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

**Part 1:
Specification**

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

Partie 1: Spécification



Reference number
ISO 10426-1:2009(E)

PDF disclaimer

This PDF file may contain embedded typefaces. In accordance with Adobe's licensing policy, this file may be printed or viewed but shall not be edited unless the typefaces which are embedded are licensed to and installed on the computer performing the editing. In downloading this file, parties accept therein the responsibility of not infringing Adobe's licensing policy. The ISO Central Secretariat accepts no liability in this area.

Adobe is a trademark of Adobe Systems Incorporated.

Details of the software products used to create this PDF file can be found in the General Info relative to the file; the PDF-creation parameters were optimized for printing. Every care has been taken to ensure that the file is suitable for use by ISO member bodies. In the unlikely event that a problem relating to it is found, please inform the Central Secretariat at the address given below.



COPYRIGHT PROTECTED DOCUMENT

© ISO 2009

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

Published in Switzerland

Contents

Page

Foreword	iv
Introduction.....	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
4 Requirements.....	3
4.1 Specification, chemical and physical requirements.....	3
4.2 Sampling frequency, timing of tests, and equipment.....	7
5 Sampling procedure	8
6 Fineness tests.....	8
6.1 Procedure	8
6.2 Requirements.....	8
7 Preparation of slurry for free fluid, compressive strength and thickening time tests	8
7.1 Apparatus	8
7.2 Procedure	11
8 Free-fluid test (formerly free water)	11
8.1 Apparatus	11
8.2 Calibration	16
8.3 Procedure	17
8.4 Calculation of percent free fluid	17
8.5 Acceptance requirements.....	18
9 Compressive strength tests	18
9.1 Apparatus	18
9.2 Procedure	19
9.3 Test procedure (after ASTM C109/C109M).....	21
9.4 Compressive strength acceptance criteria.....	21
10 Thickening-time tests.....	22
10.1 Apparatus	22
10.2 Calibration	28
10.3 Procedure	31
10.4 Thickening time and consistency.....	33
10.5 Specification acceptance requirements.....	33
11 Marking	33
12 Packing	34
13 Bentonite	34
Annex A (informative) Calibration procedures for thermocouples, temperature measuring systems, and controllers	35
Bibliography.....	38

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 10426-1 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*.

This third edition cancels and replaces the second edition (ISO 10426-1:2005), which has been technically revised.

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*
- *Part 6: Methods for determining the static gel strength of cement formulations*

Introduction

This part of ISO 10426 is based on ISO 10426-1:2005 with the intent that the 24th edition of API Spec 10A will be identical to this part of ISO 10426.

It is necessary that users of this part of ISO 10426 be aware that further or differing requirements can be required 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 can be particularly applicable where there is innovative or developing technology. Where an alternative is offered, it is the responsibility of the vendor to identify any variations from this part of ISO 10426 and provide details.

In this part of ISO 10426, where practical, US Customary (USC) or other units are included in brackets for information. The units do not necessarily represent a direct conversion of SI to USC units, or USC to SI. Consideration has been given to the precision of the instrument making the measurement. For example, thermometers are typically marked in 1° increments, thus temperature values have been rounded to the nearest degree.

In this part of ISO 10426, calibrating an instrument refers to assuring the accuracy of the measurement. Accuracy is the degree of conformity of a measurement of a quantity to its actual or true value. Accuracy is related to precision, or reproducibility, of a measurement. Precision is the degree to which further measurements or calculations will show the same or similar results. Precision is characterized in terms of the standard deviation of the measurement. The results of calculations or a measurement can be accurate, but not precise, precise but not accurate, neither or both. A result is valid if it is both accurate and precise.