

**Toiduained.  
Termoluminestsentsmeetodil sellise  
kiiritatud toiduaine väljaselgitamine,  
millest saab silikaatseid mineraale  
eraldada**

Foodstuffs - Thermoluminescence detection of  
irradiated food from which silicate minerals can be  
isolated

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

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| <p>Käesolev Eesti standard EVS-EN 1788:2002 sisaldab Euroopa standardi EN 1788:2001 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 19.04.2002 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p> | <p>This Estonian standard EVS-EN 1788:2002 consists of the English text of the European standard EN 1788:2001.</p> <p>This document is endorsed on 19.04.2002 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><b>Käsitlusala:</b><br/>See Euroopa standard määrab kindlaks meetodi kiirgusega töödeldud toiduaine väljaselgitamiseks reostunud silikaatsete mineraalide termoluminestsentsanalüüsiga. Meetodit rakendatakse nende toiduainete korral, millest on võimalik küllaldases koguses silikaatseid mineraale eraldada.</p> | <p><b>Scope:</b></p> |
|---|----------------------|

ICS 67.050

Võtmesõnad:

English version

## Foodstuffs - Thermoluminescence detection of irradiated food from which silicate minerals can be isolated

Produits alimentaires - Détection par thermoluminescence  
d'aliments ionisés dont peuvent être extraits des minéraux  
silicatés

Lebensmittel - Thermolumineszenzverfahren zum  
Nachweis von bestrahlten Lebensmitteln, von denen  
Silikatminerale isoliert werden können

This European Standard was approved by CEN on 18 August 2001.

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



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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 replaces EN 1788:1996.

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 April 2002, and conflicting national standards shall be withdrawn at the latest by April 2002.

This document was elaborated on the basis of a protocol developed following a concerted action supported by the Commission of European Union (XII C.5). Experts and laboratories from E.U. and EFTA countries, contributed jointly to the development of this protocol.

This predecessor of this document has been prepared under a mandate given to CEN by the Commission of the European Communities and the European Free Trade Association.

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

The annex A is normative ; the annexes B and C are informative.

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.

## 1 Scope

This European Standard specifies a method for the detection of irradiation treatment of food and/or food ingredients by thermoluminescence analysis of contaminating silicate minerals. This method is applicable to those foodstuffs from which a sufficient amount of silicate minerals can be isolated.

The method has been successfully tested in interlaboratory tests with herbs and spices as well as their mixtures [1] to [3], shellfish including shrimps and prawns [4] to [6], both fresh and dehydrated fruits and vegetables [7] to [9], and potatoes [10]. Other studies [11] to [46] demonstrate that the method is applicable to a large variety of foodstuffs.

## 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 (including amendments).

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

## 3 Terms and definitions

For the purposes of this European Standard, the following terms and definitions apply.

### 3.1

#### **thermoluminescence (TL)**

light emission which occurs on heating a solid material in addition to black body radiation, due to the thermally stimulated release of trapped charge carriers

### 3.2

#### **TL intensity**

amount of light detected per unit temperature interval at a given heating rate. The integrated TL intensity over a stated temperature interval is measured in photon counts or coulombs.

### 3.3

#### **glow curve**

variation of TL intensity with temperature. The integral of the glow curve is expressed in counts or coulombs depending on the apparatus used.

### 3.4

#### **Glow 1**

glow curve recorded from the minerals of the prepared sample

### 3.5

#### **Glow 2**

glow curve recorded from the minerals of the prepared sample after measurement of Glow 1 and a subsequent exposure to a fixed known dose of radiation for the purpose of normalization

### 3.6

#### **TL glow ratio**

ratio of integrated TL intensities of Glow 1 to Glow 2, evaluated over a stated temperature interval

### 3.7

#### **Minimum Detectable integrated TL- intensity Level (MDL)**

full process blank level (Glow 1) plus three standard deviations over a stated temperature interval (full process blank levels should be measured in parallel with sample extractions using portions of the same stock solutions and following the procedure at all steps) defines the MDL, which should be consistent with freedom from luminescent contamination of discs, glassware and reagents (see Annex A)