Steel pipe

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Preface

This is the eighth edition of CSA Z245.1, *Steel pipe.* It supersedes the previous editions published in 2002, 1998, 1995, 1993, 1990, 1986, and 1982.

This edition differs from the previous edition as follows:

(a) For other than sour service, this edition covers pipe from Grade 241 to Grade 825. For sour service, this edition covers pipe from Grade 241 to Grade 483.
(b) New definitions of "Flattening test", "Guided-bend test", "Hooked fibre", "Ingot casting", "Pressure casting", "Radiographic inspection", "Sensitivity check", "Standardization", and "Strand casting" have been added.
(c) The definition of "Heat-affected zone" has been revised.
(d) Yield strength requirements for grades higher than Grade 690 have been revised.
(e) For pipe weld tests, the test specimen orientation has been added.
(f) Retest procedures for pipe weld have been added.
(g) Hardness test requirements have been revised.
(h) Requirements for notch-toughness tests — weld have been revised.
(i) Tolerances on out-of-roundness have been revised.
(j) Work quality requirements have been revised.
(k) A new clause on residual magnetism has been added.
(l) The procedure for welded mill-jointers has been revised.
(m) The pipe marking requirements have been revised.
(n) Tables 1, 15, and 16 have been simplified.

This Standard covers the requirements for steel pipe intended to be used for transporting fluids as specified in CSA Z662, *Oil and gas pipeline systems*.

This Standard was prepared by the Subcommittee on Materials, under the jurisdiction of the Technical Committee on Petroleum and Natural Gas Industry Pipeline Systems and Materials and the Strategic Steering Committee on Petroleum and Natural Gas Industry Systems, and has been formally approved by the Technical Committee.

April 2007

Notes:

(1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*

(2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*

(3) *This publication was developed by consensus, which is defined by* CSA Policy governing standardization — Code of good practice for standardization *as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this publication.*

(4) *CSA Standards are subject to periodic review, and suggestions for their improvement will be referred to the appropriate committee.*

(5) *All enquiries regarding this Standard, including requests for interpretation, should be addressed to Canadian Standards Association, 5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6.*

Requests for interpretation should

(a) define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;
(b) provide an explanation of circumstances surrounding the actual field condition; and
(c) be phrased where possible to permit a specific "yes" or "no" answer.

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are published in CSA's periodical* Info Update, *which is available on the CSA Web site at www.csa.ca.*

Z245.1-07
Steel pipe

1 Scope

1.1 General

This Standard covers seamless pipe, electric-welded pipe (flash-welded pipe and low-frequency electric-welded pipe excluded) and submerged-arc-welded pipe primarily intended for use in oil or gas pipeline systems.

Notes:

(1) *Flash-welded pipe is pipe manufactured by a process using electric-resistance heating to produce a simultaneous coalescence over the entire area of the abutting edges and the application of pressure for joining.*

(2) *Low frequency is less than* 1 kHz.

1.2 Size, grade, and category

Note: *It is not intended that pipe be available in all combinations of size, grade, category, and manufacturing process. The individual pipe manufacturers should be consulted to ascertain the availability of specific pipe items.*

1.2.1 Outside diameter and wall thickness

This Standard covers pipe having specified outside diameters from 21.3 to 2032 mm.

1.2.2 Grade

For other than sour service, this Standard covers pipe from Grade 241 to Grade 825. For sour service, this Standard covers pipe from Grade 241 to Grade 483.

Note: *The standard grades are Grades 241, 290, 359, 386, 414, 448, 483, 550, 620, 690, and 825; however, intermediate grades are also permitted.*

1.2.3 Category

This Standard covers pipe in the following categories:

(a) Category I: pipe without requirements for proven pipe body notch-toughness properties;

(b) Category II: pipe with requirements for proven pipe body notch-toughness properties in the form of energy absorption and fracture appearance; and

(c) Category III: pipe with requirements for proven pipe body notch-toughness properties in the form of energy absorption.

1.3 Terminology

In CSA Standards, "shall" is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the standard; "should" is used to express a recommendation or that which is advised but not required; "may" is used to express an option or that which is permissible within the limits of the standard; and "can" is used to express possibility or capability. Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material. Notes to tables and figures are considered part of the table or figure and may be written as requirements. Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.