

Plant-applied external coatings for steel pipe



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Preface

This is the fourth edition of the CSA Z245.20 Series, *Plant-applied external coatings for steel pipe*, which consists of the ninth edition of CSA Z245.20, *Plant-applied external fusion bond epoxy coating for steel pipe*, the eighth edition of CSA Z245.21, *Plant-applied external polyethylene coating for steel pipe*, and the fourth edition of CSA Z245.22, *Plant-applied external polyurethane foam insulation coating for steel pipe*. This edition of CSA Z245.20 supersedes the previous editions published in 2018, 2014, 2010, 2006, 2002, 1998, 1992, and 1986; this edition of CSA Z245.21 supersedes the previous editions published in 2018, 2014, 2010, 2006, 2002, 1998, and 1992; and this edition of CSA Z245.22 supersedes the previous editions published in 2018, 2014, and 2010.

These Standards cover the requirements for CSA Z662, Clause 9.2, Selection of external coatings for buried or submerged piping.

CSA Z245.20 deals with the requirements for plant-applied external fusion bond epoxy coating for steel pipe. The major changes to this edition are as follows:

- new definition for the term “plant”;
- revised requirements for quality and compliance;
- revised requirements for epoxy powder properties;
- revised wording for verification of coating thickness gauges;
- revised requirements for the calibration and verification of holiday detectors;
- revised requirements for coating repairs;
- revised test specimens size requirements for impact resistance test;
- revised requirements for gouge resistance test;
- added number of specimens required for epoxy powder properties tests;
- revised acceptance criteria for 28 d cathodic disbondment at 65 °C and 95 °C qualification tests;
- updated requirement for the evaluation of gel time versions of epoxy powder formulations; and
- revised production coating test requirements for 24 h cathodic disbondment at 65 °C test.

CSA Z245.21 deals with the requirements for plant-applied external polyethylene coating for steel pipe. The major changes to this edition are as follows:

- revised wording for verification of coating thickness gauges;
- revised requirements for the calibration and verification of holiday detectors;
- revised requirements for coating repairs; and
- added number of specimens required for all tests.

CSA Z245.22 deals with the requirements for plant-applied external polyurethane foam insulation coating for steel pipe. The major changes to this edition are as follows:

- revised requirements for external polyethylene jacket thickness;
- revised requirements for coating repairs;
- added number of specimens required for all tests;
- revised wording for verification of coating thickness gauges; and
- revised requirements for the calibration and verification of holiday detectors.

These Standards were prepared by the Subcommittee on Coatings, 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 have been formally approved by the Technical Committee.

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 Standard 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 Standard.*
- 4) *To submit a request for interpretation of this Standard, please send the following information to inquiries@csagroup.org and include “Request for interpretation” in the subject line:*
 - 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) *where possible, phrase the request in such a way that a specific “yes” or “no” answer will address the issue.*

Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization and are available on the Current Standards Activities page at standardsactivities.csa.ca.
- 5) *This Standard is subject to review within five years from the date of publication. Suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to inquiries@csagroup.org and include “Proposal for change” in the subject line:*
 - a) *Standard designation (number);*
 - b) *relevant clause, table, and/or figure number;*
 - c) *wording of the proposed change; and*
 - d) *rationale for the change.*

CSA Z245.20:22

***Plant-applied external fusion bond
epoxy coating for steel pipe***



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CSA Z245.20:22

Plant-applied external fusion bond epoxy coating for steel pipe

1 Scope

1.1

This Standard covers the qualification, application, inspection, testing, handling, and storage of materials required for plant-applied fusion bond epoxy (FBE) coating applied externally to bare steel pipe. The coated pipe is intended primarily for buried or submerged service for oil or gas pipeline systems.

1.2

This Standard covers the following coating systems:

- a) System 1A: single-layer FBE with a glass transition temperature of 115 °C or less;
- b) System 1B: single-layer FBE with a glass transition temperature greater than 115 °C;
- c) System 2A: two-layer FBE with an anti-corrosion coating and a protective overcoat;
- d) System 2B: two-layer FBE with an anti-corrosion coating and an abrasion-resistant overcoat;
- e) System 2C: two-layer FBE with an anti-corrosion coating and an anti-slip overcoat; and
- f) System 3: three-layer FBE with an anti-slip overcoat applied over an anti-corrosion coating and a protective overcoat.

1.3

In this Standard, “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; and “may” is used to express an option or that which is permissible within the limits of the Standard.

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.

2 Reference publications

This Standard refers to the following publications, and where such reference is made, it shall be to the editions listed below.

Note: *In cases where the editions listed below are amended, replaced by new editions, or superseded by another standard during the life of this referencing Standard, it is the responsibility of the users of this Standard to investigate the possibility of applying those amendments, new editions, or superseding standards.*