

**Toiduained. Sulfiti määramine. Osa 2:
Ensüümireaktsioon**

Foodstuffs - Determination of sulfite - Part 2:
Enzymatic method

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 1988-2:2000 sisaldab Euroopa standardi EN 1988-2:1998 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 19.07.2000 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1988-2:2000 consists of the English text of the European standard EN 1988-2:1998.</p> <p>This document is endorsed on 19.07.2000 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala: See Euroopa standard määrab kindlaks meetodi toiduainete sulfitisisalduse (väljendatuna vääveldioksiidina) määramiseks ensüümide kaasabil. Teised väävlit sisaldavad ühendid, nagu sulfaadid, sulfiidid või tiosulfaadid, ei sega analüüsi käiku. Süsiniku ja sulfiti ühendid reageerivad nagu vabad sulfitid. Isotiotsüanaadid, nagu nt sinep, segavad analüüsi käiku. Meetod ei ole rakendatav kapsa, kuivatatud küüslaugu, kuivatatud sibula, ingveri, porrulaugu ja sojavalkude analüüsimiseks. On kindlaks tehtud, et isoleeritud sojavalkude analüüs annab valesid positiivseid tulemusi.</p>	<p>Scope:</p>
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ICS 67.050

Võtmesõnad: ensüümireaktsioonid, keemiline analüüs, sisalduse määramine, sulfitid, toiduainetooted

ICS 67.040

Descriptors: Foodstuffs, sulfite content, testing.

English version

Foodstuffs – Determination of sulfite

Part 2: Enzymatic method

Produits alimentaires – Dosage des
sulfites – Partie 2: Méthode
enzymatique

Lebensmittel – Bestimmung von
Sulfit – Teil 2: Enzymatisches
Verfahren

This European Standard was approved by CEN on 1998-01-01.

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 Central Secretariat or to any CEN member.

The European Standards exist 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 Central Secretariat has the same status as the official versions.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Foreword

This European Standard 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 August 1998, and conflicting national standards shall be withdrawn at the latest by August 1998.

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, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

This European Standard "Foodstuffs - Determination of sulfite", consists of the following parts:

Part 1: Optimized Monier-Williams method

Part 2: Enzymatic method

Introduction

Sulfite can be used as a preservative in foodstuffs. In order to minimize possible negative health effects, many countries have regulated the use of sulfite in foods. This has resulted in the development of several methods of analysis to detect the presence and quantity of sulfite in a great variety of foods.

1 Scope

This European Standard specifies an enzymatic method for the determination of the sulfite content, expressed as sulfur dioxide, in foodstuffs. Other sulfur-containing substances such as sulfate, sulfide or thiosulfate do not interfere with the determination. Carbonyl-sulfite complexes react as free sulfites. Isothiocyanates occurring in, e.g. mustard interfere with the determination. The method is not applicable to cabbages, dried garlic, dried onions, ginger, leeks and soy protein¹⁾. It has been shown that the analysis of isolated soy protein leads to false positive results.

Specific products, for which European Standards for the determination of the sulfites exist, are excluded from the scope of this horizontal European Standard.

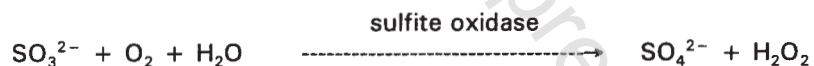
2 Normative references

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

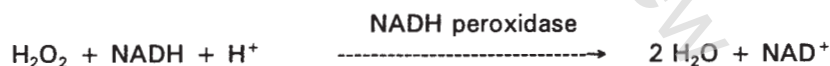
EN ISO 3696 Water for analytical laboratory use - Specification and test methods (ISO 3696:1987)

3 Principle

Oxidation of sulfite to sulfate in the presence of sulfite oxidase with the liberation of hydrogen peroxide at the same time.



Reduction of hydrogen peroxide and conversion of NADH to NAD⁺ in the presence of NADH peroxidase.



Conversion of NADH to NAD⁺ is determined spectrometrically and is proportional to the concentration of sulfite, see [1] to [6] in annex A.

4 Reagents

During the analysis, unless otherwise stated, use only reagents of recognized analytical grade and only water of at least grade 3 as defined in EN ISO 3696.

4.1 Ammonium sulfate

4.2 Ethylenediamine - N,N,N',N' - tetraacetic acid (EDTA)

4.3 Sodium hydrogen carbonate

4.4 Sodium sulfite

¹⁾ It has been shown that the analysis of isolated soy protein leads to false positive results in the range of 20 mg/kg to 30 mg/kg expressed as sulfur dioxide. Therefore, when analysing foodstuffs containing isolated soy proteins a proportional enhancement of the result may be obtained and is taken into account.