Third edition
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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

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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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

Working Group 16 of ISO/TC 67/SC 2 meets jointly with the Line Pipe Working Group (currently WG 4210) of the American Petroleum Institute (API) to ensure the harmonization of ISO 3183 with API Specification 5L.

This third edition of ISO 3183 cancels and replaces the second edition (ISO 3183:2007), on which it is based but with revisions to incorporate updating, clarification and additional technical requirements.

The second edition of ISO 3183 was harmonized to a great extent with the 44th edition of API 5L, published on 1 October 2007, and the revisions produced by the joint ISO and API Working Groups are intended to extend or complete harmonization with the new 45th edition of API 5L.

It is the intent of ISO/TC 67 that the second and third editions of ISO 3183 shall both be applicable, at the option of the purchaser (as defined in 4.49), for a period of six months from the first day of the calendar quarter immediately following the date of publication of this third edition, after which period, the second edition (ISO 3183:2007) will no longer be applicable.

Introduction

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

— API Spec 5L; 44th edition published 1 October 2007;

— ISO 3183:2007; second edition published 15 March 2007.

In the preparation of this third edition of ISO 3183, the technical committee has maintained the concept of two basic levels of standard technical requirements for line pipe expressed as 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 non-destructive testing (NDT). Requirements that apply only to PSL 1 or only to PSL 2 are so designated. Requirements that are not designated to a specific PSL designation apply to both PSL 1 and PSL 2 pipe.

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), the requirements of which have been enhanced to include verification detail of critical processes in the production of feedstock material, line pipe manufacture and product testing and inspection;

— 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 following two new annexes are added to the third edition of this International Standard.

— PSL 2 pipe ordered for European onshore natural gas transmission pipelines (Annex M).

— Equations for threaded and coupled pipe and background equations for guided bend and CVN test (Annex P).

The requirements of the annex(es) apply only when 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 applies.

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.

This third edition of ISO 3183 is the result of a continuing process of harmonizing documents of different heritage. It has been necessary to give consideration 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) 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, Table F.1 and Annex P, 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.