

**Petroleum and natural gas industries -
Cements and materials for well
cementing - Part 4: Preparation and
testing of foamed cement slurries at
atmospheric pressure**

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materials for well cementing - Part 4: Preparation
and testing of foamed cement slurries at
atmospheric pressure

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 10426-4:2005 sisaldab Euroopa standardi EN ISO 10426-4:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 22.02.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 10426-4:2005 consists of the English text of the European standard EN ISO 10426-4:2004.</p> <p>This document is endorsed on 22.02.2005 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 ISO 10426 defines the methods for the generation and testing of foamed cement slurries and their corresponding unfoamed base cement slurries at atmospheric pressure.</p>	<p>Scope:</p> <p>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.</p>
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ICS 75.020, 91.100.10

Võtmesõnad:

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)**

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)

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)

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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.

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 $\pm 2\text{ }^{\circ}\text{C}$ ($\pm 3,5\text{ }^{\circ}\text{F}$). 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