

**Milk - Determination of freezing point - Thermistor  
cryoscope method (Reference method)**

This document is a preview generated by EVS

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN ISO 5764:2009 sisaldab Euroopa standardi EN ISO 5764:2009 ingliskeelset teksti.

Standard on kinnitatud Eesti Standardikeskuse 29.05.2009 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.

Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 01.05.2009.

Standard on kättesaadav Eesti standardiorganisatsioonist.

This Estonian standard EVS-EN ISO 5764:2009 consists of the English text of the European standard EN ISO 5764:2009.

This standard is ratified with the order of Estonian Centre for Standardisation dated 29.05.2009 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 01.05.2009.

The standard is available from Estonian standardisation organisation.

ICS 67.100.10

**Võtmesõnad:** agricultural products, congealing point, cryoscopes, dairy products, determination, food products, freezing point, measurement, milk, samples, solidification point, testing, tests, thermistors

### Standardite reprodutseerimis- ja levitamiseõigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonilisse süsteemi või edastamine ükskõik millises vormis või millisel teel on keelatud ilma Eesti Standardikeskuse poolt antud kirjaliku loata.

Kui Teil on küsimusi standardite autorikaitse kohta, palun võtke ühendust Eesti Standardikeskusega:  
Aru 10 Tallinn 10317 Eesti; [www.evs.ee](http://www.evs.ee); Telefon: 605 5050; E-post: [info@evs.ee](mailto:info@evs.ee)

### Right to reproduce and distribute belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without permission in writing from Estonian Centre for Standardisation.

If you have any questions about standards copyright, please contact Estonian Centre for Standardisation:  
Aru str 10 Tallinn 10317 Estonia; [www.evs.ee](http://www.evs.ee); Phone: 605 5050; E-mail: [info@evs.ee](mailto:info@evs.ee)

English Version

**Milk - Determination of freezing point - Thermistor cryoscope method (Reference method) (ISO 5764:2009)**

Lait - Détermination du point de congélation - Méthode au cryoscope à thermistance (Méthode de référence) (ISO 5764:2009)

Milch - Bestimmung des Gefrierpunktes - Thermistor-Kryoskop-Verfahren (Referenzverfahren) (ISO 5764:2009)

This European Standard was approved by CEN on 13 April 2009.

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 CEN 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 CEN Management Centre has the same status as the official versions.

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



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

## Foreword

This document (EN ISO 5764:2009) has been prepared by Technical Committee ISO/TC 34 "Agricultural food products" in collaboration with Technical Committee CEN/TC 302 "Milk and milk products - Methods of sampling and analysis" the secretariat of which is held by NEN.

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 2009, and conflicting national standards shall be withdrawn at the latest by November 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN ISO 5764:2002.

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

### Endorsement notice

The text of ISO 5764:2009 has been approved by CEN as a EN ISO 5764:2009 without any modification.

# Contents

Page

Foreword.....	iv
Foreword.....	v
1 <b>Scope</b> .....	1
2 <b>Normative references</b> .....	1
3 <b>Terms and definitions</b> .....	1
4 <b>Principle</b> .....	2
5 <b>Reagents</b> .....	2
6 <b>Apparatus</b> .....	3
7 <b>Sampling</b> .....	4
8 <b>Calibration of the thermistor cryoscope</b> .....	4
9 <b>Preparation of test sample</b> .....	5
9.1 <b>Preparation</b> .....	5
9.2 <b>Sample condition</b> .....	6
10 <b>Procedure</b> .....	6
10.1 <b>Preliminary checks</b> .....	6
10.2 <b>Routine calibration check</b> .....	6
10.3 <b>Determination</b> .....	6
11 <b>Calculation and expression of results</b> .....	7
11.1 <b>Calculation</b> .....	7
11.2 <b>Expression of results</b> .....	7
12 <b>Precision</b> .....	7
12.1 <b>Interlaboratory test</b> .....	7
12.2 <b>Repeatability</b> .....	7
12.3 <b>Reproducibility</b> .....	7
13 <b>Test report</b> .....	8
<b>Annex A (informative) Interlaboratory trial on bovine milk</b> .....	9
<b>Annex B (informative) Interlaboratory trial on raw ovine and caprine milk</b> .....	11
<b>Annex C (informative) Guidelines for the application of routine thermistor cryoscope methods</b> .....	13
<b>Annex D (informative) Adjustment of the freezing point value used as the reference for genuine milk</b> .....	16
<b>Bibliography</b> .....	17

---

# Milk — Determination of freezing point — Thermistor cryoscope method (Reference method)

## 1 Scope

This International Standard specifies a reference method for the determination of the freezing point of raw bovine milk, heat-treated whole, reduced fat and skimmed bovine milk, as well as raw ovine and caprine milk, by using a thermistor cryoscope.

The freezing point can be used to estimate the proportion of extraneous water in milk. Calculation of the amount of extraneous water is subject to daily and seasonal variations, and is not within the scope of this International Standard.

Results obtained from samples with a titratable acidity exceeding 20 ml of 0,1 mol/l sodium hydroxide solution per 10 g of non-fat solids are not representative of the original milk.

NOTE 1 Sterilization and vacuum pasteurization can affect the freezing point of milk (see Reference [5]).

NOTE 2 The method uses plateau-timed instruments. For routine measurements, other thermistor cryoscope methods, i.e. fixed time procedures, can be used. Guidelines for the application of other procedures are given in Annex C.

NOTE 3 The limit value mentioned for the titratable acidity in Clause 1 and 9.2 applies to bovine milk. It is possible that the limit values for ovine and caprine milk are higher.

## 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.

ISO 3696, *Water for analytical laboratory use — Specification and test methods*

ISO 6091, *Dried milk — Determination of titratable acidity (Reference method)*<sup>1)</sup>