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Naftna in plinska industrija, vključno z nizkoogljično energijo - Cevni sistemi na plavajočih proizvodnih objektih in v kopenskih obratih - 2. del: Materiali (ISO 13703 -2:2023)

Oil and gas industries including lower carbon energy - Piping systems on offshore platforms and onshore plants - Part 2: Materials (ISO 13703-2:2023)

Erdöl- und Erdgasindustrie - Rohrleitungssysteme auf Offshore-Förderplattformen und Onshore-Anlagen - Teil 2: Rohrleitungswerkstoff (ISO 13703-2:2023)

Industries du pétrole et du gaz, y compris les énergies à faible teneur en carbone - Conception et installation des systèmes de tuyauterie sur les plates-formes de production en mer et les installations à terre - Partie 2: Matériels (ISO 13703-2:2023)

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75.180.10	Oprema za raziskovanje, vrtanje in odkopavanje	Exploratory, drilling and extraction equipment

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European foreword

This document (EN ISO 13703-2:2023) has been prepared by Technical Committee ISO/TC 67 "Oil and gas industries including lower carbon energy" in collaboration with Technical Committee CEN/TC 12 “Oil and gas industries including lower carbon energy” 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of an identical text or by endorsement, at the latest by April 2024, and conflicting national standards shall be withdrawn at the latest by April 2024.

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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INTERNATIONAL STANDARD

ISO 13703-2

First edition
2023-10

Oil and gas industries including lower carbon energy — Piping systems on offshore platforms and onshore plants —

Part 2: **Materials**

Industries du pétrole et du gaz, y compris les énergies à faible teneur en carbone — Conception et installation des systèmes de tuyauterie sur les plates-formes de production en mer et les installations à terre —

Partie 2: Matériels

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Foreword

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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 document 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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This document was prepared by Technical Committee ISO/TC 67, *Oil and gas industries including lower carbon energy*, Subcommittee SC 6, *Process equipment, piping, systems, and related safety,* in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 12, *Oil and gas industries including lower carbon energy,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This first edition of ISO 13703-2, together with ISO 13703-1 and ISO 13703-3, cancels and replaces ISO 13703:2000, which has been technically revised. It also incorporates the Technical Corrigendum ISO 13703:2000/Cor.1:2002.

The main changes compared to the previous edition are as follows:

— deletion of the installation and quality control requirements in Clause 10;

— deletion of former Annex C as requirements are addressed in ASME B31.3;

— addition of material data sheets.

A list of all parts in the ISO 13703 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.

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Introduction

Requirements are defined in material datasheets and element datasheets, which can be used for the specification and procurement of materials for piping systems. Common fabrication, welding, inspection, examination and testing requirements of piping systems are covered by ISO 13703-3.

Local, national or regional regulations can also affect the specification of piping materials.

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Oil and gas industries including lower carbon energy — Piping systems on offshore platforms and onshore plants —

Part 2: Materials

1 Scope

This document provides a set of common supplementary requirements for the most frequently used materials in upstream oil and gas piping systems.

This document is applicable to offshore and onshore production facilities, processing and gas liquefaction plants. The materials covered in this document are intended to be used in the following piping systems services:

— category D, category M, normal and high pressure, according to ASME B31.3;

— sour environments as defined in the ISO 15156 series.

NOTE For the purposes of this document, ANSI/NACE MR0175 is equivalent to the ISO 15156 series, and ANSI/NACE MR0103 is equivalent to ISO 17945.

This document does not provide guidelines for material selection. The selection of suitable materials for a specific service including any necessary additional material requirements remains the responsibility of the end user.

This document does not cover requirements related to:

— sulfide stress cracking (SSC) in corrosive petroleum refining environments included in ISO 17945;

— non-metallic piping systems according to ASME B31.3 or the ISO 14692 series;

— marine piping systems, e.g. ballasting piping system, covered by classification rules;

— subsea production systems;

— downhole equipment;

— transportation pipeline systems, including flowlines, designed in accordance with a recognized pipeline design code.

Common requirements related to manufacture, inspection and procurement of piping and valve parts are included in Annex A and Annex B, providing material datasheets and element datasheets, respectively. These material and element datasheets can be applied for applications other than piping systems, e.g. pressure vessels and pumps based upon assessment of the end user and conformance with the selected design code for the relevant equipment. This document is not intended to limit the use of alternative materials or grades within a referenced material standard. Where the use of alternative materials/grades are considered appropriate, the end user is responsible for specifying any additional requirements necessary to meet the design code or specification.

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2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3452 (all parts), *Non-destructive testing — Penetrant testing*

ISO 4499-2, *Hardmetals — Metallographic determination of microstructure — Part 2: Measurement of WC grain size*

ISO 4499-4, *Hardmetals — Metallographic determination of microstructure — Part 4: Characterisation of porosity, carbon defects and eta-phase content*

ISO 4624, *Paints and varnishes — Pull-off test for adhesion*

ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*

ISO 9606, *Qualification testing of welders — Fusion welding*

ISO 10474, *Steel and steel products — Inspection documents*

ISO 10684, *Fasteners — Hot dip galvanized coatings*

ISO 10893-11, *Non-destructive testing of steel tubes — Part 11: Automated ultrasonic testing of the weld seam of welded steel tubes for the detection of longitudinal and/or transverse imperfections*

ISO 11970, *Specification and qualification of welding procedures for production welding of steel castings*

ISO 14732, *Welding personnel — Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials*

ISO 15156 (all parts), *Petroleum and natural gas industries — Materials for use in H_2S-containing environments in oil and gas production*

ISO 15614-1, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys*

ISO 15614-5, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 5: Arc welding of titanium, zirconium and their alloys*

ISO 15614-7, *Specification and qualification of welding procedures for metallic materials — Welding procedure test — Part 7: Overlay welding*

ISO 17637, *Non-destructive testing of welds — Visual testing of fusion-welded joints*

ISO 17781, *Petroleum, petrochemical and natural gas industries — Test methods for quality control of microstructure of ferritic/austenitic (duplex) stainless steels*

ISO 17782, *Petroleum, petrochemical and natural gas industries — Scheme for conformity assessment of manufacturers of special materials*

ISO 27509, *Petroleum and natural gas industries — Compact flanged connections with IX seal ring*

ISO 28079, *Hardmetals — Palmqvist toughness test*

ISO 6507-1, *Metallic materials — Vickers hardness test — Part 1: Test method*

ANSI/MSS SP-55, *Quality standard for steel castings for valves, flanges, fittings, and other piping components - visual method for evaluation of surface irregularities*

ANSI/NACE TM0284, *Evaluation of pipeline and pressure vessel steels for resistance to hydrogen-induced cracking*

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