

**Spetsiaalne tehniline keraamika.
Keraamiliste pulbermaterjalide
katsemeetodid. Osa 1: Lisandite
määramine alumiiniumis**

Advanced technical ceramics - Methods of test for
ceramic powders - Part 1: Determination of
impurities in alumina

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 725-1:2007 sisaldab Euroopa standardi EN 725-1:2007 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 22.11.2007 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 725-1:2007 consists of the English text of the European standard EN 725-1:2007.</p> <p>This document is endorsed on 22.11.2007 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:</p> <p>This Part of EN 725 specifies one fusion and one acid dissolution method for the determination of elements of sodium, potassium, iron, silicon, calcium and magnesium present as impurities in alumina using atomic absorption spectroscopy (AAS) or inductively coupled plasma (ICP) spectroscopy. For each element present as impurities, the methods are applicable to the following ranges, calculated as oxides :- Sodium oxide: 20 ppm to 6000 ppm - Potassium oxide: 20 ppm to 100 ppm - Ferric oxide: 20 ppm to 300 ppm - Silica: 50 ppm to 2000 ppm - Calcium oxide: 20 ppm to 700 ppm - Magnesium oxide: 5 ppm to 1000 ppm</p>	<p>Scope:</p> <p>This Part of EN 725 specifies one fusion and one acid dissolution method for the determination of elements of sodium, potassium, iron, silicon, calcium and magnesium present as impurities in alumina using atomic absorption spectroscopy (AAS) or inductively coupled plasma (ICP) spectroscopy. For each element present as impurities, the methods are applicable to the following ranges, calculated as oxides :- Sodium oxide: 20 ppm to 6000 ppm - Potassium oxide: 20 ppm to 100 ppm - Ferric oxide: 20 ppm to 300 ppm - Silica: 50 ppm to 2000 ppm - Calcium oxide: 20 ppm to 700 ppm - Magnesium oxide: 5 ppm to 1000 ppm</p>
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ICS 81.060.30

Võtmesõnad: aatomiabsorptsioonspektrofotomeetria, alumiiniumoksiid, kaaliumoksiidid, kaltsiumoksiidid, keemiline analüüs, keraamika, lisandid, magneesiumsulfaat, naatriumoksiidid, pulbermaterjalid, raudoksiidid, ränioksiidid, sisalduse määramine

English Version

Advanced technical ceramics - Methods of test for ceramic
powders - Part 1: Determination of impurities in alumina

Céramiques techniques avancées - Méthodes d'essai des
poudres céramiques - Partie 1 : Dosage des impuretés
dans l'alumine

Hochleistungskeramik - Prüfverfahren für keramische
Pulver - Teil 1: Bestimmung von Verunreinigungen in
Aluminiumoxidpulver

This European Standard was approved by CEN on 11 August 2007.

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.



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Foreword

This document (EN 725-1:2007) has been prepared by Technical Committee CEN/TC 184 "Advanced technical ceramics", the secretariat of which is held by BSI.

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 March 2008, and conflicting national standards shall be withdrawn at the latest by March 2008.

This document supersedes EN 725-1:1997.

EN 725 *Advanced technical ceramics — Methods of test for ceramic powders* was prepared in parts as follows:

- Part 1: *Determination of impurities in alumina*
- Part 2: *Determination of impurities in barium titanate*
- Part 3: *Determination of the oxygen content of non-oxides by thermal extraction with a carrier gas*
- Part 4: *Determination of oxygen content in aluminium nitride by XRF analysis*
- Part 5: *Determination of particle size distribution*
- Part 6: *Determination of the specific surface area* [withdrawn]
- Part 7: *Determination of the absolute density* [withdrawn]
- Part 8: *Determination of tapped bulk density*
- Part 9: *Determination of un-tapped bulk density*
- Part 10: *Determination of compaction properties*
- Part 11: *Determination of densification on natural sintering*
- Part 12: *Chemical analysis of zirconia*

Parts 6 and 7 of the series were superseded in 2005 by EN ISO 18757 and EN ISO 18753 respectively.

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 United Kingdom.

1 Scope

This Part of EN 725 specifies one fusion and one acid dissolution method for the determination of elements of sodium, potassium, iron, silicon, calcium and magnesium present as impurities in alumina using atomic absorption spectroscopy (AAS) or inductively coupled plasma (ICP) spectroscopy. For each element present as impurities, the methods are applicable to the following ranges, calculated as oxides :

- Sodium oxide: 20 ppm to 6000 ppm
- Potassium oxide: 20 ppm to 100 ppm
- Ferric oxide: 20 ppm to 300 ppm
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- Magnesium oxide: 5 ppm to 1000 ppm

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

EN ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories* (ISO/IEC 17025:2005)

3 Principle

A test sample is decomposed by using either a fusion method or an acid dissolution method.

NOTE The acid dissolution method cannot be used for the determination of silicon.

The solution is transferred to a volumetric flask and diluted to a known volume, and the elements are determined by AAS or ICP.

4 Reagents

4.1 General

During the analysis, use only reagents and calibration solutions of at least 99,99 % purity and water conforming to EN ISO 3696, Grade 3, or better.

4.2 Reagents for fusion

4.2.1 **Lithium metaborate** - LiBO_2

4.2.2 **Nitric acid** HNO_3 - ($\rho_{20} = 1,33 \text{ g/ml}$)