Specification for Line Pipe

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ISO 3183:2007 (Modified), Petroleum and natural gas industries—Steel pipe for pipeline transportation systems

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API Foreword

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Standards referenced herein may be replaced by other international or national standards that can be shown to meet or exceed the requirements of the referenced standard.

This American National Standard is under the jurisdiction of the API Subcommittee 5 on Tubular Goods. ISO 3183 was prepared by Technical Committee ISO/TC 67, *Materials, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, SC2, *Pipeline transportation systems*.

In this American National Standard, certain technical modifications have been made. These technical modifications from the ISO Standard have not been incorporated directly into this API (US) national adoption. The normative modifications have been noted with an arrow ($\xrightarrow[\text{Annex N}]{}$) adjacent to the clause, table, figure, etc. that has been modified.

A complete list of modifications can be found in the normative Annex N.

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Suggested revisions are invited and should be submitted to the Standards and Publications Department, API, 1220 L Street, NW, Washington, DC 20005, standards@api.org.

Contents

Annex N

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, equipment and offshore structures for petroleum, petrochemical and natural gas industries*, Subcommittee SC 2, *Pipeline transportation systems*.

This second edition of ISO 3183 cancels and replaces ISO 3183-1:1996, ISO 3183-2:1996 and ISO 3183-3:1999 which have been technically revised. It is the intent of TC 67 that the first and second edition of ISO 3183 shall both be applicable, at the option of the purchaser (as defined in 4.37), for a period of six months from the first day of the calendar quarter immediately following the date of publication of this second edition, after which period ISO 3183-1:1996, ISO 3183-2:1996 and ISO 3183-3:1999 will no longer be applicable.

Introduction

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

— API Spec 5L;

— ISO 3183-1:1996;

— ISO 3183-2:1996;

— ISO 3183-3:1999.

In the preparation of this second 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 and additional NDE. 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 table comparing this edition of ISO 3183 with the with the predecessor International Standard ISO 3183 (all parts) and API Spec 5L and used in the harmonization of these documents is given for information in Annex M.

The technical committee also recognized that the petroleum and natural gas industry often specifies additional requirements for particular applications. In order to accommodate such needs, optional additional requirements for special applications are available, 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 “Through the Flowline” (TFL) pipe (Annex I);

— PSL 2 pipe ordered for offshore service (Annex J).

The requirements of the annex(es) apply only when it is (they are) specified on the purchase order.

When pipe is ordered for dual or multiple applications, the requirements of more than one annex for special applications can be invoked. In such instances, if a technical conflict arises due to applying the requirements of more than one annex for special applications, the most stringent requirement applicable to the intended service shall apply.

This International Standard does not provide guidance on when it is necessary to specify the above supplementary requirements. Instead, it is the responsibility of the purchaser to specify, based upon the intended use and design requirements, which, if any, of the supplementary requirements apply for a particular purchase order.

Since ISO 3183 is the result of harmonizing documents of different heritage, consideration has had to be given to traditional symbols (denoting mechanical or physical properties or their values, dimensions or test parameters) and the format of equations that have been widely used and which (in their traditional format) often maintain strong links with other widely used standards and specifications, and with the original scientific work that led to their derivation. Accordingly, although in some instances changes to established symbols and equations have been made to optimize alignment with the ISO/IEC Directives, Part 2, in other instances, some

symbols and equations, most specifically those in 9.2 and Clause F.4, have been retained in their traditional form to avoid causing confusion in this post-harmonization stage. Where changes have been made, care has been taken to ensure that the new symbol replacing the traditional one has been fully and clearly defined. Consideration for complete alignment with the ISO/IEC Directives, Part 2, will be given at the next revision of this International Standard.

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 Conformity

2.1 Units of measurement

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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 29-04 [1] is equivalent to ISO 31-0:1992, Annex B, Rule A.

→ Annex N

2.3 Compliance to this International Standard

A quality system should be applied to assist compliance with the requirements of this International Standard.

NOTE ISO/TS 29001 [2] gives sector-specific guidance on quality management systems.

A contract can specify that the manufacturer shall be responsible for complying with all of the applicable requirements of this International Standard. It shall be permissible for the purchaser to make any investigation necessary in order to be assured of compliance by the manufacturer and to reject any material that does not comply.