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English version

Fruit and vegetable juices - Determination of the stable carbon isotope ratio ($^{13}\text{C}/^{12}\text{C}$) in the pulp of fruit juices - Method using isotope ratio mass spectrometry

Jus de fruits et de légumes - Détermination du rapport des isotopes stables du carbone ($^{13}\text{C}/^{12}\text{C}$) dans la pulpe des jus de fruits - Méthode utilisant la spectrométrie de masse des rapports isotopiques

Frucht- und Gemüsesäfte - Bestimmung des Verhältnisses der stabilen Kohlenstoff-Isotope ($^{13}\text{C}/^{12}\text{C}$) in der Pulpe von Fruchtsäften - Verfahren unter Anwendung der Isotopenverhältnis-Massenspektroskopie

This European Prestandard (ENV) was approved by CEN on 9 April 1998 as a prospective standard for provisional application.

The period of validity of this ENV is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the ENV can be converted into a European Standard.

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Contents

Foreword.....	3
1 Scope.....	4
2 Normative references	4
3 Symbols.....	4
4 Principle	4
5 Reagents.....	4
6 Apparatus.....	5
7 Procedure.....	6
8 Calculation	7
9 Precision.....	7
10 Test report.....	8
Annex A (informative) Bibliography.....	9
Annex B (informative) Statistical results of the interlaboratory test.....	10

Foreword

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this European Prestandard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

This European Prestandard specifies a method for the determination of the stable carbon isotope ratio of the pulp in fruit juices. The determination of this parameter is useful as an internal standard for comparison with the Carbon 13 content value ($\delta^{13}\text{C}$) obtained for the sugars.

2 Normative references

This European Prestandard 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 Prestandard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

EN ISO 3696:1995	Water for analytical laboratory use - Specification and test methods
ISO 5725:1986	Precision of test methods - Determination of repeatability and reproducibility for a standard test method by inter-laboratory tests
ENV 12140:1996	Fruit and vegetable juices - Determination of the stable carbon isotope ratio ($^{13}\text{C}/^{12}\text{C}$) of sugars from fruit juices - Method using isotope ratio mass spectrometry

3 Symbols

For the purpose of this standard the following symbols apply :

$(^{13}\text{C}/^{12}\text{C})$	Isotope ratio of carbon 13 to 12 for a considered sample ;
$\delta^{13}\text{C}$	Carbon 13 (^{13}C) content expressed in parts per thousand (‰) ;
g	Acceleration due to gravity at the surface of the earth (9,81 m/s ²).

4 Principle

The carbon contained in the pulp is quantitatively combusted into carbon dioxide. The ratio of the two stable carbon isotopes (^{13}C and ^{12}C) is then measured using a isotope ratio mass spectrometer. This value can then be compared with the value obtained for the sugars (as determined using ENV 12140). If there is too large a difference between the value in the pulp and the sugars this can indicate the addition of sugars derived from a C_4 plant such as cane or corn.

5 Reagents

Use only reagents of recognized analytical grade and only water in accordance with at least grade 3 of EN ISO 3696:1995.