



**Summary of Substantive Changes
Between the 2017 and 2020 editions of
CSA B137 Series-20 “Thermoplastic pressure piping compendium”**

Presented to the IAPMO Standards Review Committee on July 12, 2021

General: The change reported in this summary are limited to the following component standards of this compendium: CSA B137.0, CSA B137.1, CSA B137.5, CSA B137.6, and CSA B137.9. The change to these standards should not have an impact on currently listed products. The significant changes are:

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

- All changes are editorial and should not have an impact on currently listed products

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

- Expanded the scope to add a 250 Series classification of PE pipe and tubing (see Sections 5.1.3.1, and 5.1.3.3)

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

- Expanded the scope to include additional types of moulded plastic inserts from sulfone plastic (SP) (see Section 4.2.4.1)
- Expanded the scope to include push fit fittings complying with ASSE 1061 (see Section 5.1.7)
- Revised the Hydrostatic sustained pressure test of tubing and fittings test procedure to remove a step requiring assemblies to be filled with water at a minimum temperature of 50 °C (see Section 6.9)

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

- Expanded the scope to include additional sizes, working pressures and temperatures (see Sections 1.1, 5.2, 5.5.1, 5.5.2, 6.1, 6.2.4, and 7.0)

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

- All changes are editorial and should not have an impact on currently listed products



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

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.

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1.4

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

Section 2, Reference publications: The following standards were added, revised, or deleted as follows:

CSA Group

~~CAN/CSA-B125-01 (withdrawn)~~

~~Plumbing fittings~~

~~B128.1-06/B128.2-06 (R2014/R2016)~~

~~Design and installation of non-potable water systems/Maintenance and field testing of non-potable water systems~~

B137.1:20

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

B137.2:20

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

B137.3:20

Rigid polyvinylchloride (PVC) pipe and fittings for pressure applications

B137.3.1:20

Molecularly oriented polyvinylchloride (PVCO) pipe for pressure applications

B137.4:20

Polyethylene (PE) piping systems for gas services

B137.4.1:20

Electrofusion-type polyethylene (PE) fittings for gas services

B137.5:20

Crosslinked polyethylene (PEX) tubing systems for pressure applications

B137.6:20

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



[B137.9:20](#)

[Polyethylene/aluminum/polyethylene \(PE-AL-PE\) composite pressure-pipe systems](#)

[B137.10:20](#)

[Crosslinked polyethylene/aluminum/crosslinked polyethylene \(PEX-AL-PEX\) composite pressure-pipe systems](#)

[B137.11:20](#)

[Polypropylene \(PP-R & PP-RCT\) pipe and fittings for pressure applications](#)

[B137.12:20](#)

[Polyamide \(PA\) piping systems for gas services](#)

[B137.18:20](#)

[Polyethylene of raised temperature resistance \(PE-RT\) tubing systems for pressure applications](#)

[B137.19:20](#)

[Crosslinked polyethylene \(PEX\) piping systems for gas services](#)

~~C22.1-1518~~

Canadian Electrical Code, Part I

ANSI/CSA-IGSHPA C448 Series-~~02 (R2007)~~16 Design and installation of ~~earth-energy~~ systems ~~for commercial and residential buildings~~.

~~Z662-1519~~ Oil and gas pipeline systems

~~CAN/CSA-Z234.3-89~~ (withdrawn)

Guide for the selection and use of preferred numbers

~~Z662:1519~~

Oil and gas pipeline systems

ASME (The American Society of Mechanical Engineers)

~~B1.20.1-2013~~(R2018) Pipe Threads, General Purpose, Inch

~~B16.18-2012~~2018 Cast Copper Alloy Solder Joint Pressure Fittings

~~B16.22-2013~~2018 Wrought Copper and Copper Alloy Solder Joint Pressure Fittings

~~B16.40-2013~~2019 Manually Operated Thermoplastic Gas Shutoffs and Valves in Gas Distribution Systems

~~B16.51-2013~~2018 Copper and Copper Alloy Press-Connect Pressure Fittings

[ASME \(The American Society of Mechanical Engineers\)/CSA Group](#)

[ASME A112.18.1-2018/CSA B125.1:18](#)

[Plumbing supply fittings](#)

ASTM International (American Society for Testing and Materials)

~~A240/A240M-16~~18 Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

~~B62-15~~17 Standard Specification for Composition Bronze or Ounce Metal Castings

~~B75/B75M-11~~19 Standard Specification for Seamless Copper Tube

~~B124/B124M-16~~19 Standard Specification for Copper and Copper Alloy Forging Rod, Bar, and Shapes

~~B140/B140M-12~~ (2017) Standard Specification for Copper-Zinc-Lead (Red Brass or Hardware Bronze) Rod, Bar, and Shapes

~~B283/B283M-16~~19 Standard Specification for Copper and Copper-Alloy Die Forgings (Hot-Pressed)

~~D395-03~~(R2008)16 Standard Test Methods for Rubber Property — Compression Set

~~D412-06~~ae115a Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers — Tension

~~D471-06~~ae116 Standard Test Method for Rubber Property — Effect of Liquids

~~D618-08~~13 Standard Practice for Conditioning Plastics for Testing

~~D638-08~~14 Standard Test Method for Tensile Properties of Plastics



D695-~~08~~15 Standard Test Method for Compressive Properties of Rigid Plastics
D746-~~07~~14 Standard Test Method for Brittleness Temperature of Plastics and Elastomers by Impact
D789-~~07~~15 Standard Test Methods for Determination of Solution Viscosities of Polyamide (PA)
D792-~~08~~13 Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement
B858-~~16~~ 06 (2018)
Standard Test Method for Ammonia Vapor Test for Determining Susceptibility to Stress Corrosion Cracking in Copper Alloys
D395-~~16~~18
Standard Test Methods for Rubber Property — Compression Set
D412-~~15a~~16
Standard Test Methods for Vulcanized Rubber and Thermoplastic Elastomers — Tension
D471-16a
Standard Test Method for Rubber Property — Effect of Liquids
D789-~~15~~19
Standard Test Methods for Determination of Solution Viscosities of Polyamide (PA)
D883-~~12e~~119c Standard Terminology Relating to Plastics
D1149-~~16~~18 Standard Test Method for Rubber Deterioration — Cracking in an Ozone Controlled Environment
D1505-~~10~~18 Standard Test Method for Density of Plastics by the Density-Gradient Technique
D1599-~~14e~~118 Standard Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings
D1600-~~14~~18 Standard Terminology for Abbreviated Terms Relating to Plastics
D1603-14 Standard Test Method for Carbon Black Content in Olefin Plastics
D2152-~~13~~17 Standard Test Method for Adequacy of Fusion of Extruded Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion
D2240-15e1 Standard Test Method for Rubber Property — Durometer Hardness
D2290-~~12~~19a Standard Test Method for Apparent Hoop Tensile Strength of Plastic or Reinforced Plastic Pipe
D2412-11(2018) Standard Test Method for Determination of External Loading Characteristics of Plastic Pipe by Parallel- Plate Loading
D2466-~~15~~17 Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings, Schedule 40
D2564-12(2018) Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems
~~D2581-09 Standard Specification for Polybutylene (PB) Plastics Molding and Extrusion Materials~~
D2765-~~11~~ 16 Standard Test Methods for Determination of Gel Content and Swell Ratio of Crosslinked Ethylene Plastics
D3261-~~15~~16 Standard Specification for Butt Heat Fusion Polyethylene (PE) Plastic Fittings for Polyethylene (PE) Plastic Pipe and Tubing
E8/E8M-~~15a~~16a Standard Test Methods for Tension Testing of Metallic Materials
F610/F610M-~~00a (2005)~~2015 Standard Test Method for Evaluating the Quality of Molded Poly(Vinyl Chloride) (PVC) Plastic Pipe Fittings by the Heat Reversion Technique
F656-~~08~~ 15 Standard Specification for Primers for Use in Solvent Cement Joints of Poly(Vinyl Chloride) (PVC) Plastic Pipe and Fittings
F876-19a
Standard Specification for Crosslinked Polyethylene (PEX) Tubing
F905-~~2011~~04(2018) Standard Practice for Qualification of Polyethylene Saddle-Fused Joints



[F1055-16a](#)

[Standard Specification for Electrofusion Type Polyethylene Fittings for Outside Diameter Controlled Polyethylene and Crosslinked Polyethylene \(PEX\) Pipe and Tubing](#)

~~F1057-10~~[19](#) Standard Practice for Estimating the Quality of Extruded Poly(Vinyl Chloride) (PVC) Pipe by the Heat Reversion Technique

~~F1281-11~~[17](#) Standard Specification for Crosslinked Polyethylene/Aluminum/Crosslinked Polyethylene (PEX-AL-PEX) Pressure Pipe

~~F1282-10~~[17](#) Standard Specification for Polyethylene/Aluminum/Polyethylene (PE-AL-PE) Composite Pressure Pipe

~~F1473-16~~[18](#) Standard Test Method for Notch Tensile Test to Measure the Resistance to Slow Crack Growth of Polyethylene Pipes and Resins

~~F1807-15~~[19a](#) Standard Specification for Metal Insert Fittings Utilizing a Copper Crimp Ring, [or Alternate Stainless Steel Clamps](#), for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing

~~F1865-09~~

~~Standard Specification for Mechanical Cold Expansion Insert Fitting With Compression Sleeve for Cross-linked Polyethylene (PEX) Tubing~~

~~F1960-12~~[15](#) Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Cross-linked Polyethylene (PEX) Tubing

~~F2023-08~~[15](#) Standard Test Method for Evaluating the Oxidative Resistance of Crosslinked Polyethylene (PEX) Tubing and Systems to Hot Chlorinated Water

~~F2080-12~~[16](#) Standard Specification for Cold-Expansion Fittings With Metal Compression-Sleeves for Cross-Linked Polyethylene (PEX) Pipe1

~~F2098-08~~[15](#) Standard Specification for Stainless Steel Clamps for Securing SDR9 Cross-linked Polyethylene (PEX) Tubing to Metal Insert and Plastic Insert Fittings

~~F2159-11~~[14](#) Standard Specification for Plastic Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Cross-linked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing

~~F2263-14~~[\(2019\)](#) Standard Test Method for Evaluating the Oxidative Resistance of Polyethylene (PE) Pipe to Chlorinated Water

~~F2657-12~~[07 \(2018\)](#) Standard Test Method for Outdoor Weathering Exposure of Crosslinked Polyethylene (PEX) Tubing

~~F2735-09~~[\(2016\)](#)[18](#)

~~Standard Specification for Plastic Insert Fittings for SDR9 Cross-linked Polyethylene (PEX) and Polyethylene of Raised Temperature (PE-RT) Tubing~~

~~F3347-19~~

~~Standard Specification for Metal Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing~~

~~F3348-19~~

~~Standard Specification for Plastic Press Insert Fittings with Factory Assembled Stainless Steel Press Sleeve for SDR9 Cross-linked Polyethylene (PEX) Tubing~~

AWWA (American Water Works Association)

M11 (~~Fourth~~[Fifth](#) Edition), ~~2004~~[2017](#)

Steel Water Pipe: A Guide for Design and Installation

M23 (~~2002~~[2020](#) Edition)

PVC Pipe — Design and Installation



ISO (International Organization for Standardization)

307:~~2007~~2019

Plastics — Polyamides — Determination of viscosity number

1183-1:~~2012~~2019

Plastics — Methods for determining the density of non-cellular plastics — Part 1: Immersion method, liquid pycnometer method and titration method

3127:1994 (2017)

Thermoplastics pipes — Determination of resistance to external blows — Round-the-clock method

~~4427-3:2019~~

Plastics piping systems for water supply, and for drainage and sewerage under pressure — Polyethylene (PE) — Part 3: Fittings

6509-1:2014

Corrosion of metals and alloys — Determination of dezincification resistance of copper alloys with zinc — Part 1: Test method

6964:~~1986~~2019

Polyolefin pipes and fittings — Determination of carbon black content by calcination and pyrolysis — Test method ~~and basic specification~~

9080: 2012(2018) Plastics piping and ducting systems — Determination of the long-term hydrostatic strength of thermoplastics materials in pipe form by extrapolation

~~10147:2011~~ (2017)

Pipes and fittings made of crosslinked polyethylene (PE-X) — Estimation of the degree of crosslinking by determination of the gel content

11357-3:~~2011~~ 2018 Plastics — Differential scanning calorimetry (DSC) — Part 3: Determination of temperature and enthalpy of melting and crystallization

12162: 2009 (2015) Thermoplastics materials for pipes and fittings for pressure applications — Classification, designation and design coefficient

13477:2008 (2018)

Thermoplastics pipes for the conveyance of fluids — Determination of resistance to rapid crack propagation (RCP) — Small-scale steady-state test (S4 test)

13478:2007 (2016)

Thermoplastics pipes for the conveyance of fluids — Determination of resistance to rapid crack propagation (RCP) — Full-scale test (FST)

~~14531-1:2002~~ (2019)

Plastics pipes and fittings — Crosslinked polyethylene (PE-X) pipe systems for the conveyance of gaseous fuels — Metric series — Specifications — Part 1: Pipes

~~14531-2:2004~~ (2018)

Plastics pipes and fittings — Crosslinked polyethylene (PE-X) pipe systems for the conveyance of gaseous fuels — Metric series — Specifications — Part 2: Fittings for heat-fusion jointing

~~14531-3:2010~~ (2016)

Plastics pipes and fittings — Crosslinked polyethylene (PE-X) pipe systems for the conveyance of gaseous fuels — Metric series — Specifications — Part 3: Fittings for mechanical jointing (including PE-X/metal transitions)

~~14531-4:2006~~ (2015)

Plastics pipes and fittings — Crosslinked polyethylene (PE-X) pipe systems for the conveyance of gaseous fuels — Metric series — Specifications — Part 4: System design and installation guidelines

15512:~~2014~~ 2019 Plastics — Determination of water content



TR 9080:1992/Cor 1:1995 (superseded by ISO 9080:2003)

Thermoplastics pipes for the transport of fluids — Methods of extrapolation of hydrostatic stress rupture data to determine the long-term hydrostatic strength of thermoplastics pipe materials

15874:2013 (2017)

Plastics piping systems for hot and cold water installations — Polypropylene (PP)

15875-3:2003 (2019)

Plastics piping systems for hot and cold water installations — Crosslinked polyethylene (PE-X) — Part 3: Fittings

16422:2014

Pipes and joints made of oriented unplasticized poly(vinyl chloride) (PVC-O) for the conveyance of water under pressure — Specifications

NRC (National Research Council Canada)

National Plumbing Code of Canada ~~2010~~2015

NSF/ANSI (National Sanitation Foundation-NSF International/American National Standards Institute/National Standard of Canada)

NSF/ANSI 61-~~2015~~2019 Drinking Water System Components — Health Effects

PPI (Plastics Pipe Institute)

TR-3/~~2016~~2018

Policies and Procedures for Developing Hydrostatic Design Basis (HDB), Hydrostatic Design Stress (HDS), Pressure Design Basis (PDB), Strength Design Basis (SDB), ~~and~~ Minimum Required Strength (MRS) Ratings, and Categorized Required Strength (CRS) for Thermoplastic Piping Materials or Pipe

TR-4/2019

PPI Listing of Hydrostatic Design Basis (HDB), Hydrostatic Design Stress (HDS), Strength Design Basis (SDB), Pressure Design Basis (PDB) and Minimum Required Strength (MRS) Ratings for Thermoplastic Piping Materials or Pipe

UL (Underwriters Laboratories)

UL 1738 Ed. 3-2010

Standard for Venting Systems for Gas-Burning Appliances, Categories II, III, and IV

ULC (Underwriters Laboratories of Canada)

ULC S636-08

Standard for Type BH Gas Venting Systems

Section 3, Definitions and abbreviations: Additional definitions and abbreviation were included as follows:

3.1 Definitions

Polypropylene (PP) —

Polypropylene random copolymer (PP-R) — a propylene plastic containing not more than 50% of another olefinic monomer (or monomers) having no functional group other than the olefinic group and copolymerized with propylene.

Polypropylene random copolymer with modified crystallinity (PP-RCT) — a propylene random copolymer with modified crystallinity and temperature resistance.



~~*Random copolymerized polypropylene (PP-R) — propylene that has been polymerized with either polyethylene or butyldiene to increase impact strength at temperatures below 5 °C.*~~

3.2 Abbreviations

CI — design coefficient

CRS — categorized required strength

DN — nominal diameter

DS — design stress

LCL — lower confidence limit

LTHS — long-term hydrostatic strength

Section 4, Material requirements:

4.4 Metallic materials

4.4.1 Nonferrous materials

4.4.1.4 Crimping Rings

Crimping rings shall be made of copper alloys UNS C10200, C12000, or C12200. The crimping rings shall have a hardness of 35 to 45 measured on the Rockwell 15T scale.

4.4.2 Ferrous materials

Ferrous metals, when tested as part of an assembly, shall comply with the corrosion-resistance requirements of Clause ~~6.1.1~~ 5.2.2.1 of ~~CAN~~ASME A112.18.1/CSA-B125.1

Section 6, Test methods: Added a temperature test condition for clarification as follows:

6.6.4.2.2

Pipe and tubing in sizes NPS-4 and smaller shall be tested at 23 °C for long-term hydrostatic strength in accordance with Clause 6.6.4.1, with the following exceptions:

The testing method shall be either water-in/air-out; or water-in/water-out.

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Section 7.2, Fittings:

7.2.1

Fittings shall be marked with at least the following:

- a) *the manufacturer's name or trademark;*
- b) *the material designation (e.g., CPVC, PA, PB 2110, PE, PP-R, or PVC), if applicable;*
- c) *the CSA Standard designation (e.g., "CSA B137.1" or "B137.1"); and*
- d) *the intended service, where applicable (e.g., "GAS", "potable", "P", or "PW").*

Fittings should also be marked with the nominal size.



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

Section 5.1.3, Pressure rating: Added a 250 Series classification of PE pipe and tubing as follows:

5.1.3.1

PE pipe and tubing shall be classified according to a series number that denotes its pressure rating for water at 23 °C, expressed in pounds per square inch, as follows:

Product	Rating
Pipe	Series 50
	Series 60
	Series 75
	Series 80
	Series 100
	Series 125
	Series 160
	Series 200
	Series 230
	Series 250
Tubing	Series 160
	Series 200
	Series 250

5.1.3.3

PE tubing shall be designed for continuous operation at the ~~appropriate~~ [following](#) pressure ratings [specified in Table 7](#):

- a) 1105 kPa (160 psi) for Series 160;
- b) 1380 kPa (200 psi) for Series 200; [and](#)
- c) [1720 kPa \(250 psi\) for Series 250.](#)

Table 5, Minimum wall thicknesses and tolerances for OD-sized PE pipe,

Table 6, Minimum wall thicknesses and tolerances for PE tubing

Table 7, Pressure ratings for PE pipe (with water at 23 °C): These tables were revised to add Series 250.



CSA B137.5 “Crosslinked polyethylene (PEX) tubing systems for pressure applications”

Section 4, General Requirements: Expanded the scope to include additional types of moulded plastic inserts from sulfone plastic (SP) as follows:

4.2.4 Plastic fittings and components

4.2.4.1

Plastic insert fittings shall be moulded from sulfone plastic (SP) that meets the requirements of ASTM D6394. SP material used in the manufacture of fittings shall be

- a) group 01, class 1, grade 2 unreinforced polysulfone;
- b) group 03, class 1, grade 1 or grade 2 unreinforced polyphenylsulfone;
- c) ~~an unreinforced blend of the materials specified in Items a) and b), with the polyphenylsulfone continuous phase comprising 55% to 80% of the blend.~~ group 04, class 1, grade 2 unreinforced sulfone polymer blend; or
- d) 20% glass-filled polysulfone having the additional properties defined by the material designation SP0110G20A30430.

Section 5, Detailed requirements: Expanded the scope to include push fit fittings complying with ASSE 1061 as follows:

5.1.2.2

Fittings shall comply with the requirements of the applicable reference fitting standard, this Standard and the applicable requirements of CSA B137.0. Reference fitting standards include ASTM F1807, ~~F1865~~, ASTM F1960, ASTM F2080, ~~F2098~~, ASTM F2159, ~~and~~ ASTM F2735, ASTM F3347, and ASTM F3348.

5.1.3 Insert-type fittings

5.1.3.1

Insert-type fittings utilize a reinforcing insert ~~which~~ that is inserted into the tubing and a ring or clamp ~~which~~ that compresses the tubing over the insert.

Note: Examples of insert-type fitting reference standards are ASTM F1807, ASTM F2159, ~~and~~ ASTM F2735, ASTM F3347, and ASTM F3348.

5.1.6 Cold-expansion fittings

5.1.6.1

Cold expansion fittings require the expansion of the pipe or tube prior to insertion of the fitting. Examples of cold expansion fitting standards are ASTM ~~F1865~~, F1960, and F2080.

5.1.7 Push-fit fittings

Push-fit fittings shall comply with the requirements of ASSE 1061. A tube support liner shall always be used with PEX tubing systems, when required by the fitting manufacturer.

~~5.1.75~~.1.8 Fitting qualification

~~Fittings shall meet~~ PEX tubing shall be used with fitting systems that are specifically recommended for use by the PEX tubing manufacturer as a result of testing to the system performance requirements of this Standard (Clauses 5.2.2, 5.3, and 5.9) and ~~the applicable fitting standard, if any, when tested~~



~~with each specific PEX tubing with which it is intended to be used, when applicable, the requirements of the reference fitting Standard.~~

Section 6, Test Methods: Revised the Hydrostatic sustained pressure test of tubing and fittings test procedure as follows:

6.9 Hydrostatic sustained pressure test of tubing and fittings

Assemblies shall be tested in accordance with ASTM D1598, with the following exceptions:

- a) six test assemblies shall be tested;
- ~~b) assemblies shall be filled with water at a temperature of at least 50 °C;~~
- ~~eb)~~ the test temperature shall be 82 °C ± 2 °C;
- ~~dc)~~ the test pressure shall be in compliance with Table 5;
- ~~ed)~~ external test environment shall be air or water; and
- ~~ef)~~ the test conditions shall be maintained for 1000 h.

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

Section 1, Scope: Expanded the scope to include additional sizes, working pressures and temperatures as follows:

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.*

Section 5, Manufactured pipe, tubing, and fittings: Expanded the scope to include additional sizes, working pressures and temperatures as follows:

5.2 Hydrostatic sustained pressure strength

When pipe or tubing specimens are tested in accordance with Clause 6.1, the regression curve through the test points shall have a projected nominal value of at least

- a) *6.90 MPa at 82 °C, for SDR 11 and Schedules 40 and 80 pipe; and*
- b) *27.6 MPa at 23 °C, for SDR 13.5 and SDR 21 pipe.*

5.5.1 SDR 11 and Schedules 40 and 80 pipe

SDR 11 and Schedules 40 and 80 pipe, tubing, and fittings shall comply with the minimum short-term hydrostatic pressure requirements of test conditions A and B, as specified in Table 7, when tested as assemblies in accordance with Clause 6.3.

5.5.2 SDR 13.5 and SDR 21 pipe



SDR 13.5 and SDR 21 pipe shall not fail or leak when subjected to a pressure of 7.06 MPa and 4.41 MPa, respectively, within 60 s to 70 s at 23 °C ± 2 °C, in accordance with ASTM D1599.

Section 6, Test methods:

6.1 Hydrostatic pressure test of pipe and tubing

6.1.1

Test specimens from SDR 11 pipe and tubing and from Schedules 40 and 80 pipe shall be conditioned in accordance with Clause 6.1.1 of CSA B137.0, followed by further conditioning in an oven at 82 °C for a period of 4 h.

Test specimens from SDR 13.5 and SDR 21 pipe shall be conditioned at 23 °C only, and no additional conditioning in excess of the time specified in CSA B137.0 shall be required.

6.1.2

The hydrostatic pressure test shall be conducted at 82 °C ± 1 °C for SDR 11 and Schedules 40 and 80 pipe, and at 23 °C for SDR 13.5 and SDR 21 pipe.

6.1.3

Pipe and tubing shall be tested in accordance with Clause 6.6.4.2 of CSA B137.0.

Note: See Clause A.5.5 for guidance on the assembly of pipe and tubing.

6.1.4

Test specimens of SDR 11 and Schedules 40 and 80 pipe shall be filled with water at a temperature of at least 50 °C but not exceeding 83 °C.

Note: This Clause does not apply to SDR 13.5 and SDR 21 pipe.

6.2.4 Procedure

6.2.4.1 SDR 11 and Schedules 40 and 80 Pipe

After conditioning, SDR 11 and Schedules 40 and 80 ~~the~~ specimens shall be pressurized to 1380 kPa and maintained at this pressure for a minimum of 2000 h at an ambient temperature of 82 °C. The testing procedure shall be either

- a) water-in/air-out; or
- b) water-in/water-out.

6.2.4.2 SDR 13.5 and SDR 21 pipe

6.2.4.2.1

Assembled specimens of solvent cemented joints of fittings and SDR 13.5 and SDR 21 pipe shall be conditioned in air at a standard laboratory atmosphere for at least 24 h at 23 °C before pressurizing. After conditioning, the specimens shall be pressurized to 2760 kPa and maintained at this pressure for at least 2000 h at an ambient temperature of 23 °C. The testing procedure shall be either

- a) water in/air out; or
- b) water in/water out.

6.2.4.2.2

SDR 13.5 and SDR 21 pipe shall not be used for the hydrostatic pressure testing at 82 °C of the fittings covered in this Standard. Only SDR 11 and Schedules 40 and 80 pipe shall be used for the assessment of fitting hydrostatic capability.

Section 7, Markings:

7.1 Pipe and tubing

7.1.1 SDR 11 pipe and tubing and Schedules 40 and 80 Pipe



[SDR 11 and Schedules 40 and 80](#) pipe and tubing shall be marked in accordance with Clause 7.1 of CSA B137.0 and also marked with the word “pipe” or “tubing”, as appropriate.

Note: ~~The-These covered by this Standard~~ products have a maximum pressure rating of 690 kPa at 82 °C. Schedule 80 pipe can have a higher pressure rating, and this higher pressure rating may be marked on the pipe in keeping with industry practice.

[7.1.2 SDR 13.5 and SDR 21 pipe](#)

[SDR 13.5 and SDR 21 pipe shall be marked in accordance with Clause 7.1 of CSA B137.0 and also marked with the word “pipe” and the legend “COLD WATER ONLY/EAU FROIDE SEULEMENT”.](#)

Note: [This requirement does not apply to fittings.](#)

7.2 Fittings

7.2.2

Fittings for pipe shall be marked with either “SDR 11” or “Schedule 80” to indicate that they are made to SDR 11 or Schedule 80 dimensions, respectively. [Acceptable abbreviations for “Schedule 80” are “Sch 80” and “S 80”.](#) In addition, SDR 11 fittings for pipe shall be marked with the letters “IPS”.

Table 2 Dimensions of CPVC pipe: The table was revised to add SDR 13.5 pipe.

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

Section 2 Reference publications: The following standards were added, revised or deleted as follows:

[CSA Group](#)

[B137.0:20](#)

[Definitions, general requirements, and methods of testing for thermoplastic pressure piping](#)

Section 4, General requirements:

4.1 Materials:

PE-AL-PE composite pipe ~~is~~[shall be](#) composed of one metallic and two polymeric components. The constituent materials shall comply with the requirements specified in Clauses 4.2 to 4.5.

4.2 Basic requirements

PE-AL-PE composite pipes shall be made of PE compounds that comply with the applicable requirements of CSA B137.0.

Note: [See Annex B for assembly and installation considerations.](#)

Section 5 Detailed requirements:

5.5 Sustained pressure strength

The hydrostatic design basis and the pressure rating for each construction of PE-AL-PE pipe shall be established at 23 °C, 60 °C, or 82 °C, in accordance with Clause 6.6 of CSA B137.0, substituting pressure for fibre stress and using a service (design) factor, *f*, of 0.5.

Note: [See Annex A for further information on hydrostatic design basis and hydrostatic design stress.](#)