
Naftna in plinska industrija, vključno z nizkoogljično energijo - Nevarjeni izdelki iz korozijsko odpornih zlitin, ki se uporabljajo kot zaščitne, proizvodne in priključne cevi ter pribor - Tehnični dobavni pogoji (ISO/DIS 13680:2026)

Oil and gas industries including lower carbon energy - Corrosion-resistant alloy seamless products for use as casing, tubing, coupling stock and accessory material - Technical delivery conditions (ISO/DIS 13680:2026)

Sample Document

Industries du pétrole et du gaz, y compris les énergies à faible teneur en carbone - Produits sans soudure en acier allié résistant à la corrosion utilisés comme tubes de cuvelage, tubes de production, tubes-ébauches pour manchons et matériau pour accessoires - Conditions techniques de livraison (ISO/DIS 13680:2026)

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75.180.10	Oprema za raziskovanje, vrtanje in odkopavanje	Exploratory, drilling and extraction equipment
77.140.75	Jeklene cevi in cevni profili za posebne namene	Steel pipes and tubes for specific use

oSIST prEN ISO 13680:2026

en,fr,de

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DRAFT International Standard

ISO/DIS 13680

Oil and gas industries including lower carbon energy — Corrosion- resistant alloy seamless products for use as casing, tubing, coupling stock and accessory material — Technical delivery conditions

Industries du pétrole et du gaz, y compris les énergies à faible teneur en carbone — Produits sans soudure en acier allié résistant à la corrosion utilisés comme tubes de cuvelage, tubes de production, tubes-ébauches pour manchons et matériau pour accessoires — Conditions techniques de livraison

ICS: 75.180.10; 77.140.75

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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 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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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, *Oil and gas industries including lower carbon energy*, Subcommittee SC 5, *Casing, tubing and drill pipe*.

This sixth edition cancels and replaces the fifth edition (ISO 13680:2024), which has been technically revised.

The main changes are as follows:

- addition of [Annex J](#) on provisions for threading and applying couplings
- addition of [Annex K](#) on procedures used to convert from SI units to USC units
- consolidation of former groups 3 and 4 into a unique group 3
- removal of 13-1-0 category and 13-5-2 grade 80; addition of 27-34-4 category; addition of 13-5-2 grade 110 PSL-2
- clarification of stress-relieving and drift requirements
- clarification of straightening, MPQT requirements, lot size, surface hardness testing and PMI for bars
- addition of mandatory Charpy V-Notch at –46 °C (–50 °F) and pitting corrosion testing for group 2
- addition of retest provision on hardness variation
- addition of semi-automated or automated methods for diameter and straightness measurement, clarification of capability records for Automatic Machine vision system
- addition of minimum facility requirements for manufacturers
- addition of chemical composition ranges for PSL-1 tubular product
- review of microscopic cleanliness requirements and acceptance limits
- improvement of [Annex H](#), including addition of anisotropy characterization testing

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- addition of photographic examples for group 1 in [Annex I](#).

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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WARNING — It is the purchaser's responsibility to specify the product specification level (PSL), corrosion-resistant alloy (CRA) group, category, grade, delivery conditions and any other requirement in addition to those specified herewith to ensure that the product is adequate for the intended service environment. The NACE MR0175/ISO 15156 series should be applied when making specific requirements for H₂S-containing environments; see [Annex G](#). It is the product user's responsibility to ensure that the product is suitable for the intended application with respect to all environmental degradation threats during both normal operation and system upsets. Not all PSL-1 categories and grades can be made cracking resistant in accordance with the NACE MR0175/ISO 15156 series and are, therefore, not included in PSL-2.

1 Scope

This document specifies the technical delivery conditions for corrosion-resistant alloy seamless products for casing, tubing, coupling stock and accessory material (including coupling stock and accessory material from bar) for two product specification levels:

- PSL-1, which is the basis of this document;
- PSL-2, which provides additional requirements for a product that is intended to be both corrosion and cracking resistant for the environments and qualification method specified in [Annex G](#) and in the NACE MR0175/ISO 15156 series.

This document contains no provisions relating to the connection of individual lengths of pipe, except what is included in [Annex J](#). Demonstration of conformance to NACE MR0175/ISO 15156 series of material affected by end sizing, connection manufacture or welding operations is outside the scope of this document.

This document is applicable to the following four groups of products:

- a) group 1, which is composed of stainless alloys with a martensitic or martensitic/ferritic structure;
- b) group 2, which is composed of stainless alloys with a ferritic-austenitic structure, such as duplex and super-duplex stainless alloy;
- c) group 3, which is composed of solid solution nickel-based alloys with an austenitic structure;

NOTE Former groups 3 and 4 in ISO 13680:2024 have been consolidated in the above group 3 to align with NACE MR0175/ISO 15156 series. There is no more group 4. Group 5 remains without any change in order to avoid confusion with previous editions of this document.

- d) group 5, which is composed of bar only ([Annex F](#)) in age-hardened (AH) nickel-based alloys with austenitic structure.

2 Normative references

The following documents, as applicable for the product, 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.

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- ISO 377, *Steel and steel products — Location and preparation of samples and test pieces for mechanical testing*
- ISO 404, *Steel and steel products — General technical delivery requirements*
- ISO 525, *Bonded abrasive products — Shape types, designation and marking*
- ISO 643, *Steels — Micrographic determination of the apparent grain size*
- ISO 3452-1, *Non-destructive testing — Penetrant testing — Part 1: General principles*
- ISO 4885, *Ferrous materials — Heat treatments — Vocabulary*
- ISO 4948-1, *Steels — Classification — Part 1: Classification of steels into unalloyed and alloy steels based on chemical composition*
- ISO 4948-2, *Steels — Classification — Part 2: Classification of unalloyed and alloy steels according to main quality classes and main property or application characteristics*
- ISO 6508-1, *Metallic materials — Rockwell hardness test — Part 1: Test method*
- ISO 6508-2, *Metallic materials — Rockwell hardness test — Part 2: Verification and calibration of testing machines and indenters*
- ISO 6892-1, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature*
- ISO 6892-2, *Metallic materials — Tensile testing — Part 2: Method of test at elevated temperature*
- ISO 6929, *Steel products — Vocabulary*
- ISO 8501-1, *Preparation of steel substrates before application of paints and related products — Visual assessment of surface cleanliness — Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings*
- ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel*
- ISO 9934-1, *Non-destructive testing — Magnetic particle testing — Part 1: General principles*
- ISO 10423, *Petroleum and natural gas industries — Drilling and production equipment — Wellhead and tree equipment*
- ISO 10474, *Steel and steel products — Inspection documents*
- ISO 10893-2, *Non-destructive testing of steel tubes — Part 2: Automated eddy current testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of imperfections*
- ISO 10893-3, *Non-destructive testing of steel tubes — Part 3: Automated full peripheral flux leakage testing of seamless and welded (except submerged arc-welded) ferromagnetic steel tubes for the detection of longitudinal and/or transverse imperfections*
- ISO 10893-4, *Non-destructive testing of steel tubes — Part 4: Liquid penetrant inspection of seamless and welded steel tubes for the detection of surface imperfections*
- ISO 10893-5, *Non-destructive testing of steel tubes — Part 5: Magnetic particle inspection of seamless and welded ferromagnetic steel tubes for the detection of surface imperfections*
- ISO 10893-8, *Non-destructive testing of steel tubes — Part 8: Automated ultrasonic testing of seamless and welded steel tubes for the detection of laminar imperfections*
- ISO 10893-10, *Non-destructive testing of steel tubes — Part 10: Automated full peripheral ultrasonic testing of seamless and welded (except submerged arc-welded) steel tubes for the detection of longitudinal and/or transverse imperfections*
- ISO 10893-12, *Non-destructive testing of steel tubes — Part 12: Automated full peripheral ultrasonic thickness testing of seamless and welded (except submerged arc-welded) steel tubes*

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- ISO 11484, *Steel products — Employer's qualification system for non-destructive testing (NDT) personnel*
- ISO 14284, *Steel and iron — Sampling and preparation of samples for the determination of chemical composition*
- NACE MR0175, *ISO 15156 (all parts), Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production*
- ISO 17782, *Petroleum, petrochemical and natural gas industries — Scheme for conformity assessment of manufacturers of special materials*
- ISO 21920-2, *Geometrical product specifications (GPS) — Surface texture: Profile — Part 2: Terms, definitions and surface texture parameters*
- ISO 80000-1, *Quantities and units — Part 1: General*
- API RP 578, *Guidelines for a Material Verification Program (MVP) for New and Existing Assets*
- API Spec 5CT, *Casing and Tubing*
- API Spec 6A, *Specification for Wellhead and Christmas Tree Equipment*
- API Standard 6ACRA, *Age-hardened Nickel-based Alloys for Oil and Gas Drilling and Production Equipment*
- ASNT SNT-TC-1A, *Recommended Practice — Personnel Qualification and Certification in Nondestructive Testing*
- ASTM A370, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*
- ASTM A604/A604M, *Standard Practice for Macroetch Testing of Consumable Electrode Remelted Steel Bars and Billets*
- ASTM A941, *Standard Terminology Relating to Steel, Stainless Steel, Related Alloys and Ferroalloys*
- ASTM E9, *Standard Test Methods of Compression Testing of Metallic Materials at Room Temperature*
- ASTM E18, *Standard Test Methods for Rockwell Hardness of Metallic Materials*
- ASTM E21, *Standard Test Methods for Elevated Temperature Tension Tests of Metallic Materials*
- ASTM E23, *Standard Test Methods for Notched Bar Impact Testing of Metallic Materials*
- ASTM E29, *Standard Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications*
- ASTM E45, *Standard Test Methods for Determining the Inclusion Content of Steel*
- ASTM E110, *Standard Test Method for Rockwell and Brinell Hardness of Metallic Materials by Portable Hardness Testers*
- ASTM E112, *Standard Test Methods for determining the average Grain Size*
- ASTM E165, *Standard Practice for Liquid Penetrant Examination for General Industry*
- ASTM E213, *Standard Practice for Ultrasonic Testing of Metal Pipe and Tubing*
- ASTM E309, *Standard Practice for Eddy-Current Examination of Steel Tubular Products Using Magnetic Saturation*
- ASTM E340, *Standard Test Method for Macroetching Metals and Alloys*
- ASTM E381, *Standard Method of Macroetch Testing Steel Bars, Billets, Blooms, and Forgings*
- ASTM E562, *Standard Test Method for Determining Volume Fraction by Systematic Manual Point Count*
- ASTM E570, *Standard Practice for Flux Leakage Examination of Ferromagnetic Steel Tubular Products*

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ASTM E1245, *Standard Practice for Determining the Inclusion or Second-Phase Constituent Content of Metals by Automatic Image Analysis*

ASTM E1476, *Standard Guide for Metals Identification, Grade Verification, and Sorting*

ASTM E3024, *Standard Practice for Magnetic Particle Testing for General Industry*

ASTM G48, *Standard Test Methods for Pitting and Crevice Corrosion Resistance of Stainless Steels and Related Alloys by Use of Ferric Chloride Solution*

DIN 50106, *Testing of metallic materials - Compression test at room temperature*

NORSOK M-650, *Qualification of manufacturers of special materials*

3 Terms, definitions, abbreviated terms and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 377, ISO 404, ISO 4885, ISO 4948-1, ISO 4948-2, ISO 6929, ISO 10474, ASTM A941 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1.1

accessory material

seamless *casing* (3.1.4) or *tubing* (3.1.29) or seamless thick-walled tube or *bar stock* (3.1.3) used for the manufacture of accessories

3.1.2

anisotropy

difference in mechanical properties depending on the sample orientation (longitudinal or transverse) and testing orientation (tension or compression)

Note 1 to entry: Anisotropy is typically compared on measured yield strength in the transverse to longitudinal tension orientation and in longitudinal tension to longitudinal compression orientation.

3.1.3

bar stock

bar

material with a solid uniform cross-section along its whole *length* (3.1.16)

3.1.4

casing

tube intended to line the walls of a drilled well

3.1.5

cold-hardened

CH

material condition where the mechanical properties are obtained by a cold finishing process not followed by heat treatment

Note 1 to entry: Cold finishing is a plastic deformation of material below the recrystallization temperature such that permanent strain hardening occurs.

3.1.6

connection

threaded assembly of tubular components

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3.1.7

corrosion-resistant alloy**CRA**

alloy intended to be resistant to general and localized corrosion and/or environmental cracking in environments that are corrosive to carbon and low-alloy steels

Note 1 to entry: The corrosion-resistant alloys included in this document are special alloys in accordance with ISO 4948-1 and ISO 4948-2.

3.1.8

coupling

internally threaded cylinder for joining two lengths of threaded pipe

3.1.9

coupling blank

unthreaded material used to produce an individual coupling

3.1.10

coupling stock

seamless thick-wall *product* ([3.1.22](#)) used for the manufacture of *coupling blanks* ([3.1.9](#))

3.1.11

defect

imperfection ([3.1.13](#)) having sufficient magnitude to warrant rejection of the *length* ([3.1.16](#))

Note 1 to entry: Based on criteria defined in this document.

3.1.12

heat

material of the same category melted in the same manufacturing process at the same time sequence poured into multiple ingots or continuous strand cast. In case of a remelted alloy, each ingot shall be a different heat.

3.1.13

imperfection

discontinuity on the *product* ([3.1.22](#)) surface or in the product wall that can be detected by visual inspection or non-destructive examination

3.1.14

label 1

dimensionless designation for the size or specified outside diameter that can be used when ordering *pipe* ([3.1.20](#))

3.1.15

label 2

dimensionless designation for the linear density that can be used when ordering *pipe* ([3.1.20](#))

Note 1 to entry: Linear density is sometimes designated by the deprecated term “mass per unit length”.

3.1.16

length

piece of *product* ([3.1.22](#))

3.1.17

linear imperfection

imperfection ([3.1.13](#)) including, but not limited to, seams, laps, cracks, plug scores, cuts and gouges

3.1.18

manufacturer

a pipe mill, bar mill, processor, coupling manufacturer and/or pup-joint manufacturer (see [Clause 15](#)) that performs activities on a product to establish the characteristics satisfying the requirements of this specification