

SLOVENSKI PREDSTANDARD

oSIST prEN ISO 3183:2005

julij 2005

Naftna industrija in industrija zemeljskega plina – Jeklene cevi za cevovodne sisteme (ISO/DIS 3183:2005)

Petroleum and natural gas industries - Steel pipe for pipeline transportation systems (ISO/DIS 3183:2005)

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English version

Petroleum and natural gas industries - Steel pipe for pipeline transportation systems (ISO/DIS 3183:2005)

Industries du pétrole et du gaz naturel - Tubes en acier pour le transport des fluides combustibles (ISO/DIS 3183.:2005)

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (prEN ISO 3183:2005) has been prepared by Technical Committee ISO/TC 67 "Materials, equipment and offshore structures for petroleum and natural gas industries" in collaboration with Technical Committee CEN/TC 29 "Steel tubes and fittings for steel tubes", the secretariat of which is held by UNI.

This document is currently submitted to the parallel Enquiry.

This document will supersede EN 10208-1:1997 and EN 10208-2:1996.

Endorsement notice

The text of ISO 3183:2005 has been approved by CEN as prEN ISO 3183:2005 without any modifications.

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DRAFT INTERNATIONAL STANDARD ISO/DIS 3183

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Petroleum and natural gas industries — Steel pipe for pipeline transportation systems

Industries du pétrole et du gaz naturel — Tubes en acier pour les systèmes de transport par conduites

[Revision of ISO 3183-1:1996, 3183-2:1996 and 3183-3:1999]

ICS 75.200; 77.140.75

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The CEN Secretary-General has advised the ISO Secretary-General that this ISO/DIS covers a subject of interest to European standardization. **In accordance with the ISO-lead mode of collaboration as defined in the Vienna Agreement, consultation on this ISO/DIS has the same effect for CEN members as would a CEN enquiry on a draft European Standard.** Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month FDIS vote in ISO and formal vote in CEN.

In accordance with the provisions of Council Resolution 15/1993 this document is circulated in the English language only.

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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 3183 was prepared by Technical Committee ISO/TC 67, *Materials and equipment for petroleum and natural gas industries*, Subcommittee SC 2, *Pipeline transportation systems*.

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Introduction

This International Standard is the result of harmonizing the requirements of the following standards:

API Specification 5L Forty-Third Edition, March 2004, Specification for Line Pipe

ISO 3183-1:1996, Petroleum and natural gas industries — Steel pipe for pipelines — Technical delivery conditions — Part 1: Pipes of requirement class A

ISO 3183-2:1996, Petroleum and natural gas industries — Steel pipe for pipelines — Technical delivery conditions — Part 2: Pipes of requirement class B

ISO 3183-3:1999, Petroleum and natural gas industries — Steel pipe for pipelines — Technical delivery conditions — Part 3: Pipes of requirement class C

This edition of ISO 3183 cancels and replaces ISO 3183-1:1996, ISO 3183-2:1996, and ISO 3183-3:1999.

In the preparation of this edition of ISO 3183, the technical committee recognized that there are two basic levels of standard technical requirements for line pipe and therefore agreed to establish requirements for two product specification levels (PSL 1 and PSL 2). Level PSL 1 provides a standard quality level for line pipe. Level PSL 2 has additional mandatory requirements for chemical composition, notch toughness, and strength properties. Requirements that apply to only PSL 1 or to only PSL 2 are so designated. Requirements that are not designated to a specific PSL designation apply to both PSL 1 and PSL 2. A correspondence table comparing this edition of ISO 3183 with the four standards used in the harmonization is given in Annex L.

The technical committee also recognized that the petroleum and natural gas industry often specifies additional requirements for particular applications. In order to facilitate the use of ISO 3183, optional additional requirements are available for special applications as follows:

- PSL 2 pipe ordered with a qualified manufacturing procedure (Annex B)
- PSL 2 pipe ordered with resistance to ductile fracture propagation in gas pipelines (Annex G)
- PSL 2 pipe ordered for sour service (Annex H)
- Pipe ordered as TFL pipe (Annex I)
- PSL 2 pipe ordered for offshore service (Annex J)

This International Standard does not provide guidance on when the above supplementary requirements should be specified. Instead, the purchaser should specify, based upon the intended use and design requirements, whether any of the supplementary requirements apply for a particular purchase order.

Petroleum and natural gas industries — Steel pipe for pipeline transportation systems

1 Scope

This International Standard specifies requirements for the manufacture of two product specification levels (PSL 1 and PSL 2) of seamless and welded steel pipes for use in pipeline transportation systems in the petroleum and natural gas industries.

This International Standard is not applicable to cast pipe.

2 Conformance

2.1 Units of measurement

In this International Standard, data are expressed in both SI units and USC units. For a specific order item, unless otherwise stated, only one system of units shall be used, without combining data expressed in the other system.

For data expressed in SI units, a comma is used as the decimal separator and a space is used as the thousands separator. For data expressed in USC units, a dot (on the line) is used as the decimal separator and a space is used as the thousands separator.

2.2 Rounding

Unless otherwise stated in this International Standard, to determine conformance with the specified requirements, observed or calculated values shall be rounded to the nearest unit in the last right-hand place of figures used in expressing the limiting value, in accordance with ISO 31-0:1992, Annex B, Rule A.

NOTE For the purposes of this provision, the rounding method of ASTM E 29-02 [1] is equivalent to ISO 31-0:1992, Annex B, Rule A.

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 31-0:1992, *Quantities and units — Part 0: General principles*

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 2566-1, *Steel — Conversion of elongation values — Part 1: Carbon and low alloy steels* ISO 4885, *Ferrous products — Heat treatments — Vocabulary*

ISO 6506 (all parts), *Metallic materials — Brinell hardness test*

ISO 6507 (all parts), *Metallic materials — Vickers hardness test*

ISO 6508 (all parts), *Metallic materials — Rockwell hardness test* ISO 6892, *Metallic materials — Tensile testing at ambient temperatures*

ISO 6929, *Steel products — Definitions and classification*

ISO 7438, *Metallic materials — Bend test*

ISO 7539-2, *Corrosion of metals and alloys — Stress corrosion testing — Part 2: Preparation and use of bent-beam specimens*

ISO 8491, *Metallic materials — Tube (in full section) — Bend test*

ISO 8492, *Metallic materials — Tube — Flattening test*

ISO 8501-1:1988, *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 9303:1989, *Seamless and welded (except submerged arc-welded) steel tubes for pressure purposes — Full peripheral ultrasonic testing for the detection of longitudinal imperfections*

ISO 9304:1989, *Seamless and welded (except submerged arc-welded) steel tubes for pressure purposes — Eddy current testing for the detection of imperfections*

ISO 9305:1989, *Seamless steel tubes for pressure purposes — Full peripheral ultrasonic testing for the detection of transverse imperfections*

ISO 9402:1989, *Seamless and welded (except submerged arc-welded) steel tubes for pressure purposes — Full peripheral magnetic transducer/flux leakage testing of ferromagnetic steel tubes for the detection of longitudinal imperfections*

ISO 9598:1989, *Seamless steel tubes for pressure purposes — Full peripheral magnetic transducer/flux leakage testing of seamless ferromagnetic steel tubes for the detection of transverse imperfections*

ISO 9764:1989, *Electric resistance and induction welded steel tubes for pressure purposes — Ultrasonic testing of the weld seam for the detection of longitudinal imperfections*

ISO 9765:1990, *Submerged arc-welded steel tubes for pressure purposes — Ultrasonic testing of the weld seam for the detection of longitudinal and/or transverse imperfections*

ISO/TR 9769, *Steel and iron — Review of available methods of analysis*

ISO 10124:1994, *Seamless and welded (except submerged arc-welded) steel tubes for pressure purposes — Ultrasonic testing for the detection of laminar imperfections*

ISO 10474:1991, *Steel and steel products — Inspection documents*

ISO 10543, *Seamless and hot stretch-reduced welded steel tubes for pressure purposes — Full peripheral ultrasonic thickness testing*

ISO 11484, *Steel tubes for pressure purposes — Qualification and certification of non-destructive testing (NDT) personnel*

ISO 11496, *Seamless and welded steel tubes for pressure purposes — Ultrasonic testing of tube ends for the detection of laminar imperfections*

ISO 11699-1:1998, *Non-destructive testing — Industrial radiographic films — Part 1: Classification of film systems for industrial radiography*

ISO 12094:1994, *Welded steel tubes for pressure purposes — Ultrasonic testing for the detection of laminar imperfections in strips/plates used in the manufacture of welded tubes*

ISO 12095, *Seamless and welded tubes for pressure purposes — Liquid penetrant testing*

ISO 12096:1996, *Submerged arc-welded steel tubes for pressure purposes — Radiographic testing of the weld seam for the detection of imperfections*

ISO 12135, *Metallic materials — Unified method of test for the determination of quasistatic fracture toughness*

ISO 13663:1995, *Welded steel tubes for pressure purposes — Ultrasonic testing of the area adjacent to the weld seam for the detection of laminar imperfections*

ISO 13664, *Seamless and welded steel tubes for pressure purposes — Magnetic particle inspection of the tube ends for the detection of laminar imperfections*

ISO 13665, *Seamless and welded steel tubes for pressure purposes — Magnetic particle inspection of the tube body for the detection of surface imperfections*

ISO 13678, *Petroleum and natural gas industries — Evaluation and testing of thread compounds for use with casing, tubing and line pipe*

ISO 14284, *Steel and iron — Sampling and preparation of samples for the determination of chemical composition*

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ISO 15156-2:2003, *Petroleum and natural gas industries — Materials for use in H₂S-containing environments in oil and gas production — Part 2: Cracking-resistant carbon and low alloy steels, and the use of cast irons*

ISO 19232-1:2004, *Petroleum and natural gas industries — Image quality of radiographs — Part 1: Image quality indicators (wire type) — Determination of image quality value*

API Spec 5B, *Specification for Threading, Gauging, and Thread Inspection of Casing, Tubing, and Line Pipe Threads (US customary units)*

API RP 5A3, *Recommended Practice for Thread Compounds for Casing, Tubing, and Line Pipe*

API RP 5L3, *Recommended Practice for Conducting Drop-weight Tear Tests on Line Pipe*

(American Petroleum Institute, 1220 L Street, N.W., Washington, DC 20005, USA)

ASNT SNT-TC-1A, *Recommended Practice No. SNT-TC-1A*

(American Society for Nondestructive Testing, 1711 Arlingate Lane, Columbus, Ohio 43228-0518)

ASTM A 370, *Standard Test Methods and Definitions for Mechanical Testing of Steel Products*

ASTM A 751, *Standard Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products*

ASTM A 941, *Terminology Relating to Steel, Stainless Steel, Related Alloys, and Ferroalloys*

ASTM E 8, *Standard Test Methods for Tension Testing of Metallic Materials*