SLOVENSKI STANDARD
SIST EN ISO 10427-3:2005

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Industrija za predelavo nafte in zemeljskega plina ï Oprema za cementiranje vrtin ï 3. del: Preskuġanje lastnosti opreme za cementiranje plavajoļ ih struktur (ISO 10427-3:2003)

Petroleum and natural gas industries - Equipment for well cementing - Part 3: Performance testing of cementing float equipment (ISO 10427-3:2003)

Erdöl- und Erdgasindustrie - Ausrüstungen für die Bohrloch-Zementierung - Teil 3: Festigkeitsprüfung der Zementierung schwimmender Ausrüstungen (ISO 10427-3:2003)

Industries du pétrole et du gaz naturel - Equipement de cimentation de puits - Partie 3: Essais de performance des équipements de cimentation des cuvelages (ISO 10427-3:2003)

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ICS:

75.180.10	Oprema za raziskovanje in odkopavanje	Exploratory and extraction equipment

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Petroleum and natural gas industries - Equipment for well cementing - Part 3: Performance testing of cementing float equipment (ISO 10427-3:2003)

Industries du pétrole et du gaz naturel - Equipement de cimentation de puits - Partie 3: Essais de performance des équipements de cimentation des cuvelages (ISO 10427-3:2003)

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This European Standard was approved by CEN on 30 September 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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Foreword

The text of ISO 10427-3:2003 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 10427-3:2004 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of an identical text or by endorsement, at the latest by April 2005, and conflicting national standards shall be withdrawn at the latest by April 2005.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 10427-3:2003 has been approved by CEN as EN ISO 10427-3:2004 without any modifications.

INTERNATIONAL STANDARD

ISO 10427-3

First edition
2003-04-01

Petroleum and natural gas industries — Equipment for well cementing —

Part 3: Performance testing of cementing float equipment

Industries du pétrole et du gaz naturel — Matériel pour la cimentation des puits —

Partie 3: Mode opératoire des tests des équipements de cimentation des cuvelages

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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 10427-3 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 first edition cancels and replaces the first edition of ISO 18165, which has undergone an ISO number change and a minor revision.

ISO 10427 consists of the following parts, under the general title *Petroleum and natural gas industries — Equipment for well cementing*:

— *Part 1: Casing bow-spring centralizers*

— *Part 2: Centralizer placement and stop-collar testing*

— *Part 3: Performance testing of cementing float equipment*

Introduction

This part of ISO 10427 is based on API Recommended Practice 10F, second edition, November, 1995.

Users of this part of ISO 10427 should be aware that further or differing requirements may be needed for individual applications. This part of ISO 10427 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 10427 and provide details.

In this part of ISO 10427, where practical, U.S. Customary units are included in brackets for information.

Petroleum and natural gas industries — Equipment for well cementing —

Part 3: Performance testing of cementing float equipment

1 Scope

This part of ISO 10427 describes testing practices to evaluate the performance of cementing float equipment for the petroleum and natural gas industries.

This part of ISO 10427 is applicable to float equipment that will be in contact with water-based fluids used for drilling and cementing wells. It is not applicable to float equipment performance in non-water-based fluids.

2 Functions of cementing float equipment

The term “cementing float equipment” refers to one or more check valves incorporated into a well casing string that prevent fluid flow up the casing while allowing fluid flow down the casing. The primary purpose of cementing float equipment is to prevent cement that has been placed in the casing/wellbore annulus from flowing up the casing (U-tubing). In some cases, such as liner cementing, float equipment may be the only practical means of preventing U-tubing. In other cases, the float equipment serves to allow the cement to set in the annulus without having to increase the pressure inside the casing to prevent U-tubing. Increased pressure in the casing while cement sets is generally undesirable because it can result in gaps (micro-annuli) in the cemented annulus.

Float equipment is also sometimes used for the purpose of lessening the load on the drilling rig. Since float equipment blocks fluid flow up the casing, the buoyant force acting on casing run with float equipment is greater than the buoyant force acting on casing run without float equipment. If either the height or the density of the fluid placed inside casing equipped with float equipment while the casing is being run is less than that of the fluid outside the casing, the suspended weight of the casing is reduced compared with what it would be without the float equipment.

The ability of float equipment to prevent fluid flow up the casing is also important in certain well control situations. If the hydrostatic pressure of the fluid inside the casing becomes less than the pressure of formation fluids in formations near the bottom of the casing, fluids from the well may try to flow up the casing. In such a situation, the float equipment becomes a primary well control device.

Float equipment is also sometimes used as a device to assist in pressure testing of casing. This is normally done by landing one or more cementing plugs on top of the float equipment assembly. The plugs seal the casing so that the pressure integrity of the casing may be tested.

Float equipment is also used by some operators as a device to lessen the free fall of cement inside the casing. The free fall of cement is the tendency of cement to initially fall due to the density differences between the cement and the fluid in the well. The float equipment lessens the free fall, to some extent, by providing a constriction in the flow path.

Casing fill-up float equipment is a special type of float equipment that allows the casing to fill from the bottom as the casing is run. This is desirable, in some cases, to help reduce pressure surges as the casing is lowered. Fill-up type float equipment also helps ensure that the collapse pressure of the casing is not exceeded. Once the casing is run, the check valve mechanism of fill-up type float equipment is activated. This is normally done by either pumping a surface-released ball through the equipment or by circulating above a certain rate.