

INTERNATIONAL STANDARD

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Meat and meat products — Determination of total phosphorus content — Spectrometric method

*Viande et produits à base de viande — Détermination de la teneur en
phosphore total — Méthode spectrométrique*



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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 13730 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*, Subcommittee SC 6, *Meat and meat products*.

Annex A of this International Standard is for information only.

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Meat and meat products — Determination of total phosphorus content — Spectrometric method

1 Scope

This International Standard specifies a method for the determination of the total phosphorus content of all kinds of meat and meat products, including poultry. The precision results quoted in this method relate only to processed sausages.

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 936:—¹⁾, *Meat and meat products — Determination of ash*.

3 Definition

For the purposes of this International Standard, the following definition applies.

3.1 total phosphorus content of meat and meat products: Mass of phosphorus pentoxide determined by the procedure specified in this International Standard, expressed as a percentage of the mass of the test portion.

4 Principle

Drying of the test portion and incineration of the residue. After cooling, hydrolysis of the ash with nitric acid. Filtration and dilution followed by the formation of a yellow compound with a mixture of ammonium monovanadate and ammonium heptamolybdate. Photometric measurement at a wavelength of 430 nm.

1) To be published. (Revision of ISO 936:1978)

5 Reagents

Use only reagents of recognized analytical grade and distilled or demineralized water or water of at least equivalent purity.

5.1 Nitric acid, 1 + 2 (V/V) dilution.

Mix 1 volume of nitric acid [65 % (m/m); $\rho_{20} = 1,40$ g/ml] with two volumes of water.

5.2 Ammonium monovanadate solution (NH_4VCO_3), 2,5 g/l.

Dissolve 2,5 g of ammonium monovanadate in 500 ml of boiling water. Cool and transfer quantitatively to a 1000 ml volumetric flask (6.7). Add 20 ml of the nitric acid (5.1), dilute to the mark with water and mix.

5.3 Ammonium heptamolybdate solution, $[(\text{NH}_4)_6\text{Mo}_7\text{O}_{24} \cdot 4\text{H}_2\text{O}]$, 50 g/l.

Dissolve 50 g of ammonium heptamolybdate tetrahydrate in about 800 ml of warm water (at approx. 50 °C). Cool and transfer quantitatively to a 1000 ml volumetric flask. Dilute to the mark with water and mix.

5.4 Colour reagent.

Mix one volume of the nitric acid (5.1) with one volume of the ammonium monovanadate solution (5.2).

Subsequently add one volume of the ammonium heptamolybdate solution (5.3) and mix. The colour reagent should turn from pale yellow to completely clear.

5.5 Phosphate stock solution, $c(\text{P}) = 218$ mg/l; $c(\text{P}_2\text{O}_5) = 500$ mg/l.

Dissolve in water 958,8 mg of potassium dihydrogen phosphate (KH_2PO_4), previously dried for 3 h at $103 \text{ °C} \pm 2 \text{ °C}$ and allowed to cool in a desiccator.

Transfer quantitatively to a 1000 ml volumetric flask (6.7). Dilute to the mark with water and mix.

5.6 Phosphate standard solutions, containing between 0,05 mg and 0,30 mg of P_2O_5 per millilitre.

Transfer by pipette or burette to 100 ml volumetric flasks (6.7) 10 ml, 20 ml, 30 ml, 40 ml, 50 ml and 60 ml of the phosphate stock solution (5.5). Add 10 ml of the nitric acid (5.1). Dilute to the mark with water and mix.

5.7 Blank solution.

Pipette 2 ml of the nitric acid (5.1) and 30 ml of the colour reagent (5.4) into a 100 ml volumetric flask (6.7). Dilute to the mark with water and mix.

6 Apparatus

IMPORTANT: All glassware shall be thoroughly cleaned using a phosphate-free detergent and then rinsed with water.

Usual laboratory equipment and, in particular, the following.

6.1 Mechanical or electrical equipment capable of homogenizing the laboratory sample. This includes a high speed rotational cutter, or a mincer fitted with a plate with holes not exceeding 4,5 mm in diameter (see also clause 8).

6.2 Water bath, capable of being maintained at 100 °C.

6.3 Fluted filter paper, of diameter 15 cm, phosphate-free.