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Erdöl- und Erdgasindustrie – Zemente und Materialien für die Zementation von Tiefbohrungen – Teil 2: Prüfung von Bohrloch-Zemente (ISO 10426-2:2003 + Amd. 1:2005); Englische Fassung EN ISO 10426-2:2003 + A1:2005

Petroleum and natural gas industries – Cements and materials for well cementing – Part 2: Testing of well cements (ISO 10426-2:2003 + Amd. 1:2005); English version EN ISO 10426-2:2003 + A1:2005

Industries du pétrole et du gaz naturel – Ciments et matériaux pour la cimentation des puits – Partie 2: Essais de ciment pour puits (ISO 10426-2:2003 + Amd. 1:2005); Version anglaise EN ISO 10426-2:2003 + A1:2005

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Nationales Vorwort

Diese Europäische Norm wurde vom Technischen Komitee CEN/TC 12 „Materialien, Ausrüstungen und Offshore-Bauwerke für die Erdöl- und Erdgasindustrie“ (Sekretariat: Frankreich) erstellt. Es handelt sich dabei um die unveränderte Übernahme von EN ISO 10426-2:2003 einschließlich der Änderung 1:2005, erarbeitet von ISO/TC 67 „Materialien, Ausrüstungen und Offshore-Bauwerke für die Erdöl- und Erdgasindustrie; Unterkomitee SC 3, Bohrspülungen, Komplettierungsflüssigkeiten und Zemente“ (Sekretariat: Norwegen).

Für Deutschland hat hieran der Arbeitskreis NÖG 12/67 AK 3 „Bohrspülung und Zemente“ im Normenausschuss Erdöl- und Erdgasgewinnung (NÖG) mitgearbeitet.

Diese Europäische Norm enthält unter Berücksichtigung des DIN-Präsidialbeschlusses 13/1983 nur die englische Originalfassung der ISO-Norm.

Die Änderung (ISO 10426-2:2003/Amd.1:2005 übernommen als EN ISO 10426-2:2003/A1:2005) wurde in diese Ausgabe eingearbeitet und durch einen senkrechten Strich am Rand im Text gekennzeichnet. Hierbei handelt es sich um die zusätzlich aufgenommenen Abschnitte 3.1.52 und 16.8.

EUROPEAN STANDARD

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English Version

Petroleum and natural gas industries — Cements and materials for well cementing — Part 2: Testing of well cements (ISO 10426-2:2003 + A1:2005)

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Erdöl- und Erdgasindustrie — Zemente und Materialien für die Zementation von Tiefbohrungen — Teil 2: Prüfung von Bohrloch-Zemente (ISO 10426-2:2003 + A1:2005)

This European Standard was approved by CEN on 1 October 2003.

This admentment A1 modifies the European Standard EN ISO 10426-2:2003; it was approved by CEN on 13 August 2005.

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Foreword

This document (EN ISO 10426-2:2003) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum and natural gas industries" in collaboration with 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 April 2004, and conflicting national standards shall be withdrawn at the latest by April 2004.

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, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of ISO 10426-2:2003 has been approved by CEN as EN ISO 10426-2:2003 without any modifications.

Foreword Amendment 1

This document (EN ISO 10426-2:2003/A1:2005) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum and natural gas industries" in collaboration with 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 March 2006, and conflicting national standards shall be withdrawn at the latest by March 2006.

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 10426-2:2003 has been approved by CEN as EN ISO 10426-2:2003/A1:2005 without any modifications.

Introduction

This part of ISO 10426 is based on API RP 10B, 22nd edition, December 1997, addendum 1, October 1999.

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 part of ISO 10426 and provide details.

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

Well cement classes and grades are defined in ISO 10426-1.

1 Scope

This part of ISO 10426 specifies requirements and gives recommendations for the testing of cement slurries and related materials under simulated well conditions.

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 10414-1, *Petroleum and natural gas industries — Field testing of drilling fluids — Part 1: Water-based fluids*

API RP 13J, *Testing of heavy brines (second edition), March 1996*

ASTM C 109, *Standard test method for compressive strength of hydraulic cement mortars (using 2 in. or [50 mm] cube specimens)*

ASTM C 188, *Standard test method for density of hydraulic cement*

3 Terms, definitions and symbols

3.1 Terms and definitions

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

3.1.1
absolute volume
reciprocal of absolute density

NOTE It is expressed as volume per unit mass.

3.1.2
additive
material added to a cement slurry to modify or enhance some desired property

NOTE Common properties that are modified include: setting time (by use of retarders or accelerators), fluid loss control, viscosity, etc.

3.1.3
annulus
space surrounding the pipe in the wellbore

NOTE The outer wall of the annular space may be either surface or casing

3.1.4
assumed surface temperature
T_{AS}
assumed temperature at surface used for calculating a pseudo-temperature gradient

3.1.5
batch mixing
process of mixing and holding a volume of cement slurry prior to placement in the wellbore

3.1.6
Bearden units of consistency
units used to express consistency of a cement slurry when determined on a pressurized consistometer

NOTE The symbol for consistency when expressed in Bearden units is B_C.

3.1.7
blowout
point in time at which nitrogen flows through the sample in a fluid loss test

3.1.8
bulk density
mass per unit volume of a dry material containing entrained air

3.1.9
casing cementing
complete or partial annular cementing of a full casing string

3.1.10
cement
Portland cement
ground clinker generally consisting of hydraulic calcium silicates and aluminates and usually containing one or more of the forms of calcium sulfate as an interground addition

NOTE 1 Hydraulic calcium silicates and aluminates are those which harden under water.

NOTE 2 Interground additions are added before grinding, rather than after grinding.

3.1.11
cement class
cement type
designation achieved using the ISO system of classifications of well cement in accordance with its intended use

NOTE See ISO 10426-1 for further information.

3.1.12
cement grade
designation achieved using the ISO system for denoting the sulfate resistance of a particular cement

NOTE See ISO 10426-1 for further information.