



VARIANCE

July 15, 2018

Subject:

Blazemaster Chlorinated polyvinylchloride (CPVC) pipe (SPV-002)

in residential partial flow-through fire sprinkler/standpipe system applications utilizing a Dual Check Valve Backflow Preventer for Fire Protection Systems (DuCF) (SPV-002)

Background

A variance is written permission to build, install, process or otherwise act in a manner not consistent with the provisions of an applicable code but which provides, in the opinion of the Authority Having Jurisdiction (AHJ) or Safety Codes Officer, an equivalent or greater level of safety to persons or property.

As stated in Sentence 1.2.1.1.(1). of Division A of the National Plumbing Code of Canada (NPC) 2015, compliance with this Code may be achieved by either of the following methods:

- a) Complying with the applicable acceptable solutions in Division B of the Code or
- b) Using alternative solutions that will achieve at least the minimum level of performance required by Division B in the areas defined by the objectives and functional statements attributed to the applicable acceptable solutions.

Applicable regulatory requirements:

National Plumbing Code of Canada 2015, Division B, Clause 2.6.2.4(2)(a)

(2)(a) residential partial flow-through fire sprinkler/standpipe systems in which the pipes and fittings are constructed of potable water system materials shall be protected by a dual check valve backflow preventer conforming to CSA B64.6.1, "Dual Check Valve Backflow Preventers for Fire Protection Systems (DuCF),"

National Plumbing Code of Canada 2015, Division B, Clause 2.2.5.8

- 1) CPVC hot and cold-water pipe, fittings and solvent cements shall conform to CAN/CSA-137.6, "Chlorinated Polyvinylchloride (CPVC) Pipe, Tubing, and Fittings for Hot- and Cold-Water Distribution Systems."
- 2) The design temperature and design pressure of a CPVC piping system shall conform to Table 2.2.5.8.

Reason for the variance

The purpose of this variance to clause 2.6.2.4(2)(a) and 2.2.5.8 of the National Plumbing Code of Canada is to install Blazemaster CPVC pipe in residential partial flow-through fire sprinkler/standpipe system applications. The use of Blazemaster CPVC pipe in residential homes utilizing a partial flow-through fire sprinkler/standpipe system and a Dual Check Valve Backflow Preventer for Fire Protection Systems (DuCF) does not meet the requirements of the National Plumbing Code of Canada 2015. Blazemaster CPVC pipe is currently not approved for use in a potable water system. For a system using Blazemaster CPVC pipe to comply with 2.6.2.4 of the NPC 2015 a Double Check Valve Backflow Preventer for Fire Protection Systems (DCVAF) would have to be installed. Installation of a DCVAF requires yearly testing and maintenance of the device.

Verification of equivalency

CAN/CSA-B137.6-13

1.1

This Standard covers chlorinated polyvinylchloride (CPVC) pipe, tubing, and fittings having standard dimension ratio 11 (SDR 11), and Schedules 40 and 80 pipe in 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.

Blazemaster pipe and fittings manufactured by Lubrizol meet the ASTM F442. Included in this Standard are the sustained and burst pressure test requirements. Blazemaster CPVC 4120-06 for Canada is rated at 690 kPa (100 PSI) @ 82 C (179.6 F) meets the temperature and pressure rating prescribed by CAN/CSA-B137.6-13.

CAN/CSA-B137.6-13

4.2.1.1

Compounds, pipes, fittings, and solvent cements intended for potable water applications shall comply with the applicable requirements of NSF/ANSI 61.

Blazemaster pipe and fittings manufactured by Lubrizol carries an NSF/ANSI 61 approval referenced in CAN/CSA-B137.6-13. Health Canada adopted the NSF/ANSI 61 Drinking water system components and Alberta Adopted the Standard under the Potable Water Regulation Section 8(1)(b) in September of 2003.

CAN/CSA-B137.6-13

4.2.1

CPVC compounds used in the manufacture of pipe, tubing, and fittings shall comply with the properties of CPVC cell class 23447 specified in ASTM D1784. The compound used in a single production run shall be from one manufacturer.

Blazemaster Sample specifications procedures sheet outlines that all CPVC fire sprinkler pipe and fittings shall be extruded/molded from BlazeMaster® CPVC compounds manufactured by Lubrizol Advanced Materials. The pipe compound shall meet cell class 23447 and the fittings compound shall meet cell class 24447 as defined by ASTM D1784. Both pipe and fittings compounds shall be certified by NSF International for use with potable water and shall be pressure rated by Plastics Pipe Institute (PPI).

CAN/CSA-B137.6-13

5.4.1

Solvent cement for use with CPVC piping shall comply with ASTM F493, except for clauses 5.6, 6.4 and 9 of that Standard.

Blazemaster Sample specifications procedures sheet outlines that all socket type joints shall be assembled with solvent cements that meet or exceed the requirements of ASTM F493. Safe handling of solvent cements shall be in accordance with ASTM F402. Solvent cement shall be certified by NSF International for use with potable water, and approved by the manufacturers. The solvent cements shall be approved for use with BlazeMaster CPVC pipe and fittings.

Attributing objective and functional statements

OH5 – Hazardous Substances Containment

OS3.4 – exposure to hazardous substances

F46 – To minimize the risk of contamination of potable water

This Variance is based on:

With exception of the Standard Dimension Ratio, Blazemaster CPVC pipe manufactured by Lubrizol currently meets all requirements, Functional Statements and Objectives of CAN/CSA-B137.6-13 referenced in clause 2.2.5.8 of the National Plumbing Code of Canada 2015.

Lubrizol the manufacturer of Blazemaster Chlorinated polyvinylchloride (CPVC) pipe has opened project number P-17-13 with The Canadian Standards Association (CSA) to request a change to the CAN/CSA-B137.6-13 Standard. This is the accepted standard listed in the National Plumbing Code of Canada 2015 for chlorinated polyvinylchloride (CPVC) pipe, tubing, and fittings having a Standard Dimension Ratio of 11 (SDR 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. The Standard specifies requirements for materials, workmanship, dimensions and tolerances, hydrostatic sustained pressure strength, thermo-cycling resistance, solvent cement, joint strength, and methods of marking. Project P-17-13 purposes a change to CAN/CSA-B137.6-13 to reduce the SDR 11 requirement to an SDR of 13.5.

In the event Lubrizol's project P-17-13 with CSA is rejected, compliance with the National Plumbing Code of Canada 2015 will be required. All previous and future installations of residential partial flow-through fire sprinkler/standpipe systems employing Blazemaster CPVC pipe, within the jurisdiction of The City of Calgary shall have a Double Check Valve Backflow Preventer for Fire Protection Systems (DCVAF) installed and tested.

Address

Where referenced as (SPV-002) within the building/plumbing permit conditions, this variance shall be applicable to the address of the Building/Plumbing permit.

Authority and conditions

Under the authority of Section 38 of the Safety Codes Act, Chapter S-1 of the Statutes of Alberta 2000, this Variance is granted based on:

- The owner/contractor acknowledging the authority under which the variance is issued by referencing the Variance in the Building Permit documentation.
- The owner/contractor ensuring that the project is carried out as outlined in this Variance.

Note:

Non-compliance with the requirements of this variance is an offence under the Alberta Safety Codes Act.

Chief Plumbing & Gas Inspector
Calgary Building Services
Planning & Development

Planning & Development