, until no more gas evolves.

7.3 Calibration

Perform two-point calibration of the pH meter with buffer solutions (5.2 and 5.3), following the instrument manufacturer's instructions. The calibration may alternatively be carried out using commercially available buffer solutions (see 5.4).

7.4 Measurement

Measure the pH-value of the test sample, according to the instrument manufacturer's instructions.

8 Expression of results

Report the pH-value to two decimal places.

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9 Precision

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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 value is : $r = 0,03$.

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 value is : $R = 0,12$.

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 the pH-value: No 11, 1989. - In: Analyses [Collection] / International Federation of Fruit Juice Producers. - Loose-leaf edition, as of 1989. - Zug : Swiss Fruit Union.

[2] Untersuchung von Lebensmitteln: Messung des pH-Wertes in Fruchtsäften: L31.00-2, 1980-05 [Food Analysis: Measurement of the pH-value in fruit juices : L31.00-2, 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 official methods under article 35 of the German Federal Foods Act: 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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