

Foodstuffs — Determination of vitamin B1 by HPLC

The European Standard EN 14122:2003 has the status of a
British Standard

ICS 67.050

National foreword

This British Standard is the official English language version of EN 14122:2003, including Corrigendum December 2005.

The UK participation in its preparation was entrusted to Technical Committee AW/-/3, Horizontal analysis, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

The British Standards which implement international or European publications referred to in this document may be found in the BSI Catalogue under the section entitled “International Standards Correspondence Index”, or by using the “Search” facility of the *BSI Electronic Catalogue* or of British Standards Online.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 4 June 2003

Summary of pages

This document comprises a front cover, an inside front cover, the EN title page, pages 2 to 17 and a back cover.

The BSI copyright date displayed in this document indicates when the document was last issued.

Amendments issued since publication

Amd. No.	Date	Comments
16206 Corrigendum No. 1	31 July 2006	Correction to Clause 4.2.15, footnote 1 on page 5 and to Clause 6.2.2

© BSI 2006

ISBN 0 580 41987 8

English version

Foodstuffs - Determination of vitamin B1 by HPLC

Produits alimentaires - Dosage de la vitamine B1 par CLHP

Lebensmittel - Bestimmung von Vitamin B1 mit HPLC

This European Standard was approved by CEN on 17 March 2003.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

Contents

	Page
Foreword	3
1 Scope	4
2 Normative references	4
3 Principle	4
4 Reagents	4
5 Apparatus	7
6 Procedure	8
7 Calculation	11
8 Precision	11
9 Test report	12
Annex A (informative) Examples of HPLC chromatograms	13
Annex B (informative) Precision data	15
Annex C (informative) Alternative HPLC systems	17
Bibliography	18

Foreword

This document (EN 14122:2003) 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 November 2003, and conflicting national standards shall be withdrawn at the latest by November 2003.

Annexes A, B and C are informative.

WARNING — The use of this European Standard can involve hazardous materials, operations and equipment. This European Standard does not purport to address all the safety problems associated with its use. It is the responsibility of the user of this European Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

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

1 Scope

This European Standard specifies a method for the determination of vitamin B₁ in foodstuffs by high performance liquid chromatography (HPLC). Vitamin B₁ is the mass fraction of total thiamin including its phosphorylated derivatives.

2 Normative references

This European Standard incorporates by dated or undated references, 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 (including amendments).

EN ISO 3696:1995, *Water for analytical laboratory use – Specification and test methods (ISO 3696:1987)*.

3 Principle

Thiamin is extracted from food after acid hydrolysis followed by dephosphorylation using an enzymatic treatment and quantified by HPLC with pre- or post-column derivatization to thiochrome [1] to [6].

4 Reagents

4.1 General

During the analysis, unless otherwise stated, use only reagents of recognised analytical grade and water of at least grade 1 according to EN ISO 3696:1995, or double distilled water.

4.2 Chemicals and solutions

4.2.1 Methanol, HPLC grade mass fraction $w(\text{CH}_3\text{OH}) \geq 99,8 \%$

4.2.2 Acetic acid solution, substance concentration $c(\text{CH}_3\text{COOH}) = 0,02 \text{ mol/l}$

4.2.3 Isobutanol, $w(\text{C}_4\text{H}_{10}\text{O}) \geq 98 \%$

4.2.4 Sodium dihydrogen phosphate, $w(\text{NaH}_2\text{PO}_4) \geq 99,8 \%$

4.2.5 Hydrochloric acid, $w(\text{HCl}) = 36 \%$

4.2.6 Hydrochloric acid, $c(\text{HCl}) = 0,1 \text{ mol/l}$

4.2.7 Sulfuric acid, $c(\text{H}_2\text{SO}_4) = 0,05 \text{ mol/l}$

4.2.8 Sodium hydroxide, $w(\text{NaOH}) \geq 99 \%$

4.2.9 Sodium hydroxide solution, mass concentration $\rho(\text{NaOH}) = 150 \text{ g/l}$

4.2.10 Sodium hydroxide solution, $\rho(\text{NaOH}) = 200 \text{ g/l}$

4.2.11 Potassium hexacyanoferrate III, $w\{\text{K}_3[\text{Fe}(\text{CN})_6]\} \geq 99 \%$