

**Foodstuffs - Determination of trace elements -
Determination of tin by inductively coupled plasma
mass spectrometry (ICP-MS) after pressure digestion**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 15765:2010 sisaldab Euroopa standardi EN 15765:2009 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 28.02.2010 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 16.12.2009.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN 15765:2010 consists of the English text of the European standard EN 15765:2009.

This standard is ratified with the order of Estonian Centre for Standardisation dated 28.02.2010 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.

Date of Availability of the European standard text 16.12.2009.

The standard is available from Estonian standardisation organisation.

ICS 67.250

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ICS 67.050

English Version

**Foodstuffs - Determination of trace elements - Determination of
tin by inductively coupled plasma mass spectrometry (ICP-MS)
after pressure digestion**

Produits alimentaires - Dosage des éléments traces -
Dosage de l'étain par spectrométrie de masse à plasma
induit par haute fréquence (ICP-MS) après digestion sous
pression

Lebensmittel - Bestimmung von Elementspuren -
Bestimmung von Zinn mit Massenspektrometrie mit
induktiv gekoppeltem Plasma (ICP-MS) nach
Druckaufschluss

This European Standard was approved by CEN on 7 November 2009.

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Foreword

This document (EN 15765:2009) has been prepared by Technical Committee CEN/TC 275 "Food analysis - Horizontal methods", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by June 2010, and conflicting national standards shall be withdrawn at the latest by June 2010.

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1 Scope

This European Standard specifies a method for the determination of tin in foodstuffs by inductively coupled plasma mass spectrometry (ICP-MS) after pressurized digestion. The collaborative study included carrot puree, tomato puree, pineapple, mixed fruit, white wine, peach powder, tomato powder, beans powder, powdered fruit yoghurt and fish powder foodstuffs having a mass fraction of tin ranging from 2,5 mg/kg to 259 mg/kg.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 13805, *Foodstuffs — Determination of trace elements — Pressure digestion*

3 Principle

The sample is mineralized through pressurized digestion with nitric acid and hydrochloric acid in accordance with EN 13805. The digestion solution obtained thereby is diluted and then atomised and ionised in an inductively coupled argon plasma. After extraction from the plasma by a system of sampler and skimmer cones the positive (charged) tin ions are separated according to their mass charge ratio in a mass spectrometer and quantified in a detector system.

4 Reagents

4.1 General

The concentration of tin in the reagents and water used shall be low enough not to affect the results of the determination. Solution shall be understood as an aqueous solution unless otherwise specified.

4.2 Nitric acid, mass fraction $w(\text{HNO}_3) \geq 65 \%$, mass concentration $\rho(\text{HNO}_3) \approx 1,4 \text{ g/ml}$.

4.3 Hydrochloric acid, $w(\text{HCl}) \geq 30 \%$, density $\rho(\text{HCl}) \approx 1,15 \text{ g/ml}$.

4.4 Stock solutions

4.4.1 Tin stock solution, mass concentration $\rho(\text{Sn}) = 1\,000 \text{ mg/l}$.

4.4.2 Rhodium stock solution (internal standard), mass concentration $\rho(\text{Rh}) = 1\,000 \text{ mg/l}$.

4.5 Standard solutions

4.5.1 Tin standard solution 1, mass concentration $\rho(\text{Sn}) = 50 \text{ mg/l}$

Fill a 50 ml volumetric flask with 10 ml to 20 ml of water, add 2,5 ml of hydrochloric acid (4.3) and mix. Cool to ambient temperature, and add by means of a pipette exactly 2,5 ml of tin stock solution (4.4.1) and dilute to volume with water. This solution is stable for at least one week.