

PROPOSED CHANGE TO THE 2024 BUILDING CODE

O. Reg. 163/24 as Amended

CHANGE NUMBER	B-07-02-05-01	Ontario
CODE REFERENCE	Division B / 7.2.5.16.(3)	
DESCRIPTION OF THE PROPOSED AMENDMENT	The proposed change increases options for Drain Waste and Vent (DWV) pipes and revises the restrictions on the usage of Cellular Core Polyvinyl Chloride (PVC) Piping.	

EXISTING 2024 BUILDING CODE PROVISION(S)

7.2.5.16. Cellular Core PVC Pipe and Fittings

(3) Cellular core PVC pipe shall only be used in residential *buildings* containing 1 or 2 *dwelling units* and in row houses that do not exceed 3 *storeys* in height.

PROPOSED CODE CHANGE

7.2.5.16. Cellular Core PVC Pipe and Fittings

(3) Cellular core PVC pipe shall only be used in a *building of residential occupancy* permitted to be of *combustible construction* ~~residential *buildings* containing 1 or 2 *dwelling units* and in row houses that do not exceed 3 *storeys* in height.~~

RATIONALE FOR CHANGE

Problem/General Background

The Proponent indicates the following:

The existing wording in 7.2.5.16. (3) excludes the use of PVC cellular core DWV pipe for use in buildings with more than 2 dwelling units and row houses more than 3 storeys.

The product is only new in Canada and has been referenced in U.S. building codes and manufactured and installed in the U.S. for many years. See attached documentation regarding ASTM standards F891 and F3128, and code reference locations in the Unified Plumbing Code and the International Plumbing code (pages 1 to 4).

PVC cellular core DWV pipe is schedule 40 size, as are other referenced products for DWV in the Building Code. This ensures that flow capacity for this product is adequate for DWV drainage, since the inside diameter and roughness coefficient is identical to products already in use.

PVC cellular core DWV pipe stiffness is well above 320 kPa, making it suitable for underground installations.

All PVC pipe expands and contracts with temperature fluctuations. To accommodate this, PVC expansion joints are available for use with PVC cellular core DWV pipe. The coefficients for expansion and contraction are well known and accommodating this possible movement for taller structures is common practice. See attached excerpts from the Installation Guide for PVC Cellular Core DWV pipe, which details the use of expansion joints (page 5 and 6).

Requirements for support for vertical and horizontal piping (which apply to PVC cellular core DWV pipe) are already included in the Building Code, Section 7.3

A study done for CMHC indicated that PVC cellular core DWV pipe found lower sound pressure levels than ABS cellular core DWV pipe permitted in the Code in all installation scenarios tested (vertical, horizontal, enclosed, bare).

The proposed code change is intended that this product would be used in building of residential occupancy permitted to be of combustible construction only. The proposal does not cover any other construction type. Regardless, testing conducted on 1 ½" PVC cellular core DWV pipe and ABS cellular core DWV pipe that is permitted in the Building Code to ULC S102.2 yielded a flame spread rating of 0 (zero) for the PVC product vs 270 for the ABS product. See the attached documentation for the test results (Appendix II, page 13).

PVC cellular core DWV pipe meets or exceeds all performance requirements that ABS cellular core DWV pipe, which is approved without restriction meets. See attached comparison of standard requirements for the two products (pages 8 to 11).

Justification/Explanation

The Proponent indicates the following:

“The requested change allows the use of PVC cellular core DWV pipe without restriction in building of residential occupancy permitted to be of combustible construction. The addition will contribute to reduced construction costs, which will assist with housing affordability. The use of the product, for the reasons noted above, has no downside as it meets or exceeds all necessary requirements for the end use. The requested change expands the use of a product in residential occupancies, and the product has flame spread rating lower when compared to the ABS products that are currently permitted by the Code.”

Cost/Benefit Implications

The Proponent states the following:

“This change will not bring any additional costs as this will be an additional option for DWV pipe material. Standard DWV fittings and PVC solvent cements and primers already exist and will be used with this product.”

The Proponent suggests that this product will reduce construction cost.

“It is anticipated that making this product available will reduce the cost for plumbing in an average residential housing by approximately 10% to 20% which will amount to approximately \$314 to \$628 saving per standard (2,000 to 2,200 ft²) house.”

The proponent indicates that this product has a flame spread of 0 compared to a flame spread of 270 (PVC cellular core DWV pipe compared to ABS cellular core DWV pipe).

Enforcement Implications

Beyond standard training for code officials with respect to changes in the Building Code, no enforcement issues are anticipated from the addition of this product as an alternative.

Who is Affected

Code users, building officials, designers, builders/contractors, engineers, architects, manufacturers, building business owners, homeowners.

Objective Based Analysis

Provision	Objective/Functional Statement
Division B / 7.2.5.16.(3)	
(3)	* No Objective/Functional Statement are assigned to Sentence (3) as it introduces a limitation on the application of Sentence (1)

Sentence (3) limits the application of Sentence (1), which has the following Objectives and Functional Statements:
 [F20-OH2.1, OH2.2, OH2.3]
 [F20-OP5]

OTHER SUPPORTING MATERIALS

The Proponent provided the following supporting documents under one attachment. Please refer to the attachment.

- Documentation regarding ASTM standards F891 and F3128, and code reference locations in the Unified Plumbing Code and the International Plumbing code.
- Excerpts from the Installation Guide for PVC Cellular Core DWV pipe, which details the use of expansion joints.
- Documentation for the CMHC report.
- Documentation for the test results.
- Comparison of standard requirements.
- Documentation regarding plumbing cost reduction.