SLOVENSKI STANDARD
SIST EN ISO 13678:2012

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Nadomešča:
SIST EN ISO 13678:2009

Industrija za predelavo nafte in zemeljskega plina - Ovrednotenje in preskušanje navojnih spojev za uporabo pri zaščitnih, proizvodnih (dvižnih) in vrtalnih elementih (ISO 13678:2010)

Petroleum and natural gas industries - Evaluation and testing of thread compounds for use with casing, tubing, line pipe and drill stem elements (ISO 13678:2010)

Erdöl- und Erdgasindustrie - Beurteilung und Prüfung von Gewindefetten zur Verwendung an Futter-, Steig- und Leitungsrohren und an Bohrgestängeteilen (ISO 13678:2010)

Industries du pétrole et du gaz naturel - Évaluation et essais des graisses pour filetage utilisées pour les tubes de cuvelage, les tubes de production, les tubes de conduites et les éléments de garnitures de forage (ISO 13678:2010)

Ta slovenski standard je istoveten z: **EN ISO 13678:2012**

ICS:

75.180.10	Oprema za raziskovanje in odkopavanje	Exploratory and extraction equipment

SIST EN ISO 13678:2012 **en,fr**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 13678

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ICS 75.180.10

Supersedes EN ISO 13678:2009

English Version

Petroleum and natural gas industries - Evaluation and testing of thread compounds for use with casing, tubing, line pipe and drill stem elements (ISO 13678:2010)

Industries du pétrole et du gaz naturel - Évaluation et essais des graisses pour filetage utilisées pour les tubes de cuvelage, les tubes de production, les tubes de conduites et les éléments de garnitures de forage (ISO 13678:2010)

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This European Standard was approved by CEN on 3 December 2011.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

The text of ISO 13678:2010 has been prepared by Technical Committee ISO/TC 67 “Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 13678:2012 by Technical Committee CEN/TC 12 “Materials, equipment and offshore structures for petroleum, petrochemical 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 July 2012, and conflicting national standards shall be withdrawn at the latest by July 2012.

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Endorsement notice

The text of ISO 13678:2010 has been approved by CEN as a EN ISO 13678:2012 without any modification.

INTERNATIONAL STANDARD

ISO 13678

Third edition
2010-12-01

Petroleum and natural gas industries — Evaluation and testing of thread compounds for use with casing, tubing, line pipe and drill stem elements

Industries du pétrole et du gaz naturel — Évaluation et essais des graisses pour filetage utilisées pour les tubes de cuvelage, les tubes de production, les tubes de conduites et les éléments de garnitures de forage

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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 13678 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 5, *Casing, tubing and drill pipe*.

This third edition cancels and replaces the second edition (ISO 13678:2009), of which it constitutes a minor revision.

It is the intent of ISO/TC 67 that the second and third editions of ISO 13678 both be applicable, at the option of the purchaser, for a period of six months from the first day of the calendar quarter immediately following the date of publication of this third edition, after which period the second edition will no longer be applicable.

Introduction

This International Standard is based on API RP 5A3[9], second edition, July 2003, with errata and inclusion of all clauses of API RP 7A1[1)][13], first edition, November 1992, incorporated into Annex I.

This International Standard specifies requirements and gives recommendations for the manufacture, testing and selection of thread compounds for use on casing, tubing, line pipe and drill stem elements based on the current industry consensus of good engineering practice.

It is intended that the words casing and tubing apply to the service application, rather than to the diameter of the pipe.

The performance requirements of thread compounds for use with casing, tubing, line pipe, premium connections and rotary shouldered connections include:

a) consistent frictional properties that allow both proper and uniform connection engagement;

b) adequate lubrication properties to resist galling or damage of connection contact surfaces during make-up and breakout;

c) adequate sealing properties for thread-type seal connections and/or not inhibiting the sealing properties of non-thread sealing connections (e.g. metal-to-metal seals, polytetrafluoroethylene seals, etc.) depending upon service requirements;

d) physical and chemical stability both in service and in expected compound storage conditions;

e) properties that allow effective application to the connection contact surfaces in expected service conditions and environment.

In addition, compounds for rotary shouldered connections provide:

— lubrication of the connection members during make-up to achieve the proper axial bearing stress;

— an effective seal between connection shoulders to prevent wash-out by drilling fluids;

— more uniform distribution of circumferential bearing stress if shoulders are not parallel;

— resistance to additional make-up down hole.

When evaluating the suitability of a thread compound, the user can define the service conditions and then consider field trials and field service experience in addition to laboratory test results. Appropriate supplementary tests can be utilized for specific applications which are not evaluated by the tests herein. The user and manufacturer are encouraged to discuss service applications and limitations of the compound being considered.

Representatives of users and/or other third-party personnel are encouraged to monitor tests wherever possible. Interpolation and extrapolation of test results to other products, even of similar chemical composition, are not recommended.

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1) Obsolete. Incorporated into this International Standard.

Testing in compliance with this International Standard does not in itself ensure adequate thread compound/connection system performance in field service. The user has the responsibility of evaluating the results obtained from the recommended procedures and test protocols and determining whether the thread compound/connection system in question meets the anticipated requirements of that particular field service application.

Petroleum and natural gas industries — Evaluation and testing of thread compounds for use with casing, tubing, line pipe and drill stem elements

1 Scope

This International Standard provides requirements, recommendations and methods for the testing of thread compounds intended for use on threaded casing, tubing, and line pipe connections; and for thread compounds intended for use on rotary shouldered connections. The tests outlined are used to evaluate the critical performance properties and physical and chemical characteristics of thread compounds under laboratory conditions.

These test methods are primarily intended for thread compounds formulated with a lubricating base grease and are not applicable to some materials used for lubricating and/or sealing thread connections. It is recognized that many areas can have environmental requirements for products of this type. This International Standard does not include requirements for environmental compliance. It is the responsibility of the end user to investigate these requirements and to select, use and dispose of the thread compounds and related waste materials accordingly.

2 Conformance

2.1 Dual citing of normative references

In the interest of world-wide application of this International Standard, Technical Committee ISO/TC 67 has decided, after detailed technical analysis, that certain of the normative documents listed in Clause 3 and prepared by ISO/TC 67 or another ISO Technical Committee are interchangeable in the context of the relevant requirement with the relevant document prepared by the American Petroleum Institute (API), the American Society for Testing and Materials (ASTM) and the American National Standards Institute (ANSI). These latter documents are cited in the running text following the ISO reference and preceded by “or”, for example “ISO XXXX or API YYYY”. Application of an alternative normative document cited in this manner will lead to technical results different from those obtained from the use of the preceding ISO reference. However, both results are acceptable and these documents are thus considered interchangeable in practice.

2.2 Units of measurement

In this International Standard, data are expressed in both the International System (SI) of units and the United States Customary (USC) system of units. For a specific order item, it is intended that only one system of units be used, without combining data expressed in the other system.

Products manufactured to specifications expressed in either of these unit systems shall be considered equivalent and totally interchangeable. Consequently, compliance with the requirements of this International Standard as expressed in one system provides compliance with requirements expressed in the other system.

For data expressed in the SI system, a comma is used as the decimal separator and a space as the thousands separator. For data expressed in the USC system, a dot (on the line) is used as the decimal separator and a space as the thousands separator. In the text, data in SI units are followed by data in USC units in parentheses.

3 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 2137, *Petroleum products and lubricants — Determination of cone penetration of lubricating greases and petrolatum*

ISO 2176, *Petroleum products — Lubricating grease — Determination of dropping point*

ASTM D217, *Standard Test Methods for Cone Penetration of Lubricating Grease*

ASTM D2265, *Standard Test Method for Dropping Point of Lubricating Grease Over Wide Temperature Range*

ASTM D4048, *Standard Test Method for Detection of Copper Corrosion from Lubricating Grease*

4 Terms and definitions

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

4.1
API connection
pipe assembly consisting of two external threaded connectors (pins) and a coupling with two internal threaded connectors (box) or one pin and an integral box manufactured in accordance with ISO/API specifications

4.2
API modified thread compound
compound designated as “modified thread compound” in API BUL 5A2[8]

NOTE API BUL 5A2 is obsolete and has been replaced by API RP 5A3[9].

4.3
box
connector with internal threads

4.4
casing, tubing and line pipe
CT and LP
production and delivery tubulars

4.5
drill stem elements
components of the drilling assembly from the swivel or top drive to the bit, composed of the kelly, drill string, subs, drill collars and other down-hole tools such as stabilizers and reamers

4.6
pin
connector with external threads

4.7
premium connection
connection with or without metal-to-metal seal(s) that can provide greater clearance and/or higher performance properties when compared to the API connections

4.8
proprietary connection
connection, without published specifications, made and marketed by companies with exclusive rights to manufacture and/or sell

4.9
reference standard formulation
⟨casing, tubing and line pipe⟩ thread compound formulated, in accordance with the requirements of Annex B, to include the limitations and tolerances specified in Tables B.1, B.2 and B.3

4.10
reference standard formulation
⟨rotary shouldered connection⟩ thread compound formulated in accordance with the requirements of I.4.2.3

NOTE The reference standard formulations are not intended for general field service.

4.11
rotary shouldered connection
RSC
connection used on drill stem elements, which has threads and sealing shoulders

4.12
seal
barrier resisting the passage of fluids, gases and liquids

4.13
storage compound
substance applied to threaded pipe connections for protection against corrosion, during shipment and/or storage only, that is not used for connection make-up

4.14
thread compound
substance applied to threaded pipe connections prior to make-up for lubrication during assembly and disassembly and for assistance in sealing internal and external pressures

NOTE Some thread compounds can also contain substances that provide storage compound properties.

4.15
thread compound/connection system
system consisting of the various critical threaded pipe connection components, including the specific connection geometry and the individual connection materials and coatings combined with the thread compound

4.16
tool joint
threaded connector used to join sections of drill pipe

5 Thread compound characteristics

5.1 Product characteristics

This International Standard outlines tests to characterize the performance of thread compounds under service conditions, rather than specifying the formulation. Thus, the purchaser and the manufacturer should agree on the product characteristics to be provided, such as the following:

— thickener type;

— fluid type;