SLOVENSKI STANDARD
SIST EN ISO 10426-4:2005

01-april-2005

Industrija za predelavo nafte in zemeljskega plina - Cementi in materiali za cementiranje vrtin - 4. del: Priprava in preskušanje penjenih cementnih past pri atmosferskem tlaku (ISO 10426-4:2004)

Petroleum and natural gas industries - Cements and materials for well cementing - Part 4: Preparation and testing of foamed cement slurries at atmospheric pressure (ISO 10426-4:2004)

Erdöl- und Erdgasindustrie - Zemente und Materialien für die Zementation von Tiefbohrungen - Teil 4: Vorbereitung und Prüfung von Schaumzementbrühen unter atmosphärischen Bedingungen (ISO 10426-4:2004)

Industrie du pétrole et du gaz naturel - Ciments et matériaux pour la cimentation des puits - Partie 4: Préparation et essais en conditions ambiantes des laitiers de ciment mousse (ISO 10426-4:2004)

Ta slovenski standard je istoveten z: **EN ISO 10426-4:2004**

ICS:

75.180.10	Oprema za raziskovanje in odkopavanje	Exploratory and extraction equipment
91.100.10	Cement. Mavec. Apno. Malta	Cement. Gypsum. Lime. Mortar

SIST EN ISO 10426-4:2005 **en**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 10426-4

December 2004

ICS 91.100.10; 75.020

English version

Petroleum and natural gas industries - Cements and materials for well cementing - Part 4: Preparation and testing of foamed cement slurries at atmospheric pressure (ISO 10426-4:2004)

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This European Standard was approved by CEN on 21 December 2004.

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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 Central Secretariat has the same status as the official versions.

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

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Foreword

The text of ISO 10426-4:2004 has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum and natural gas industries" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 10426-4:2004 by Technical Committee CEN/TC 12 "Materials, equipment and offshore structures for petroleum and natural gas industries" the secretariat of which is held by AFNOR.

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 June 2005, and conflicting national standards shall be withdrawn at the latest by June 2005.

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

Endorsement notice

The text of ISO 10426-4:2004 has been approved by CEN as EN ISO 10426-4:2004 without any modifications.

INTERNATIONAL STANDARD

ISO 10426-4

First edition
2004-03-01

Petroleum and natural gas industries — Cements and materials for well cementing —

Part 4: Preparation and testing of foamed cement slurries at atmospheric pressure

Industrie du pétrole et du gaz naturel — Ciments et matériaux pour la cimentation des puits —

Partie 4: Préparation et essais en conditions ambiantes des laitiers de ciment mousse

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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

ISO 10426-4 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 3, *Drilling and completion fluids, and well cements*.

ISO 10426 consists of the following parts, under the general title *Petroleum and natural gas industries — Cements and materials for well cementing*:

— *Part 1: Specification*

— *Part 2: Testing of well cements*

— *Part 3: Testing of deepwater well cement formulations*

— *Part 4: Preparation and testing of foamed cement slurries at atmospheric pressure*

— *Part 5: Determination of shrinkage and expansion of well cement formulations at atmospheric pressure*

Introduction

Users of this part of ISO 10426 should be aware that further or differing requirements may be needed for individual applications. This part of ISO 10426 is not intended to inhibit a vendor from offering, or the purchaser from accepting, alternative equipment or engineering solutions for the individual application. This may be particularly applicable where there is innovative or developing technology. Where an alternative is offered, the vendor should identify any variations from this International Standard and provide details.

Cements or cement blends used for foamed cement slurry preparation at atmospheric pressure should be fit for purpose. Such cements could include well cements of ISO Classes, high alumina cement, or other speciality cements. The cements and blending materials should conform to appropriate standards. Where International Standards do not exist, conformance with other appropriate standards should be made.

In this part of ISO 10426, where practical, U.S. Customary units are included in brackets for information.

Petroleum and natural gas industries — Cements and materials for well cementing —

Part 4: Preparation and testing of foamed cement slurries at atmospheric pressure

1 Scope

This part of ISO 10426 defines the methods for the generation and testing of foamed cement slurries and their corresponding unfoamed base cement slurries at atmospheric pressure.

2 Normative references

The following normative document is 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 10426-2:2003, *Petroleum and natural gas industries — Cements and materials for well cementing — Part 2: Testing of well cements*

3 Sampling

3.1 General

Samples of the cement material or cement blend, solid and liquid additives, and water used for mixing are required to test a foamed cement slurry in accordance with this part of ISO 10426. Accordingly, the best available sampling technology should be employed to ensure the test materials match as closely as possible those found at the well site.

3.2 Method

Applicable sampling techniques for the fluids and materials used in foamed cementing operations can be found in ISO 10426-2:2003, Clause 4. If required, the temperatures of the mix water, cement or cement blends, and liquid additives may be measured with a thermocouple or thermometer capable of measuring temperature with an accuracy of ± 2 °C (± 3,5 °F). These temperatures should be recorded. Temperature-measuring devices shall be calibrated (in the case of a thermocouple) or checked for accuracy (in the case of a thermometer) annually.

4 Slurry calculations

4.1 Calculation of base cement slurry composition with and without surfactant(s)

The final base cement slurry for preparing a foamed cement slurry contains surfactant(s), which cannot be added to the base cement slurry for initial mixing. This requires calculation of the relative mass percentage (mass fraction) of the surfactant(s) in the foamed cement slurry. This is done by taking the total mass of the