

# WI Commercial Building Code

## The 2021 IFGC & the Application of UL 1738 - Discussion

WI Department of Safety and Professional Services

Web Site: <https://dsps.wi.gov/pages/home.aspx>

Randall Dahmen, PE



# History

- For decades, the **plumbing and HVAC industry** has not had a unified, national regulation for the use of **thermoplastic Flue Gas Venting (FGV) piping, fittings, and accessories**.
- In practice, installers often used **Drain, Waste, and Vent (DWV) piping**—such as ABS or Schedule 40 PVC (solid wall or cellular foam core)—for venting flue gases. These materials were attractive primarily because they were inexpensive and widely available.

# History

- However, Drain, Waste and Vent piping was **never designed or tested** for high-temperature corrosive environments associated with flue gases from gas-fired appliances.



Robinson Heating & Cooling

# Safety Concerns

- **Material degradation** – non-tested plastics tend to become **brittle over time**, leading to cracking.
- **Adhesive failures** – Standard plumbing glues often **lose adhesion**, resulting in failed joints.
- **Health hazards** – Failures in venting systems can release **carbon monoxide and other combustion by-products** inside occupied spaces, creating serious life safety risks.

# Regulatory Shift

- With the **adoption of the 2021 International Fuel Gas Code (IFGC)**, Wisconsin's DSPS incorporated an amendment into **SPS 365.0501(4)**:
  - *“Plastic venting systems associated with gas-fired appliances shall meet the requirements of UL 1738, inclusive of specific testing and marking requirements for pipe, fittings and cement.”*

# Regulatory Shift

- This is a **major change** because UL 1738 establishes **strict performance criteria** for:
  - Temperature resistance
  - Chemical resistance
  - Pressure integrity
  - Joint strength
  - Required markings (traceability & compliance labeling)

# Practical Impact

- **Appliance manufacturers:** While some still allow generic DWV plastics, more are **adopting UL 1738 compliance in their installation instructions.**
- **Future retrofits:** If a non-UL 1738 system is installed today and a replacement appliance later requires UL 1738 materials, the **entire venting system must be removed and replaced.** This adds cost, disruption, and liability for building owners and contractors.
- **Code committee rationale:** The Wisconsin commercial building committee's intent is to **prevent stranded installations**—systems that meet today's relaxed standards but will not comply with future requirements.

# Key Takeaways

- **Cost vs. Safety:** Historically, cost drove the use of DWV piping, but safety failures have shown the need for change.
  - **UL 1738 is now the benchmark** for plastic venting systems, covering not just pipe, but fittings and cement.



HC-HVAC.com



# Key Takeaways

- **Long-term compliance:** Installing UL 1738 products now protects against costly replacements later.



Air Unlimited

# Key Takeaways

- **Industry trend:** Adoption is accelerating—contractors, inspectors, and owners should expect UL 1738 to become the **default national standard** in coming years.



The architecture designs

# -- For Your Information --

- The Wisconsin Commercial Building Code is separate from the Wisconsin Uniform Dwelling Code (UDC). The UDC is applicable to 1 & 2 family dwelling units. The UDC has not yet incorporated language similar to that contained in SPS 365.0501(4).
- HOWEVER, Installers shall review SPS 323.14(1) which states, *“Gas Vents (1) General. (a) All gas-fired equipment shall be provided with vent pipes conforming with s. SPS 323.15(2)(e), unless the manufacturer specifies other materials.”*
  - *So, if the HVAC equipment manufacturer specifies a UL 1738 plastic venting system, the installer shall be responsible install the HVAC equipment as required by the manufacturer.*

# The 2021 ICC is FREE On-Line

Go to the following website to view the 2021 International Codes (it's FREE !!):

<https://codes.iccsafe.org>

On the left, Click on **“I-Codes”**, Then to the right of that entry, click on **“2021 I-Codes”** to view the associated I-codes for that year.

*Note that other code years are also available for viewing at this same website.*

# Wisconsin Amendments

- On September 1, 2025, the Wisconsin amendments to the Wisconsin Commercial Building Code as related to the adoption of the 2021 ICC codes may be found on the Department website:
- <https://dsps.wi.gov/Pages/RulesStatutes/TradesProgram.aspx>
- Click on “Commercial Building Code”:
  - Find the appropriate SPS Chapter;
  - Click on the red/white pdf icon button which is located just to the right of the “Help” statement in the upper right of the screen to get a standardized administrative code layout for printing purposes.

# Wisconsin Amendments



Clicking on the pdf icon (see red arrow) will result in the following for printing purposes --

Chapter SPS 361	
ADMINISTRATION AND ENFORCEMENT	
<b>Subchapter I — Scope and Application</b>	
SPS 361.01 Purpose of code.	
SPS 361.02 Scope.	
SPS 361.03 Application.	
SPS 361.04 Definitions.	
SPS 361.05 Adoption of the International Codes.	
SPS 361.06 Fees.	
<b>Subchapter II — Responsibilities, Appeals, Petitions and Penalties</b>	
SPS 361.20 Responsibilities.	
SPS 361.21 Appeals.	
SPS 361.22 Petition for variance.	
SPS 361.23 Penalties.	
<b>Subchapter III — Plan Review and Related Functions</b>	
SPS 361.295 Administrative coordination.	
SPS 361.30 Plan review and approval.	
SPS 361.31 Plans.	
SPS 361.32 Permission to start construction.	
SPS 361.33 Evidence of plan approval.	
SPS 361.35 Revocation of approval.	
SPS 361.36 Expiration of plan approval and extension of plan approval.	
SPS 361.37 Department limitation.	
SPS 361.39 Registration of cross connection control assemblies.	
<b>Subchapter IV — Supervision and Inspections</b>	
SPS 361.40 Supervision.	
SPS 361.41 Inspections.	
<b>Subchapter V — Approval and Inspection of Modular Multifamily Dwellings and their Components</b>	
SPS 361.45 Modular multifamily dwelling scope.	
SPS 361.46 Manufacture, sale, and installation of dwellings.	
SPS 361.47 Approval procedures.	
SPS 361.48 Suspension and revocation of approval.	
SPS 361.485 Effect of suspension and revocation.	
<b>Subchapter VI — Product and Standard Review and Approval</b>	
SPS 361.50 Building product approvals.	
SPS 361.51 Alternate standards and model building codes.	
<b>Subchapter VII — First Class City and Certified Municipality Approvals</b>	
SPS 361.60 Certified municipalities and counties.	

**Note:** Chapters Comm 50 to 64 and Appendices A and B as they existed on June 30, 2002 were repealed and new chapters Comm 61 to 65 and Appendix A and B were created effective July 1, 2002. Chapter Comm 61 was renumbered chapter SPS 361 under s. 13.92 (4) (b) 1., Stats., Register December 2011 No. 672.

**Note:** Chapters SPS 361 to 366 are affected by 2017 Wisconsin Acts 59, 198, 243, 317, 329, 330, and 331. Future rule-making will update chs. SPS 361 to 366 to reflect this legislation.

**Subchapter I — Scope and Application**

(d) Portions of buildings leased to the federal government provided all of the following conditions are met:

1. A statement is recorded with the register of deeds that describes the steps necessary for compliance with chs. SPS 361 to 366 if the space is converted to a nonexempt use.
2. The statement recorded with the register of deeds is