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CSA B137.0:20
National Standard of Canada

Definitions, general requirements, and methods of testing for thermoplastic pressure piping

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Contents

Preface

This is the eleventh edition of CSA B137.0, *Definitions, general requirements, and methods of testing for thermoplastic pressure piping*. It supersedes the previous editions published in 2017, 2013, 2009, 2005, 2002, 1999, 1993, 1986, 1981, and 1973.

While earlier editions of this Standard were published as part of the CSA B137 Series, *Thermoplastic pressure piping compendium*, the tenth edition was reissued as a stand-alone Standard in January 2019. The compendium format has been discontinued.

CSA B137.0 provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series. Wherever possible, individual Standards make reference to the relevant clauses in CSA B137.0.

The major changes in this new edition are

a) Addition of Note 2) to Clause 1.1 for the exclusion of venting of combustion gas applications;
b) Revision to the definition for "polypropylene" to Clause 3;
c) Clarification of test temperature in Clause 6.6.4.2.2; and
d) Revision to fitting marking requirements in Clause 7.2.1 c).

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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CSA B137.0:20
Definitions, general requirements, and methods of testing for thermoplastic pressure piping

1 Scope

1.1

This Standard specifies requirements for thermoplastic pressure piping. It includes reference publications, definitions, abbreviations, general requirements for materials and manufactured pipe and fittings, relevant test methods, and marking requirements.

Notes:

1) *The terms "pipe" and "piping", as well as "tube" and "tubing", are used interchangeably in the CSA B137 Series.*
2) *This Standard does not specify requirements for venting of combustion gases. In Canada, ULC S636 specifies testing and marking requirements for pipe, fittings, and accessories intended for venting of combustion gases. In the United States, UL 1738 specifies testing and marking requirements for pipe, fittings, and accessories intended for venting of combustion gases.*

1.2

This Standard is intended to be used in conjunction with one of the other Standards in the CSA B137 Series to form a complete Standard for a particular product.

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.

1.4

Values are given in SI units. Annex C provides conversion factors for inch-pound (IP) units.

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Polyethylene (PE) pipe, tubing, and fittings for cold-water pressure services

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Polyethylene (PE) pipe, tubing, and fittings for cold-water pressure services

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While earlier editions of this Standard were published as part of the CSA B137 Series, *Thermoplastic pressure piping compendium*, the tenth edition was reissued as a stand-alone Standard in January 2019. The compendium format has been discontinued.

This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

The major changes in this new edition are

a) The addition of Series 250 pipe to Clause 5.1.3.1 and Tables 5 and 7; and
b) The addition of Series 250 tubing to Clauses 5.1.3.1 and 5.1.3.3, and Table 6.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

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CSA B137.1:20
Polyethylene (PE) pipe, tubing, and fittings for cold-water pressure services

1 Scope

1.1
This Standard covers polyethylene (PE) pipe, tubing, and fittings for use in potable cold water supply services or other applications such as water-based ground source geothermal systems.

1.2
This Standard specifies requirements for materials, quality of work, dimensions, sustained pressure, environmental stress cracking, and markings.

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.

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Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

2 Reference publications
In addition to the following, this Standard refers to the publications listed in Clause 2 of CSA B137.0, and where such reference is made, it shall be to the edition listed there, including all amendments published thereto.

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B137.0:20
Definitions, general requirements, and methods of testing for thermoplastic pressure piping

3 Definitions and abbreviations
The definitions and abbreviations listed in Clause 3 of CSA B137.0 shall apply in this Standard.

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CSA B137.2:20
National Standard of Canada

Polyvinylchloride (PVC) injection-moulded gasketed fittings for pressure applications

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CSA B137.2:20

Polyvinylchloride (PVC) injection-moulded gasketed fittings for pressure applications

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Contents

Preface

This is the ninth edition of CSA B137.2, *Polyvinylchloride (PVC) injection-moulded gasketed fittings for pressure applications*, which supersedes the previous editions published in 2017, 2013, 2009, 2005, 2002, 1999, 1993, and 1989.

While earlier editions of this Standard were published as part of the CSA B137 Series, *Thermoplastic pressure piping compendium*, the eighth edition was reissued as a stand-alone Standard in January 2019. The compendium format has been discontinued.

This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

The major change in this new edition is the addition of B137.0 to Reference Publications in Clause 2.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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   d) *rationale for the change.*

CSA B137.2:20
Polyvinylchloride (PVC) injection-moulded gasketed fittings for pressure applications

1 Scope

1.1
This Standard covers rigid polyvinylchloride (PVC) injection-moulded fittings that have gasketed joints and are intended for use in pressure applications such as water mains, water service piping, process piping, and fire lines. Fittings covered by this Standard are suitable for use with PVC pipes having outside diameter dimensions of cast iron pipe. Only one pressure rating, 1620 kPa at 23 °C (PC 235), is covered in this Standard and is suitable for use with compatible outside diameter PVC pipes having a dimension ratio (DR) of 18 or more.

Note: *Where PVC fittings are to be used in applications other than those involving water, the manufacturer should be consulted.*

1.2
This Standard specifies requirements for materials, quality of work, long-term performance under sustained hydrostatic pressure, dimensions, markings, and injection-moulding quality.

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
In addition to the following, this Standard refers to the publications listed in Clause 2 of CSA B137.0, and where such reference is made, it shall be to the edition listed there, including all amendments published thereto.

CSA Group

B137.0:20
Definitions, general requirements, and methods of testing for thermoplastic pressure piping

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CSA B137.3:20
National Standard of Canada

Rigid polyvinylchloride (PVC) pipe and fittings for pressure applications

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Standards Update Service

CSA B137.3:20
February 2020

Title: *Rigid polyvinylchloride (PVC) pipe and fittings for pressure applications*

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CSA B137.3:20

Rigid polyvinylchloride (PVC) pipe and fittings for pressure applications

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Contents

Preface

This is the thirteenth edition of CSA B137.3, *Rigid polyvinylchloride (PVC) pipe and fittings for pressure applications*. It supersedes the previous editions published in 2017, 2013, 2009, 2005, 2002, 1999, 1993, 1990, 1986, 1981, 1972, and 1970.

While earlier editions of this Standard were published as part of the CSA B137 Series, *Thermoplastic pressure piping compendium*, the twelfth edition was reissued as a stand-alone Standard in January 2019. The compendium format has been discontinued.

This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

The major changes in this new edition are

a) addition of Note 2) to Clause 1.1 for the exclusion of venting of combustion gas applications;
b) clarification of impact resistance for pipe sizes NPS-14 or larger in Clause 5.7.3;
c) correction of pressure rating for DR 25 in Table 10; and
d) correction of pressure rating for DR 25 and 14 in Table 16.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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CSA B137.3:20
Rigid polyvinylchloride (PVC) pipe and fittings for pressure applications

1 Scope

1.1

This Standard covers rigid polyvinylchloride (PVC) pipe and fittings intended for use in pressure applications such as water mains, water service piping, and process piping. The fittings covered by this Standard include moulded, solvent-cemented, gasketed, or threaded fittings, and fittings that have been fabricated for use with any joining method.

Notes:

1) *Where PVC pipe and fittings are to be used in non-water applications, the manufacturer should be consulted.*
2) *This Standard does not specify requirements for venting of combustion gases. In Canada, ULC S636 specifies testing and marking requirements for pipe, fittings, and accessories intended for venting of combustion gases. In the United States, UL 1738 specifies testing and marking requirements for pipe, fittings, and accessories intended for venting of combustion gases.*

1.2

This Standard specifies requirements for materials, quality of work, dimensions, solvent cement, and markings for pipe and fittings. Requirements for hydrostatic sustained pressure, extrusion, impact resistance, and quality are also specified for pipe.

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

In addition to the following, this Standard refers to the publications listed in Clause 2 of CSA B137.0, and where such reference is made, it shall be to the edition listed there, including all amendments published thereto.

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CSA B137.3.1:20
National Standard of Canada

Molecularly oriented polyvinylchloride (PVCO) pipe for pressure applications

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CSA B137.3.1:20
February 2020

Title: *Molecularly oriented polyvinylchloride (PVCO) pipe for pressure applications*

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CSA B137.3.1:20

Molecularly oriented polyvinylchloride (PVCO) pipe for pressure applications

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Contents

Preface

This is the fourth edition of CSA B137.3.1, *Molecularly oriented polyvinylchloride (PVCO) pipe for pressure applications*. It supersedes the previous editions published in 2013 and 2009.

While earlier editions of this Standard were published as part of the CSA B137 Series, *Thermoplastic pressure piping compendium*, the third edition was reissued as a stand-alone Standard in January 2019. The compendium format has been discontinued.

This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

The major changes in this new edition are

a) clarification of impact resistance for pipe sizes NPS-14 or larger in Clause 5.6.3;
b) addition of Note to Clause 5.7 on oil-resistant materials;
c) correction of pressure rating for CIOD pipe in Tables 1, 5, and 7; and
d) addition of oil-resistant gaskets and liquid immersion test to Table 8.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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   d) *rationale for the change.*

CSA B137.3.1:20
Molecularly oriented polyvinylchloride (PVCO) pipe for pressure applications

1 Scope

1.1
This Standard covers molecularly oriented polyvinylchloride (PVCO) pipe intended for use in pressure applications such as water mains, sewer force mains, and process piping.

Note: *This Standard does not address chemical compatibility between PVCO pipe and process fluids. Where PVCO pipe is to be used in non-water applications, the manufacturer should be consulted.*

1.2
PVCO complying with this Standard is not suitable for solvent cementing and is intended to be joined by gasketed joints.

1.3
This Standard specifies requirements for materials, quality of work, dimensions, markings, hydrostatic sustained pressure, extrusion, impact resistance, and quality for PVCO pipe.

1.4
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
In addition to the following, this Standard refers to the publications listed in Clause 2 of CSA B137.0, and where such reference is made, it shall be to the edition listed there, including all amendments published thereto.

CSA Group

B137.0:20
Definitions, general requirements, and methods of testing for thermoplastic pressure piping

CSA GROUP™

CSA B137.4:20
National Standard of Canada

Polyethylene (PE) piping systems for gas services

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Standards Update Service

CSA B137.4:20
February 2020

Title: *Polyethylene (PE) piping systems for gas services*

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CSA B137.4:20

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ISBN 978-1-4883-2301-0

Contents

Preface

This is the eleventh edition of CSA B137.4, *Polyethylene (PE) piping systems for gas services*. It supersedes the previous editions published in 2017, 2013, 2009, 2005, 2002, 1999, 1992, 1986, 1977, and 1971.

While earlier editions of this Standard were published as part of the CSA B137 Series, *Thermoplastic pressure piping compendium*, the tenth edition was reissued as a stand-alone Standard in January 2019. The compendium format has been discontinued.

This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

The major changes in this new edition are the following:

a) addition of Clause 4.2.4.9 and Table 10 for elevated temperature service;
b) addition of Clause 4.3.1.5 to restrict rework material in mechanical or fused fittings;
c) revision to Clause 5.5.2.1 on the sustained pressure test requirements for different compounds;
d) additional pipe marking requirement to Clause 7.1.1; and
e) addition of Clause 7.3 for tracking and traceability.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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.*
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CSA B137.4:20
Polyethylene (PE) piping systems for gas services

1 Scope

1.1

This Standard covers polyethylene (PE) pipe, tubing, and fittings for use in gas mains and services, including gathering, transmission, and distribution of fuel gases containing not more than 1% aromatic hydrocarbons.

1.2

This Standard covers all types of fittings and connections used in plastic gas pipe systems, including

a) plastic-to-metal transition fittings;
b) plastic component fittings (e.g., elbows, tees, end caps, and valves); and
c) clamps and couplings.

Notes:

1) *In this Standard, "pipe" refers to pipe having IPS outside diameters and "tubing" refers to pipe having copper tube size outside diameters.*
2) *In this Standard, test requirements for pipe apply to both pipe and tubing.*

1.3

This Standard specifies the manufacturing and testing requirements necessary to ensure that the PE compound, pipe, and fittings are of a quality acceptable for use in gas distribution systems. This Standard specifies requirements for

a) primary properties of the compound;
b) physical properties of the finished product;
c) on-line monitoring during production;
d) shipping and storage; and
e) markings.

Note: *The user of the pipe, tubing, or fittings should refer to CSA Z662 for design and installation limitations of products covered by this Standard.*

1.4

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.

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Notes to tables and figures are considered part of the table or figure and may be written as requirements.

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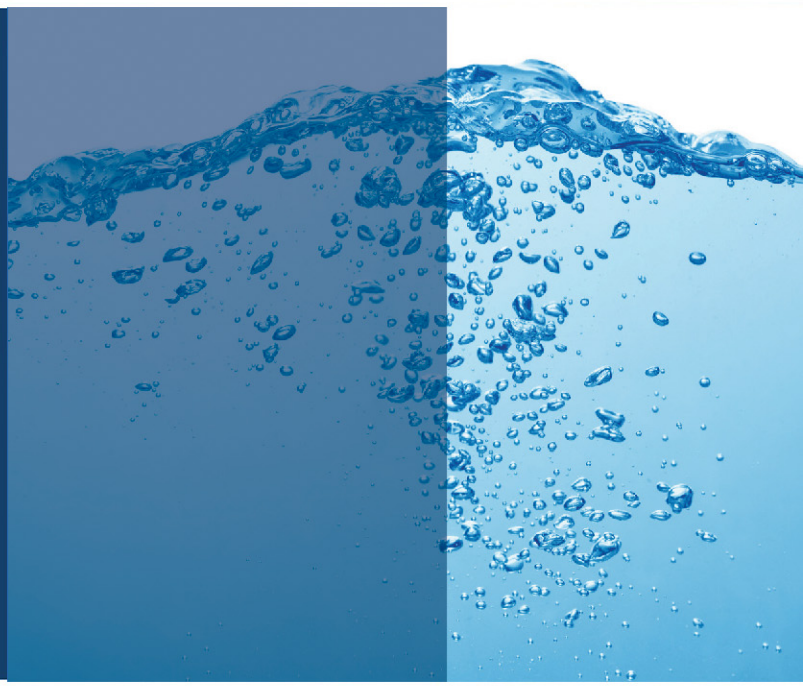
CSA B137.4.1:20
National Standard of Canada

Electrofusion-type polyethylene (PE) fittings for gas services



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CSA B137.4.1:20
February 2020

Title: *Electrofusion-type polyethylene (PE) fittings for gas services*

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CSA B137.4.1:20

Electrofusion-type polyethylene (PE) fittings for gas services

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Contents

Preface

This is the eighth edition of CSA B137.4.1, *Electrofusion-type polyethylene (PE) fittings for gas services*, which supersedes the previous editions published in 2017, 2013, 2009, 2005, 2002, 1999, and 1989.

While earlier editions of this Standard were published as part of the CSA B137 Series, *Thermoplastic pressure piping compendium*, the seventh edition was reissued as a stand-alone Standard in January 2019. The compendium format has been discontinued.

This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

The major change in this new edition is the addition of B137.0 to Reference Publications in Clause 2.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

Notes:

1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
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CSA B137.4.1:20
Electrofusion-type polyethylene (PE) fittings for gas services

1 Scope

1.1

This Standard covers socket- and saddle-type polyethylene (PE) electrofusion fittings that are used to join PE pipe where the heat source is an integral part of the fitting.

Note: *Fittings covered by this Standard are connected to an electrical power source during the fusion process. Power sources, cables, and electrical connections are covered by the* Canadian Electrical Code, Part I *and* Part II*, as appropriate.*

1.2

PE electrofusion fittings covered by this Standard are intended for use with PE pipe that complies with CSA B137.4.

1.3

This Standard specifies general requirements for materials, performance, manufactured fittings, specimen preparation, test methods, markings, and quality of work.

Notes:

1) *In this Standard, "pipe" refers to pipe having IPS outside diameters and "tubing" refers to pipe having copper tube outside diameters.*
2) *In this Standard, test requirements for pipe apply to both pipe and tubing.*

1.4

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.

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Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

2 Reference publications

In addition to the following, this Standard refers to the publications listed in Clause 2 of CSA B137.0, and where such reference is made, it shall be to the edition listed there, including all amendments published thereto.

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CSA B137.5:20
National Standard of Canada

Crosslinked polyethylene (PEX) tubing systems for pressure applications

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Standards Update Service

CSA B137.5:20
February 2020

Title: *Crosslinked polyethylene (PEX) tubing systems for pressure applications*

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CSA B137.5:20

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Contents

Preface

This is the tenth edition of CSA B137.5, *Crosslinked polyethylene (PEX) tubing systems for pressure applications*. It supersedes the previous editions published in 2017, 2013, 2009, 2005, 2002, 1999, 1997, 1996, and 1989.

While earlier editions of this Standard were published as part of CSA B137 Series, *Thermoplastic pressure piping compendium*, the ninth edition was reissued as a stand-alone Standard in January 2019. The compendium format has been discontinued.

This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

The major changes in this new edition are

a) Additional sulfone plastic materials included in Clause 4.2.4.1 for insert fittings;
b) Update to the reference fitting standards in Clauses 5.1.2.2, 5.1.3.1 and 5.1.6.1;
c) Addition of Clause 5.1.7 for push-fit fittings;
d) Update to Clause 5.1.8 for fitting qualification; and
e) Removal of 50 °C water requirement from Clause 6.9.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standard Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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CSA B137.5:20
Crosslinked polyethylene (PEX) tubing systems for pressure applications

1 Scope

1.1

This Standard specifies requirements for crosslinked polyethylene (PEX) tubing systems that comprise tubing and fittings.

Tubing covered by this Standard is made in Standard Dimensional Ratio 9 (SDR 9).

Systems are pressure rated at three temperatures: 1105 kPa at 23 °C, 690 kPa at 82 °C, and 550 kPa at 93 °C, with a maximum working pressure of 690 kPa at 82 °C. Systems are intended for use in potable water distribution systems or other applications, including municipal water service lines, reclaimed water distribution, radiant panel heating and cooling systems, hydronic baseboard heating systems, snow and ice melting heating systems, building services piping, compressed air distribution, and ground source geothermal systems, provided that the PEX tubing systems covered herein comply with the applicable code requirements. Residential and commercial systems are included.

Note: *The requirements and test methods specified in this Standard can involve hazardous materials, operations, and equipment. This Standard does not purport to address all of the safety problems associated with its use. Users of this Standard are responsible for establishing appropriate safety and health practices and determining the applicability of regulatory limitations before using this Standard.*

1.2

This Standard specifies requirements for

a) materials;
b) quality of work;
c) tubing;
d) metal components of fittings;
e) fittings;
f) interior liners;
g) dimensions;
h) hydrostatic capability;
i) marking for tubing and fittings; and
j) marking for flexible pre-insulated tubing.

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.

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CSA B137.6:20
National Standard of Canada

Chlorinated polyvinylchloride (CPVC) pipe, tubing, and fittings for hot- and cold-water distribution systems

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CSA B137.6:20
February 2020

Title: *Chlorinated polyvinylchloride (CPVC) pipe, tubing, and fittings for hot- and cold-water distribution systems*

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CSA B137.6:20

Chlorinated polyvinylchloride (CPVC) pipe, tubing, and fittings for hot- and cold-water distribution systems

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Contents

Preface

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While earlier editions of this Standard were published as part of the CSA B137 Series, *Thermoplastic pressure piping compendium*, the ninth edition was reissued as a stand-alone Standard in January 2019. The compendium format has been discontinued.

This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

The major changes in this new edition are the following:

a) addition of SDR 13.5 and SDR 21 sizes for use only in cold-water distribution and water service systems at a maximum working pressure of 2170 kPa and 1380 kPa, respectively, and a maximum working temperature of 23 °C;
b) addition of Note 2) to Clause 1.1 for the exclusion of venting of combustion gas applications; and
c) revision to fitting marking requirements in Clause 7.2.2.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

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d) *rationale for the change.*

CSA B137.6:20
Chlorinated polyvinylchloride (CPVC) pipe, tubing, and fittings for hot- and cold-water distribution systems

1 Scope

1.1

This Standard covers chlorinated polyvinylchloride (CPVC) pipe, tubing, and fittings in the following sizes and uses:

a) standard dimension ratio 11 (SDR 11), and Schedules 40 and 80 pipe in pipe sizes whose dimension ratio does not exceed 11, for use in hot- and cold-water distribution systems at a maximum working pressure of 690 kPa and a maximum working temperature of 82 °C; and
b) SDR 13.5 and SDR 21 for use only in cold-water distribution and water service systems at a maximum working pressure of 2170 kPa and 1380 kPa, respectively, and a maximum working temperature of 23 °C.

Note: *This Standard does not specify requirements for venting of combustion gases. In Canada, ULC S636 specifies testing and marking requirements for pipe, fittings, and accessories intended for venting of combustion gases. In the United States, UL 1738 specifies testing and marking requirements for pipe, fittings, and accessories intended for venting of combustion gases.*

1.2

This Standard specifies requirements for materials, quality of work, dimensions and tolerances, hydrostatic sustained pressure strength, thermocycling resistance, solvent cement, joint strength, and markings.

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.

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Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

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Polyethylene/aluminum/polyethylene (PE-AL-PE) composite pressure-pipe systems

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Title: *Polyethylene/aluminum/polyethylene (PE-AL-PE) composite pressure-pipe systems*

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CSA B137.9:20

Polyethylene/aluminum/ polyethylene (PE-AL-PE) composite pressure-pipe systems

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Contents

Preface

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This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

The major change in this new edition is the addition of B137.0 to Reference Publications in Clause 2.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

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CSA B137.9:20
Polyethylene/aluminum/polyethylene (PE-AL-PE) composite pressure-pipe systems

1 Scope

1.1

This Standard covers polyethylene/aluminum/polyethylene (PE-AL-PE) macrocomposite pipe consisting of a welded aluminum tube laminated by a melt adhesive to layers of polyethylene (PE) inside and outside the aluminum tube. The pipes covered in this Standard are pressure rated for 1380 kPa at 23 °C, 1035 kPa at 60 °C, or 690 kPa at 82 °C.

Systems are intended for use in potable water distribution systems or other applications, including municipal water service lines, reclaimed water distribution, radiant panel heating systems, hydronic baseboard heating systems, snow and ice melting systems, building services piping, compressed air distribution, ground source geothermal systems, underground irrigation, and compressed gas distribution (not including fuel gases), provided that the PE-AL-PE systems comply with the applicable code requirements. Residential and commercial systems are included.

Note: *The complete structure, consisting of the aluminum, melt adhesive, and layers of PE intimately bonded together, is known as pipe. For the purposes of this Standard, the layer of welded aluminum, or the internal or external layer of PE, is known as a tube. Tubes, intimately bonded together by the melt adhesive, form a pipe.*

1.2

The Standard specifies requirements for materials, quality of work, dimensions, thermocycling resistance, sustained pressure performance, delamination resistance, and marking.

Notes:

1) *In developing the hydrostatic design basis for PE-AL-PE pipes, in accordance with CSA B137.0, pressure has been substituted for fibre stress.*
2) *The pressure rating of PE-AL-PE pipes is contingent on the thickness of the aluminum metal reinforcing layer. Pipes having the same dimension ratio but different metal reinforcing layer thicknesses will have different pressure ratings. The dimension ratio therefore cannot be used, as it is with homogeneous walled pipes, to assess changes in pressure rating with wall thickness variation.*

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.

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CSA B137.10:20
National Standard of Canada

Crosslinked polyethylene/aluminum/ crosslinked polyethylene (PEX-AL-PEX) composite pressure-pipe systems

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CSA B137.10:20
February 2020

Title: *Crosslinked polyethylene/aluminum/crosslinked polyethylene (PEX-AL-PEX) composite pressure-pipe systems*

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CSA B137.10:20
Crosslinked polyethylene/aluminum/ crosslinked polyethylene (PEX-AL-PEX) composite pressure-pipe systems

1 Scope

1.1

This Standard covers crosslinked polyethylene/aluminum/crosslinked polyethylene (PEX-AL-PEX) macrocomposite pipe consisting of a welded aluminum (AL) tube laminated by a melt adhesive to layers of crosslinked polyethylene (PEX) inside and outside the aluminum tube. This Standard also covers fittings (connectors) for use with PEX-AL-PEX pipe. The pipes covered in this Standard are pressure rated for 1380 kPa at 23 °C or 860 kPa at 82 °C, or both.

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Note: *The complete structure, consisting of the aluminum, melt adhesive, and layers of crosslinked polyethylene intimately bonded together, is known as pipe. For the purposes of this Standard, the layer of welded aluminum, or the internal and external layer of crosslinked polyethylene, is known as a tube. Tubes, intimately bonded together by the melt adhesive, form a pipe.*

1.2

This Standard specifies requirements for materials, quality of work, dimensions, thermocycling resistance, sustained pressure performance, delamination resistance, and marking.

Notes:

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Polypropylene (PP-R & PP-RCT) pipe and fittings for pressure applications

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CSA B137.11:20
February 2020

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The major changes in this new edition are the following:

a) addition of polypropylene random copolymer with modified crystallinity and temperature resistance (PP-RCT) materials;
b) revision of scope in Clauses 1.1 and 1.2;
c) revision of material properties in Clause 4.2.1;
d) revision of long-term hydrostatic strength requirements in Clause 4.2.3;
e) revision of Clauses 5.5 and 7.2 to longitudinal reversion;
f) revision of impact resistance requirements in Clause 5.7 and removal of Clause 7.3;
g) revision of marking requirements in Clause 8;
h) addition of Table 2 50-year service life model; and
i) revision of dimensions in Table 3.

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CSA B137.11:20
Polypropylene (PP-R & PP-RCT) pipe and fittings for pressure applications

1 Scope

1.1
This Standard covers two types of polypropylene (PP) pipe and fittings – polypropylene random copolymer (PP-R) and polypropylene random copolymer with modified crystallinity and temperature resistance (PP-RCT) intended for use in pressure applications such as hot and cold potable water distribution systems, process piping, reclaimed/recycled water systems, water service, hydronic heating and cooling, and geothermal systems. Piping system components covered by this Standard are classified based on dimension ratio in sizes NPS-3/8 to NPS-28, and are joined using socket-type heat-fusion joints, saddle welding joints (fusion outlet), electrofusion joints, and butt fusion.

Piping covered by this Standard with minimum hydrostatic pressure ratings of 1105 kPa at 23 °C and 690 kPa at 82 °C are intended for use in plumbing applications. Pipes with different dimension ratios (DRs) can have higher or lower pressure ratings for other applications.

1.2
This Standard specifies requirements for materials, dimensions, hydrostatic sustained pressure performance, longitudinal reversion, apparent tensile strength, oxidative resistance, and marking.

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
In addition to the following, this Standard refers to the publications listed in Clause 2 of CSA B137.0, and where such reference is made, it shall be to the edition listed there, including all amendments published thereto.

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CSA B137.12:20
National Standard of Canada

Polyamide (PA) piping systems for gas services

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CSA B137.12:20
February 2020

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CSA B137.12:20

Polyamide (PA) piping systems for gas services

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Contents

Preface

This is the eighth edition of CSA B137.12, *Polyamide (PA) piping systems for gas services*. It supersedes the previous edition published in 2017, and the editions 2013, 2009, 2005, 2002, 1999, and 1996 under the title *Polyamide-11 (PA-11) piping systems for gas services*.

While earlier editions of this Standard were published as part of the CSA B137 Series, *Thermoplastic pressure piping compendium*, the seventh edition was reissued as a stand-alone Standard in January 2019. The compendium format has been discontinued.

This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

The major changes in this new edition are the following:

a) Clause 4.2.4.3 changed from flattening resistance to sustained pressure test; and
b) addition of Clause 4.3.1.5 on reworked compounds.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*
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CSA B137.12:20
Polyamide (PA) piping systems for gas services

1 Scope

1.1
This Standard covers polyamide (PA) pipe, tubing, and fittings for use in gas mains and services, including the gathering, transmission, and distribution of gases that can contain aromatic hydrocarbons.

1.2
This Standard covers all types of fittings and connections used in PA piping systems for gas services, including plastic-to-metal transition fittings, plastic component fittings (e.g., elbows, tees, end caps, and valves), and clamps and couplings.

Notes:
1) *In this Standard, "pipe" refers to pipe having NPS (nominal pipe size) outside diameters and "tubing" refers to pipe having NTS (nominal tube size) outside diameters.*
2) *In this Standard, test requirements for pipe apply to both pipe and tubing.*

1.3
This Standard specifies the manufacturing and testing requirements necessary to ensure that the PA compound, pipe, and fittings are of a quality acceptable for use in gas distribution systems. This Standard specifies requirements for

a) primary properties of the compound;
b) physical properties of the finished product;
c) on-line monitoring during production;
d) shipping and storage; and
e) markings.

Note: *The user of the pipe, tubing, or fittings should refer to CSA Z662 for design and installation limitations of products covered by this Standard.*

1.4
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.

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CSA B137.18:20
National Standard of Canada

Polyethylene of raised temperature resistance (PE-RT) tubing systems for pressure applications

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CSA B137.18:20
February 2020

Title: *Polyethylene of raised temperature resistance (PE-RT) tubing systems for pressure applications*

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Polyethylene of raised temperature resistance (PE-RT) tubing systems for pressure applications

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Contents

Preface

This is the third edition of CSA B137.18, *Polyethylene of raised temperature resistance (PE-RT) tubing systems for pressure applications*. It supersedes the previous editions published in 2017 and 2013.

While earlier editions of this Standard were published as part of the CSA B137 Series, *Thermoplastic pressure piping compendium*, the second edition was reissued as a stand-alone Standard in January 2019. The compendium format has been discontinued.

This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

The major changes in this new edition are the following:

a) clarification of barrier layer in Clause 4.2.1.3.2;
b) revision to fitting requirements in Clauses 5.1.2, 5.1.3, 5.1.4, 5.1.5, 5.1.6, and 5.1.7;
c) revision to fitting qualification requirements in Clause 5.1.8;
d) revision to fitting marking requirements in Clause 7.2;
e) revision to packaging marking requirements in Clause 7.3; and
f) revision to flexible pre-insulated tubing marking requirements in Clause 7.4.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee.

This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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CSA B137.18:20
Polyethylene of raised temperature resistance (PE-RT) tubing systems for pressure applications

1 Scope

1.1

This Standard specifies requirements for polyethylene of raised temperature (PE-RT) tubing systems that comprise tubing and fittings.

Tubing covered by this Standard is made in Standard Dimensional Ratio 9 (SDR 9).

Systems are pressure rated at two temperatures: 1105 kPa at 23 °C and 690 kPa at 82 °C. Systems are intended for use in potable water distribution systems or other applications, including municipal water service lines, reclaimed water distribution, radiant panel heating and cooling systems, hydronic baseboard heating systems, snow and ice melting heating systems, building services piping, compressed air distribution, and ground source geothermal systems, provided that the PE-RT tubing systems covered in this Standard comply with the applicable code requirements. Residential and commercial systems are included.

Note: *The requirements and test methods specified in this Standard can involve hazardous materials, operations, and equipment. This Standard does not purport to address all potential safety problems associated with its use. Before using this Standard, users are responsible for establishing appropriate health and safety practices and determining the applicability of any regulatory limitations.*

1.2

This Standard specifies requirements for

a) materials;
b) quality of work;
c) tubing;
d) metal components of mechanical fittings;
e) fittings;
f) interior liners;
g) dimensions;
h) hydrostatic capability;
i) marking for tubing and fittings; and
j) marking for flexible pre-insulated tubing.

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.

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Crosslinked polyethylene (PEX) piping systems for gas services

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CSA B137.19:20
February 2020

Title: *Crosslinked polyethylene (PEX) piping systems for gas services*

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Contents

Preface

This is the second edition of CSA B137.19, *Crosslinked polyethylene (PEX) piping systems for gas services*. It supersedes the previous edition published in 2017 as *Black crosslinked polyethylene (PEX) piping systems for gas services*.

This Standard is to be used with the 2020 edition of CSA B137.0, which provides requirements and test methods that are common to some or all of the Standards of the CSA B137 series.

The major changes in this new edition are the following:

a) removal of "black" from the Standard title and scope;
b) revision of the scope in Clause 1.1;
c) removal of PEX 125 and PEX X009 materials;
d) revision of Clause 4.1.2 from carbon black to colour requirements;
e) revision of UV requirements in Clause 4.1.3;
f) incorporation of Annex C into Clause 4.2.4.7;
g) revision to the sustained pressure requirements in Clause 5.5.2.1; and
h) revision to pipe marking requirements in Clause 7.1.1.

This Standard is considered suitable for use for conformity assessment within the stated scope of the Standard.

This Standard was prepared by the Technical Committee on Plastic Pressure Piping, under the jurisdiction of the Strategic Steering Committee on Construction and Civil Infrastructure, and has been formally approved by the Technical Committee. This Standard has been developed in compliance with Standards Council of Canada requirements for National Standards of Canada. It has been published as a National Standard of Canada by CSA Group.

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 B137.19:20
Crosslinked polyethylene (PEX) piping systems for gas services

1 Scope

1.1
This Standard covers crosslinked polyethylene (PEX) pipe and fittings for use in gas mains and services, including gas gathering, gas transmission, and distribution of fuel gases.

1.2
This Standard covers PEX pipes in metric nominal sizes DN 16 to DN 1000 or nominal pipe sizes NPS-3 to NPS-54 that are

a) pressure-rated using the hydrostatic design basis (HDB) rating method specified in ASTM D2837 or the minimum required strength (MRS) rating method specified in ISO 9080 and ISO 12162;
b) intended for operating temperatures between –50 and 110 °C; and
c) joined by electrofusion or by mechanical fittings, but not by butt fusion.

1.3
This Standard does not cover pipes intended to be joined by butt fusion, socket fusion, or saddle fusion.

1.4
Fittings covered in this Standard include

a) plastic-to-metal transition fittings;
b) electrofusion fittings (e.g., couplings, elbows, tees, and end caps); and
c) mechanical couplings.

1.5
This Standard specifies requirements for

a) primary properties of the PE compound;
b) physical properties of the finished PEX pipe;
c) on-line monitoring during production;
d) shipping and storage; and
e) markings.

Note: *See CSA Z662 for design and installation limitations of products covered by this Standard.*

1.6
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.

