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SWEDISH STANDARDS INSTITUTE

Petroleum- och naturgasindustri – Cement och material för källcementering –
Del 3: Provning av cementsammansättningar för djupvattensbrunnar (ISO 10426-3:2019)

Petroleum and natural gas industries – Cements and materials for well cementing –
Part 3: Testing of deepwater well cement formulations (ISO 10426-3:2019)

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Europastandarden EN ISO 10426-3:2019 gäller som svensk standard. Detta dokument innehåller den officiella engelska versionen av EN ISO 10426-3:2019.

Denna standard ersätter SS-EN ISO 10426-3:2006, utgåva 1

The European Standard EN ISO 10426-3:2019 has the status of a Swedish Standard. This document contains the official version of EN ISO 10426-3:2019.

This standard supersedes the SS-EN ISO 10426-3:2006, edition 1

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 10426-3

October 2019

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Supersedes EN ISO 10426-3:2004

English Version

Petroleum and natural gas industries - Cements and materials for well cementing - Part 3: Testing of deepwater well cement formulations (ISO 10426-3:2019)

Industries du pétrole et du gaz naturel - Ciments et matériaux pour la cimentation des puits - Partie 3: Essais de formulations de ciment pour puits en eau profonde (ISO 10426-3:2019)

Erdöl- und Erdgasindustrie - Zemente und Materialien für die Zementation von Tiefbohrungen - Teil 3: Prüfung von Unterwasser-Bohrlochzement (ISO 10426-3:2019)

This European Standard was approved by CEN on 9 June 2019.

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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 CEN-CENELEC Management Centre 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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European foreword

This document (EN ISO 10426-3:2019) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries" in collaboration with Technical Committee CEN/TC 12 “Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries” the secretariat of which is held by NEN.

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 2020, and conflicting national standards shall be withdrawn at the latest by April 2020.

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

This document supersedes EN ISO 10426-3:2004.

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

Endorsement notice

The text of ISO 10426-3:2019 has been approved by CEN as EN ISO 10426-3:2019 without any modification.

Introduction

The test methods contained in this document, though generally based on ISO 10426-2, consider the specialized sampling/testing requirements and unique downhole temperature profiles found in deepwater wells. ISO 10426-2 contains no applicable well simulation schedules for deepwater cementing operations.

In a deepwater cementing environment, several factors impact the thermal history of the cement slurry. These factors include: water depth, mud-line temperature, geothermal gradient, the presence or absence of a drilling riser, drilling fluid temperature, ocean current velocity, presence of thermoclines (layers of ocean water separated by temperature), ambient sea-surface temperature, cement mix-water temperature, bulk cement temperature, cement mixing rate, cement heat of hydration, displacement rate, prior circulating and static event history, drill pipe size and mass, casing size and mass, and hole size.

In this way, the testing of the cement formulation can reflect as closely as possible the actual temperature profile found during field cementing operations.

Numerical modelling can be used to determine the relative magnitude of the input variables so that "most likely" and "less likely" scenarios of temperature history can be assessed. The values of some input variables might not be known precisely, and a range of possible values needs to be employed. Physical laboratory testing can then be conducted at "most likely" conditions, with some additional testing at "less likely" conditions to determine the sensitivity to well conditions. Sound engineering judgement can then be applied to assess the risks.

These procedures serve not only for the testing of well cements under deepwater well conditions but can also be used in those circumstances where low seafloor temperatures are found at shallow water depths.

Well cements that can be used in deepwater well cementing can include those of ISO Classes A, C, G or H (as given in ISO 10426-1[1]), high-alumina cement, appropriate foamed cements, various types of ductile cement compositions, etc.

In this document, where practical, United States customary (USC) units are included in parentheses for information.