SLOVENSKI STANDARD
SIST EN ISO 15156-1:2021

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Nadomešča:
SIST EN ISO 15156-1:2015

Industrija za predelavo nafte in zemeljskega plina - Materiali za uporabo v okoljih s H2S v proizvodnji olja in plina - 1. del: Splošna načela za izbiro materialov, odpornih proti razpokam (ISO 15156-1:2020)

Petroleum and natural gas industries - Materials for use in H2S-containing environments in oil and gas production - Part 1: General principles for selection of cracking-resistant materials (ISO 15156-1:2020)

Erdöl- und Erdgasindustrie - Werkstoffe für den Einsatz in H<(Index)2>S-haltiger Umgebung bei der Öl- und Gasgewinnung - Teil 1: Allgemeine Grundlagen für die Auswahl von gegen Rissbildung beständigen Werkstoffen (ISO 15156-1:2020)

Industries du pétrole et du gaz naturel - Matériaux pour utilisation dans des environnements contenant de l'hydrogène sulfuré (H2S) dans la production de pétrole et de gaz - Partie 1: Principes généraux pour le choix des matériaux résistant à la fissuration (ISO 15156-1:2020)

Ta slovenski standard je istoveten z: **EN ISO 15156-1:2020**

ICS:

75.180.10	Oprema za raziskovanje, vrtanje in odkopavanje	Exploratory, drilling and extraction equipment
77.060	Korozija kovin	Corrosion of metals

SIST EN ISO 15156-1:2021 **en,fr,de**

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English Version

Petroleum and natural gas industries - Materials for use in H2S-containing environments in oil and gas production - Part 1: General principles for selection of cracking-resistant materials (ISO 15156-1:2020)

Industries du pétrole et du gaz naturel - Matériaux pour utilisation dans des environnements contenant de l'hydrogène sulfuré (H2S) dans la production de pétrole et de gaz - Partie 1: Principes généraux pour le choix des matériaux résistant à la fissuration (ISO 15156-1:2020)

Erdöl und Erdgasindustrie - Werkstoffe für den Einsatz in H2S haltiger Umgebung bei der Öl und Gasgewinnung - Teil 1: Allgemeine Grundlagen für die Auswahl von gegen Rissbildung beständigen Werkstoffen (ISO 15156 1:2020)

This European Standard was approved by CEN on 12 October 2020.

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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Ref. No. EN ISO 15156-1:2020 E

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European foreword

This document (EN ISO 15156-1:2020) 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 May 2021, and conflicting national standards shall be withdrawn at the latest by May 2021.

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.

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Endorsement notice

The text of ISO 15156-1:2020 has been approved by CEN as EN ISO 15156-1:2020 without any modification.

INTERNATIONAL STANDARD

ISO 15156-1

Fourth edition
2020-11

Petroleum and natural gas industries — Materials for use in H_2S-containing environments in oil and gas production —

Part 1: General principles for selection of cracking-resistant materials

Industries du pétrole et du gaz naturel — Matériaux pour utilisation dans des environnements contenant de l'hydrogène sulfuré (H_2S) dans la production de pétrole et de gaz —

Partie 1: Principes généraux pour le choix des matériaux résistant à la fissuration

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 12, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 15156-1:2015), which has been technically revised. The main changes compared to the previous edition are as follows:

— new definition on "galvanically induced hydrogen stress cracking" (see 3.14), "chemical activity" (see 3.27) and "fugacity" (see 3.28);

— inclusion of an expanded description of factors affecting the susceptibility of materials to cracking caused by H_2S. The expanded description includes specific guidance provided in ISO 15156-2:2020, Annex C for gas phase containing systems using H_2S fugacity (as an alternative to H_2S partial pressure) and application of non-ideal thermodynamic rules for gas-free liquid systems.

A list of all parts in the ISO 15156 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The consequences of sudden failures of metallic oil and gas field components, associated with their exposure to H_2S-containing production fluids, led to the preparation of the first edition of NACE MR0175, which was published in 1975 by the National Association of Corrosion Engineers, now known as NACE International.

The original and subsequent editions of NACE MR0175 established limits of H_2S partial pressure above which precautions against sulfide stress cracking (SSC) were always considered necessary. They also provided guidance for the selection and specification of SSC-resistant materials when the H_2S thresholds were exceeded. In more recent editions, NACE MR0175 has also provided application limits for some corrosion-resistant alloys, in terms of environmental composition and pH, temperature, and H_2S partial pressures.

In separate developments, the European Federation of Corrosion issued EFC Publication 16 in 1995 and EFC Publication 17 in 1996. These documents are generally complementary to those of NACE though they differed in scope and detail.

In 2003, the publication of the ISO 15156 series and NACE MR0175/ISO 15156 was completed for the first time. These technically identical documents utilized the above sources to provide requirements and recommendations for materials qualification and selection for application in environments containing wet H_2S in oil and gas production systems. They are complemented by NACE TM0177 and NACE TM0284 test methods.

The revision of this document, i.e. ISO 15156-1, involves a consolidation of all changes agreed and published in the Technical Circular 1, ISO 15156-1:2015/Cir.1:2017, published by the ISO 15156 series Maintenance Agency secretariat at DIN.

The changes were developed by, and approved by the ballot of, representative groups from within the oil and gas production industry. The great majority of these changes stem from issues raised by document users. A description of the process by which these changes were approved can be found at the ISO 15156 series maintenance website: www.iso.org/iso15156maintenance.

When found necessary by oil and gas production industry experts, future interim changes to this document will be processed in the same way and will lead to interim updates to this document in the form of Technical Corrigenda or Technical Circulars. Document users should be aware that such documents can exist and can impact the validity of the dated references in this document.

The ISO 15156 series Maintenance Agency at DIN was set up after approval by the ISO Technical Management Board given in document 34/2007. This document describes the makeup of the agency, which includes experts from NACE, EFC, and ISO/TC 67, and the process for approval of amendments. It is available from the ISO 15156 series maintenance website and from the ISO/TC 67 Secretariat. The website also provides access to related documents that provide more detail of the ISO 15156 series maintenance activities.