

INTERNATIONAL
STANDARD

ISO
7952

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**Fruits, vegetables and derived products —
Determination of copper content —
Method using flame atomic absorption
spectrometry**

*Fruits, légumes et produits dérivés — Détermination de la teneur en
cuivre — Méthode par spectrométrie d'absorption atomique avec flamme*



Reference number
ISO 7952:1994(E)

Foreword

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Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7952 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Subcommittee SC 3, *Fruit and vegetable products*.

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Fruits, vegetables and derived products — Determination of copper content — Method using flame atomic absorption spectrometry

1 Scope

This International Standard specifies a flame atomic absorption spectrometric method for the determination of the copper content of fruits, vegetables and derived products.

2 Normative reference

The following standard contains provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the edition indicated was valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent edition of the standard indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5515:1979, *Fruits, vegetables and derived products — Decomposition of organic matter prior to analysis — Wet method.*

3 Principle

Decomposition of organic matter by either a dry or a wet method and determination of the Cu(II) cation content by flame atomic absorption spectrometry.

4 Reagents

All reagents shall be of recognized analytical grade and, in particular, shall be free from copper. The water used shall have been distilled twice in borosilicate glass apparatus, or shall be water of at least equivalent purity.

4.1 Sulfuric acid, concentrated ($\rho_{20} = 1,84$ g/ml).

4.2 Nitric acid, concentrated ($\rho_{20} = 1,38$ g/ml).

4.3 Hydrochloric acid, diluted 1 + 1 (V/V).

Mix one volume of concentrated hydrochloric acid ($\rho_{20} = 1,19$ g/ml) with one volume of water.

4.4 Hydrochloric acid, approximately 0,1 mol/l solution.

Place 17 ml of dilute hydrochloric acid (4.3) into a 100 ml one-mark volumetric flask and make up to the mark with water. Mix.

4.5 Copper, standard solution corresponding to 1 g of copper per litre.

Dissolve in a 1 000 ml one-mark volumetric flask 3,929 g of copper sulfate pentahydrate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) in doubly distilled water. Make up to the mark with water and mix.

Store this solution in a borosilicate glass bottle fitted with a ground-glass stopper.

1 ml of this standard solution contains 1 mg of Cu.

It is also possible to prepare a standard solution in the following ways.

a) Dissolve in a 1 000 ml one-mark volumetric flask 1,000 g of metallic copper in 50 ml of a 5 mol/l solution of nitric acid. Make up to the mark with doubly distilled water and mix. Store this solution in a polyethylene bottle.

b) Dissolve in a 1 000 ml one-mark volumetric flask 3,798 g of copper nitrate trihydrate [$\text{Cu}(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$] in 250 ml of doubly distilled wa-