PD CEN/TS 15656:2015

BSI Standards Publication

Copper and copper alloys — Determination of phosphorus content — Spectrophotometric method

bsi.

...making excellence a habit.™

Document Sharing Hub

National foreword

This Published Document is the UK implementation of CEN/TS 15656:2015. It supersedes DD CEN/TS 15656:2009 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee NFE/34/1, Wrought and unwrought copper and copper alloys.

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

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

© The British Standards Institution 2015.
Published by BSI Standards Limited 2015

ISBN 978 0 580 87644 8

ICS 77.120.30

Compliance with a British Standard cannot confer immunity from legal obligations.

This Published Document was published under the authority of the Standards Policy and Strategy Committee on 30 April 2015.

Amendments/corrigenda issued since publication

Date	Text affected

Documents
Document Sharing Hub

Full document details: PD CEN/TS 15656:2015

TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CEN/TS 15656

April 2015

ICS 77.120.30

Supersedes CEN/TS 15656:2009

English Version

Copper and copper alloys - Determination of phosphorus content - Spectrophotometric method

Cuivre et alliages de cuivre - Détermination du phosphore - Méthode spectrophotométrique

Kupfer und Kupferlegierungen - Bestimmung des Phosphorgehaltes - Spektrophotometrisches Verfahren

This Technical Specification (CEN/TS) was approved by CEN on 24 February 2015 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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

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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

© 2015 CEN All rights of exploitation in any form and by any means reserved worldwide for CEN national Members.

Ref. No. CEN/TS 15656:2015 E

Documents
Document Sharing Hub

Full document details: PD CEN/TS 15656:2015

Contents

Page

Foreword 3

1 Scope 4

2 Normative references 4

3 Principle 4

4 Reagents 4

5 Apparatus 6

6 Sampling 6

7 Procedure 6
7.1 Preparation of the test portion solution 6
7.2 Blank test 6
7.3 Check test 7
7.4 Establishment of the calibration curve 7
7.5 Determination 10

8 Expression of results 11

9 Precision 11

10 Test report 12

Bibliography 13

Documents
Document Sharing Hub

Full document details: PD CEN/TS 15656:2015

Foreword

This document (CEN/TS 15656:2015) has been prepared by Technical Committee CEN/TC 133 “Copper and copper alloys”, the secretariat of which is held by DIN.

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 CEN/TS 15656:2009.

Within its programme of work, Technical Committee CEN/TC 133 requested CEN/TC 133/WG 10 "Methods of analysis" to prepare the revision of the following document:

CEN/TS 15656:2009, *Copper and copper alloys — Determination of phosphorus content — Spectrophotometric method*.

In comparison with CEN/TS 15656:2009 only editorial modifications have been made.

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

Documents
Document Sharing Hub
Full document details: PD CEN/TS 15656:2015

1 Scope

This Technical Specification specifies a molybdovanadate spectrophotometric method for the determination of phosphorus in copper and copper alloys in the form of castings or unwrought or wrought products.

The method is applicable to products having phosphorus mass fractions between 0,001 % and 0,5 %.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1811-1, *Copper and copper alloys — Selection and preparation of samples for chemical analysis — Part 1: Sampling of cast unwrought products*

ISO 1811-2, *Copper and copper alloys — Selection and preparation of samples for chemical analysis — Part 2: Sampling of wrought products and castings*

3 Principle

Dissolution of a test portion in nitric acid. Elimination of interfering elements by fuming with perchloric, hydrofluoric and hydrobromic acids. Decomposition of insoluble phosphates by fusion with sodium carbonate. For contents below 0,01 % mass fraction, extraction of phosphorus as phosphomolybdic acid and spectrophotometric determination as molybdenum blue; for contents between 0,005 % and 0,05 % mass fraction, extraction and spectrophotometric determination as phosphovanadomolybdic acid.

4 Reagents

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

4.1 Nitric acid, HNO_3 (ρ = 1,40 g/ml)

4.2 Nitric acid solution, 1 + 1

Add 500 ml of nitric acid (4.1) to 500 ml of water.

4.3 Hydrofluoric acid, HF (ρ = 1,13 g/ml)

4.4 Perchloric acid, $HClO_4$ (ρ = 1,67 g/ml)

4.5 Hydrobromic acid, HBr (ρ = 1,50 g/ml)

4.6 Isobutanol

4.7 Sodium carbonate, Na_2CO_3

4.8 Methanol

4.9 Methyl isobutyl ketone

Documents
Document Sharing Hub
Full document details: PD CEN/TS 15656:2015