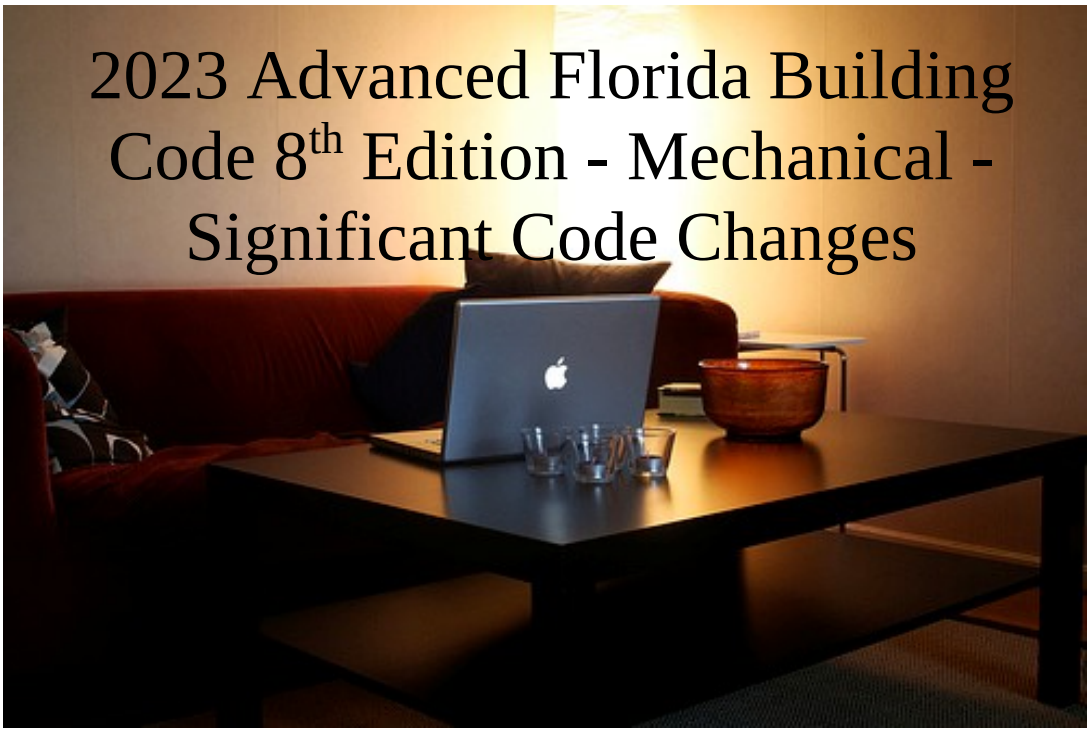


# 2023 Advanced Florida Building Code 8th Edition - Mechanical - Significant Code Changes

By

Elena Ress, P.E.

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1 PDH HOUR

# 2023 Advanced Building Code 8th Edition - Mechanical
# Significant Code Changes – Internet
# Course #1147.0

**Course Provider:**

Southard Engineering, Inc. dba www.pdhlibrary.com
4566B NW 5th Blvd.
Gainesville, FL 32609
352-367-2526 (office)
mail@pdhlibrary.com

**Objective**

The objective of this course is to review the significant code changes in the 8th Edition update to the *2023 Florida Building Code, Mechanical* as compared to the 7th Edition *2020 Florida Building Code, Mechanical*.

This is an advanced code course intended to fulfill the 1-hour Advanced Florida Building Code course requirement for engineers who practice engineering that is related to building design or systems. This course covers the most significant changes in the *2023 Florida Building Code, Mechanical* and is designed for mechanical engineers. The deadline to complete this course in Florida is December 31st, 2024.


*Image Source: ICC: Digital Codes, "2023 Florida Building Code, Mechanical, Eighth Edition." Accessed via https://codes.iccsafe.org/content/FLMC2023P.*

**Introduction**

The effective date is December 31, 2023, for the 8th Edition of the *Florida Building Code*. This code is based on the latest changes to the 2021 International Mechanical Code® with customized amendments adopted statewide. This course only reviews the significant changes made to the mechanical code. Reference the original text to ensure that the appropriate context is used during design.

The mechanical code references other texts as well. Review the referenced materials that have been updated for this edition.

**Changes to Chapter 2 – Definitions**

*Direct Evaporative Cooling*

While direct evaporative cooling is not used frequently in Florida, its definition has been added.

> **DIRECT EVAPORATIVE COOLING.** The evaporative cooling process where water evaporates directly into the air stream, reducing the air's dry-bulb temperature and raising its humidity level.

*Flammability Classification (Refrigerant)*

The definition of "flammability classification" has been modified to be more descriptive rather than prescriptive and an additional classification has been added, Class 2L, which refers to refrigerants "with low flammability and low burning velocity."

> **FLAMMABILITY CLASSIFICATION (REFRIGERANT).** The alphabetical/numerical designation used to identify the flammability of refrigerants.
>
> **Class 1.** Indicates a refrigerant with no flame propogation.
>
> **Class 2.** Indicates a refrigerant with low flammability.
>
> **Class 2L.** Indicates a refrigerant with low flammability and low burning velocity.
>
> **Class 3.** Indicates a refrigerant with high flammability.

*Indirect Evaporative Cooling*

To distinguish the definition of direct evaporative cooling, the definition of "indirect evaporative cooling" has been added.

> **INDIRECT EVAPORATIVE COOLING.** The evaporative cooling process where water evaporates into a secondary air stream, removing heat from a primary air stream utilizing a heat exchanger.

*Refrigerant Safety Group Classification*

The definition of "refrigerant safety group classification", "flammability classification", and "toxicity classifications" have been coordinated.

> **REFRIGERANT SAFETY GROUP CLASSIFICATION.** The alphabetical/numerical designation that indicates both the toxicity and flammability classifications of refrigerants.
>
> **Flammability.** See Flammability classification (Refrigerant).
>
> **Toxicity.** See Toxicity classification (Refrigerant).

*Toxicity Classification (Refrigerant)*

As noted above, this definition was modified to coordinate with other definition changes. The definitions of Class A and Class B are unchanged but are shown below for clarity.

> **TOXICITY CLASSIFICATION (REFRIGERANT).** An alphabetical designation used to identify the toxicity of refrigerants. Class A indicates a refrigerant with lower toxicity. Class B indicates a refrigerant with higher toxicity.
>
> **Class A.** Refrigerants that have an occupational exposure limit (OEL) of 400 parts per million (ppm) or greater.
>
> **Class B.** Refrigerants that have an OEL of less than 400 ppm.

*Unvented Alcohol Fuel Burning Decorative Appliance*

With new technologies, come new definitions:

> **UNVENTED ALCOHOL FUEL BURNING DECORATIVE APPLIANCE.** A stationary, self-contained *appliance* intended to be directly or indirectly secured to a wall or floor and not intended for duct connection. Such *appliance* burns alcohol and is made in a manufacturing facility for subsequent delivery to the installation site.

**Changes to Chapter 3 – General Regulations**

*307.1.1 Identification*

The termination of concealed condensate drains for fuel-burning appliances must now be marked indicating whether the piping is connected to the primary or secondary drain.

*307.2.1.1 Condensate discharge*

Additional requirements have been added for the location of condensate discharge.

> **307.2.1.1 (IPC [M] 314.2.1.1) Condensate discharge.**
>
> Condensate drains shall not directly connect to any plumbing drain, waste or vent pipe. Condensate drains shall not discharge into a plumbing fixture other than a floor sink, floor drain, trench drain, mop sink, hub drain, standpipe, utility sink or laundry sink. Condensate drain connections to a lavatory wye branch tailpiece or to a bathtub overflow pipe shall not be considered as discharging to a plumbing fixture. Except where discharging to grade outdoors, the point of discharge of condensate drains shall be located within the same occupancy, tenant space or *dwelling unit* as the source of the condensate.

*307.2.2 Drain pipe materials and sizes*

Galvanized steel, PE-RT and PVDF have been added to the allowable materials list for condensate from cooling coils and evaporators. In addition, instead of limiting the drain size to ¾" internal diameter, the requirement is now for ¾" *pipe size*. This simplifies the requirement.

*307.2.3.3 Identification*

Similar to the requirement for concealed condensate drains for fuel-burning appliances, condensate drains for cooling coils and evaporators must now also be marked indicating whether the piping is connected to the primary or secondary drain.

**Changes to Chapter 4 – Ventilation**

*401.4 Intake opening location*

An exception was added to the requirement that intake openings shall be separated from contaminant sources.

> 3. Intake openings shall be located not less than 3 feet (914 mm) below contaminant sources where such sources are located within 10 feet (3048 mm) of the opening. Separation is not required between intake air openings and living space exhaust air openings of an individual dwelling unit or sleeping unit where an approved factory-built intake/exhaust combination termination fitting is used to separate the air streams in accordance with the manufacturer's instructions.

*403.2.1 Recirculation of air*

Ventilation requirements for indoor swimming pools now references ANSI/ACCA 10 Manual SPS.

> 2. Supply air to a swimming pool and associated deck areas shall not be recirculated unless such air is dehumidified to maintain the relative humidity of the area at 60 percent or less. Air from this area shall not be recirculated to other spaces where more than 10 percent of the resulting supply airstream consists of air recirculated from these spaces. The design and installation of dehumidification systems shall comply with ANSI/ACCA 10 Manual SPS.

*TABLE 403.3.1.1 Minimum Ventilation Rates*

A few of the values in this table were modified. Below is an excerpt of the table showing the changes.

| Occupancy Classification | Occupant Density #/1000 ft$^2$ | People Outdoor Airflow Rate in Breathing Zone, $R_p$ cfm/person | Area Outdoor Airflow Rate in Breathing Zone, Ra cfm/ft$^2$ | Exhaust Airflow Rate cfm/ft$^2$ |
|---|---|---|---|---|
| **Commercial laundry** | 10 | 5 | 0.12 | --- |
| **Private Dwelling Kitchens** | --- | --- | --- | 50/100 |
| **Private dwelling toilet rooms and bathrooms** | --- | --- | --- | 25/50 |
| **Refrigerated warehouses/freezers** | --- | 10 | --- | --- |

Note g from the bottom of the table was modified to address energy recovery ventilation (ERV) units. This impacts bathrooms, locker rooms, wood/metal shops, laboratories, and art classrooms.

g. Mechanical exhaust is required and recirculation from such spaces is prohibited. For occupancies other than science laboratories, where there is a wheel-type energy recovery ventilation (ERV) unit in the exhaust system design, the volume of air leaked from the exhaust airstream into the outdoor airstream within the ERV shall be less than 10 percent of the outdoor air volume. Recirculation of air that is contained completely within such spaces shall not be prohibited (see Section 403.2.1, Items 2 and 4).

*403.3.1.5 Balancing*

The requirements for balancing have been removed from this section. The section is reserved.

*403.3.2.4 Ventilating equipment*

The previous code only referenced exhaust equipment in this section. Fans for outdoor air have now been added.

**403.3.2.4 Ventilating equipment.**

Fans providing exhaust or outdoor air shall be listed and labeled to provide the minimum required airflow in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51.

*407.1 General*

Section 407 refers to Ambulatory Care Facilities and Group I-2 Occupancies. A reference to NFPA 99 has been added to this section. Note that versions of referenced codes have been updated.

> **407.1 General.**
>
> Mechanical ventilation for ambulatory care facilities and Group I-2 occupancies shall be designed and installed in accordance with this code and ASHRAE 170 and NFPA 99.

**Changes to Chapter 5 – Exhaust Systems**

*501.3.1 Location of exhaust outlets*

To coordinate with *401.4 Intake opening location*, an exception has been made for factory-built intake/exhaust combination termination fittings.

> 3. For all *environmental air* exhaust: 3 feet (914 mm) from property lines; 3 feet (914 mm) from operable openings into buildings for all occupancies other than Group U, and 10 feet (3048 mm) from mechanical air intakes. Such exhaust shall not be considered hazardous or noxious. Separation is not required between intake air openings and living space exhaust air openings of an individual *dwelling unit* or *sleeping unit* where an approved factory-built intake/exhaust combination termination fitting is used to separate the air streams in accordance with the manufacturer's instructions.

*502.9.5 Flammable and combustible liquids*

An additional exception to the requirement to have exhaust ventilation systems was added to specifically address storage of liquor.

**[F] 502.9.5 Flammable and combustible liquids.**

Exhaust ventilation systems shall be provided as required by Sections 502.9.5.1 through 502.9.5.5 for the storage, use, dispensing, mixing and handling of flammable and combustible liquids. Unless otherwise specified, this section shall apply to any quantity of flammable and combustible liquids.

**Exceptions:**

1. This section shall not apply to flammable and combustible liquids that are exempt from the *Florida Fire Prevention Code*.
2. The storage of beer, distilled spirits and wines in barrels and casks conforming to the requirements of the *Florida Fire Prevention Code*.

*502.20.1 Operation*

This subsection was added to *502.20 Manicure and pedicure stations*. It specifies the controls required for the exhaust system.

**502.20.1 Operation.**

The exhaust system for manicure and pedicure stations shall have controls that operate the system continuously when the space is occupied.

*504.4.1 Termination location*

In the Clothes Dryer Exhaust section, regarding exhaust installation, the subsection has been changed from the following in the 2020 version:

**504.4.1 Exhaust termination outlet and passageway size.**

The passageway of dryer exhaust duct terminals shall be undiminished in size and shall provide an open area of not less than 12.5 square inches (8065 $mm^2$).

To the following in the 2023 version:

**504.4.1 Termination location.**

Exhaust duct terminations shall be in accordance with the dryer manufacturer's installation instructions. Where the manufacturer's instructions do not specify a termination location, the exhaust duct shall terminate not less than 3 feet (914 mm) in any direction from openings into buildings, including openings in ventilated soffits.

Rather than specifying a minimum exhaust dryer vent size explicitly in the code, the code allows the dryer manufacturer to specify the requirement. In addition, the termination location has been given restrictions.

*504.6 Booster fans prohibited*

This section was added to the code, prohibiting domestic booster fans in dryer exhaust systems.

**504.6 Booster fans prohibited.**

Domestic booster fans shall not be installed in dryer exhaust systems.

*506.3.3 Grease duct supports*

The requirement to have duct supports designed for seismic loads has been removed from the code since earthquakes are not a major issue in Florida.

*506.3.7 Prevention of grease accumulation in grease ducts*

An exception has been added to the 2023 code that allows for deviations from the prescriptive sloping requirements.

**506.3.7 Prevention of grease accumulation in grease ducts.**

Duct systems serving a Type I hood shall be constructed and installed so that grease cannot collect in any portion thereof, and the system shall slope not less than one-fourth unit vertical in 12 units horizontal (2-percent slope) toward the hood or toward a grease reservoir designed and installed in accordance with Section 506.3.7.1. Where horizontal ducts exceed 75 feet (22 860 mm) in length, the slope shall be not less than one unit vertical in 12 units horizontal (8.3-percent slope).

**Exception:** Factory-built grease ducts shall be installed at a slope that is in accordance with the listing and manufacturer's installation instructions.

*506.3.9 Grease duct horizontal cleanouts*

An additional requirement was added to the 2023 code. The cleanout must "be located within 3 feet (914mm) of horizontal discharge fans."

*506.5.2 Pollution control units*

This section contains multiple changes.

1. The new wording eliminates the requirement for the pollution control units to be installed per the manufacturer's installation instructions.
2. The units must be "listed and labeled in accordance with UL 8782" rather than UL 1978.
3. Reference to the manufacturer's installation instructions regarding bracing and supports has been eliminated. Instead, item #3 states, "Bracing and supports for pollution control units shall be of noncombustible material securely attached to the structure and designed to carry gravity loads withing the stress limitations of the *Florida Building Code, Building.*"
4. Units connected to enclosed duct systems are not required to be "listed and labeled, in accordance with UL 2221 or ASTM E2336."
5. Rather than a prescriptive clearance between the pollution control unit and combustible material, it now states that the clearance must be in accordance with the listing.

*507.1 General*

An exception to the requirement for commercial kitchen exhaust hoods has been added to this section regarding smoker ovens.

4. Smoker ovens with integral exhaust systems, provided that the appliance is installed in accordance with the manufacturer's installation instructions, is listed and tested for the application and complies with Chapter 5.

*507.2 Type 1 hoods*

An exception to the requirement for Type I hoods has been added to this section regarding pizza ovens.

> 2. A Type I hood shall not be required for solid fuel or combination gas and solid fuel pizza ovens if the oven is tested and listed using direct venting as allowed in NFPA 96. The venting system shall be constructed and installed per the conditions of listing of the oven and of the duct or chimney used for venting. This applies to pizza ovens listed with natural draft or forced draft venting.

*510.6.5 Makeup air*

In the hazardous exhaust system section, the requirements for the makeup air have been clarified.

> **510.6.5 Makeup air.**
>
> *Makeup* air from all sources shall be provided during operations at a rate approximately equal to the rate that air is exhausted by the hazardous exhaust system. Makeup air shall be provided by gravity or mechanical means or both. Mechanical *makeup air* systems shall be automatically controlled to start and operate simultaneously with the exhaust system. The *makeup air* shall not reduce the effectiveness of the exhaust system. *Makeup air* intakes shall be located in accordance with Section 401.4.

*511.1 Dust, stock and refuse conveying systems*

This section now references the requirements in the *Florida Fire Prevention Code*.

*511.1.5 Explosion control*

This section has become more generalized. Instead of referring to safety or explosion relief vents, the section now just refers to explosion control.

Below is the verbiage from the 2020 code:

> **511.1.5 Explosion relief vents.**
>
> A safety or explosion relief vent shall be provided on all systems that convey combustible refuse or stock of an explosive nature, in accordance with the requirements of the *Florida Building Code, Building*.

Below is the revised verbiage in the 2023 code:

**511.1.5 Explosion control.**

Explosion control shall be provided in accordance with the requirements of the *Florida Fire Prevention Code* on all systems that convey combustible dust or combustible refuse or stock that produces combustible dusts in such a manner that the concentration and conditions could create a fire or explosion hazard. Determination of concentrations or conditions that are deemed to not create a fire or explosion hazard shall be based on a Dust Hazard Analysis prepared in accordance with the *Florida Fire Prevention Code*.

*514.2 Prohibited applications*

In the 2020 code, commercial kitchen exhaust systems serving Type II hoods were not allowed to be used with energy recovery ventilation systems. In the 2023 code, this exclusion was removed.

**Changes to Chapter 6 – Duct Systems**

*602.2 Construction*

The 2023 code now clarifies that gypsum board plenums are not allowed to supply air in systems with direct evaporative cooling systems. In the 2020 code, it leaves out the words "supply" and "direct." Therefore, the code now leaves the opportunity open for gypsum board plenums for return air systems or systems with indirect evaporative cooling systems.

*602.2.1.8 Pipe and duct insulation within plenums*

An additional stipulation was added to this section regarding pipe and duct insulation within plenums. It may not be used to "reduce the maximum flame spread and smoke-developed indexes except where the pipe or duct and its related insulation, coatings and adhesives are tested as a composite assembly in accordance with Section 602.2.1.7."

*603.5.1 Gypsum ducts*

This section now directly specifies that gypsum supply ducts are not allowed with direct evaporative cooling systems.

**603.5.1 Gypsum ducts.**

The use of gypsum boards to form air shafts (ducts) shall be limited to return air systems where the air temperatures do not exceed 125°F (52°C) and the gypsum board surface temperature is maintained above the airstream dew-point temperature. Supply air ducts formed by gypsum boards shall not be incorporated in air-handling systems utilizing *direct evaporative cooling* systems.

*604.3 Coverings and linings*

The word “duct” was added to clarify that the coverings and linings for ductwork is the subject of this section.

> **604.3 Coverings and linings.**
>
> Duct coverings and linings, including adhesives where used, shall have a flame spread index not more than 25 and a smoke-developed index not more than 50, when tested in accordance with ASTM E84 or UL 723, using the specimen preparation and mounting procedures of ASTM E2231. Duct coverings and linings shall not flame, glow, smolder or smoke when tested in accordance with ASTM C411 at the temperature to which they are exposed in service. The test temperature shall not fall below 250°F (121°C). Coverings and linings shall be *listed* and *labeled*.

Additionally, an exception is made for sprayed polyurethane foam insulation. See below for the exact wording from the 8th edition of the code.

> **Exception:** Polyurethane foam insulation that is spray applied to the exterior of ducts in attics and crawlspaces shall be subject to all of the following requirements:
>
> 1. The foam plastic insulation shall have a flame spread index not greater than 25 and a smoke-developed index not greater than 450, when tested in accordance with ASTM E84 or UL 723, using the specimen preparation and mounting procedures of ASTM E2231.
> 2. The foam plastic insulation shall not flame, glow, smolder or smoke when tested in accordance with ASTM C411 at the temperature to which they are exposed in service. The test temperature shall not fall below 250°F (121°C).
> 3. The foam plastic insulation complies with the requirements of Section 2603 of the *Florida Building Code, Building*.
> 4. The foam plastic insulation is protected against ignition in accordance with the requirements of Section 2603.4.1.6 of the *Florida Building Code, Building*.

*608.1 Balancing*

Section 608 has been added to the current code. Airflow balancing is required by an approved method. This requirement was located in Chapter 4 in the 2020 code and has moved to Chapter 6 in the 2023 code.

## SECTION 608
## BALANCING

**608.1 Balancing.**

Air distribution, ventilation and exhaust systems shall be provided with means to adjust the system to achieve the design airflow rates and shall be balanced by an *approved* method. Ventilation air distribution shall be balanced by an *approved* method and such balancing shall verify that the air distribution system is capable of supplying and exhausting the airflow rates required by Chapter 4.

**Changes to Chapter 8 – Chimneys and Vents**

*801.21 Blocked vent switch*

To ensure that exhaust does not build up in the space, a safety switch must be installed to turn off the burner in an oil-fired appliance if the vent becomes blocked.

**801.21 Blocked vent switch.**

Oil-fired appliances shall be equipped with a device that will stop burner operation in the event that the venting system is obstructed. Such device shall have a manual reset and shall be installed in accordance with the manufacturer's instructions.

**Changes to Chapter 9 – Specific Appliances, Fireplaces, and Solid Fuel-Burning Equipment**

*905.1 General*

Newer EPA-certified stoves produce less smoke than older uncertified ones; the "EPA-certified stoves may produce no more than 4.5 grams per hour" while the older ones may release as much as "30 grams of smoke per hour", (*Choosing the Right Wood-Burning Stove | US EPA*, 2013). This section of the 8th edition of the code requires that "new wood-burning residential hydronic heaters shall be EPA certified", (2023).

*908.4 Support and anchorage*

Like other parts of the 2023 code, reference to seismic restraints have been removed from this section. They are not required for cooling towers, evaporative condensers, and fluid coolers.

*920.4 Prohibited uses*

For safety, suspended-type unit heaters are not allowed in egress corridors and patient sleeping areas in some healthcare occupancies. See the exact wording below.

> **920.4 Prohibited uses.**
>
> In Group I-2 and ambulatory care facilities, suspended-type unit heaters are prohibited in corridors, exit access stairways and ramps, exit stairways and ramps and patient sleeping areas.

*Section 929 Unvented Alcohol Fuel-Burning Decorative Appliances*

*929.1 General*

Section 929 was added to specify that the UL listing for appliances such as decorative fireplaces. Below is the exact wording from the 8th edition of the code.

> **929.1 General.**
>
> *Unvented alcohol fuel-burning decorative appliances* shall be *listed* and *labeled* in accordance with UL 1370 and shall be installed in accordance with the conditions of the listing, manufacturer's installation instructions and Chapter 3.

**Changes to Chapter 10 – Boilers, Water Heaters and Pressure Vessels**

*1004.1 Standards*

There has been a slight change in this section. In the 2020 code, controls and safety devices for boilers with input of 12,500,00 Btu/hr or less needed to meet the requirements of ASME CSD-1, while those over that size must meet the requirements of NFPA 85. In the 2023 code, boilers with exactly 12,500,00 Btu/hr now must have controls and safety devices that comply with NFPA 85. Very few boilers will be impacted by this change.

**Changes to Chapter 11 – Refrigeration**

*1101. 2 Factory-built equipment and appliances*

Commercial refrigerating appliances and ice-makers with an incorporated or remote refrigerant unit or motor compressor are subject to UL 60335-2-89. Reference to this UL section has been added to this section of the 2023 code.

**Changes to Chapter 12 – Hydronic Piping**

*TABLE 1202.4 Hydronic Pipe*

ASTM F2855 has been added for Chlorinated Polyvinyl Chloride/Aluminum/Chlorinated Polyvinyl Chloride (CPVC/AL/CPVC), and ASTM 3253 and CSA B137.5 have been added for cross-linked polyethylene (PEX) tubing, (International Code Council, Inc. 2023). These changes are most important for manufacturers, but design engineers will want to make sure that the specifications reflect these additions.

*Table 1202.5 Hydronic Pipe Fittings*

Standards for CPVC, PEX and plastic fittings have been added to the table. See the changes to the table below. The new text is in blue.

| MATERIAL | STANDARD (see Chapter 15) |
|---|---|
| Copper and copper alloys | ASME B16.15; ASME B16.18;<br>ASME B16.22; ASME B16.26;<br>ASTM F1974; ASTM B16.24;<br>ASME B16.51; ASSE 1061 |
| CPVC | ASSE 1061; ASTM D2846; ASTM F438; ASTM F439 |
| Ductile iron and gray iron | ANSI/AWWA C110/A21.10;<br>AWWA C153/A21.53; ASTM A395;<br>ASTM A536; ASTM F1476;<br>ASTM F1548 |
| Ductile iron | ANSI/AWWA C153/A21.53 |
| Gray iron | ASTM A126 |
| Malleable iron | ASME B16.3 |
| PE-RT fittings | ASTM F1807; ASTM F2098;<br>ASTM F2159; ASTM F2735;<br>ASTM F2769; ASSE 1061 |
| PEX fittings | ASTM F877; ASTM F1807; ASTM F2159; ASTM F3253; ASSE 1061 |
| Plastic | ASTM D2466; ASTM D2467;<br>ASTM D2846;<br>ASTM F877; ASTM F2389; ASTM F2735 |
| Steel | ASME B16.5; ASME B16.9;<br>ASME B16.11; ASME B16.28;<br>ASTM A53; ASTM A106;<br>ASTM A234; ASTM A420; ASTM A536; ASTM A395;<br>ASTM F1476; ASTM F1548 |

*1203.9 CPVC plastic pipe*

Mechanical joints are allowed for CPVC plastic pipe or fittings. Solvent-cemented or threaded joints are still allowed, (International Code Council, Inc. 2023).

*1203.10 CPVC/AL/CPVC plastic pipe*

This section is completely new in the 2023 code.

> **1203.10 CPVC/AL/CPVC plastic pipe.**
>
> Joints between CPVC/AL/CPVC plastic pipes or fittings shall be mechanical, solvent-cemented or threaded joints conforming to Section 1203.3.

*Table 1210.4 Ground-source loop pipe and Table 1210.5 Ground-source loop pipe fittings*

Additional CSA (Canadian Standards Association) and NSF (National Sanitation Foundation) standards were added for cross-linked polyethylene (PEX) and raised temperature polyethylene (PE-RT).

*1210.6.2 Preparation of pipe ends*

The requirements under this subsection, regarding plastic pipe ground-source heat pump loop systems, have become more generalized and yield to the manufacturer's instructions.

Below is the wording from the 2020 code.

> **1210.6.2 Preparation of pipe ends.**
>
> Pipe shall be cut square, be reamed, and be free of burrs and obstructions. CPVC, PE, and PVC pipe shall be chamfered. Pipe ends shall have full-bore openings and shall not be undercut.

Below is the new wording in the 2023 code.

> **1210.6.2 Preparation of pipe ends.**
>
> Pipe shall be cut square and be free of burrs and obstructions. Pipe ends shall have full-bore openings and shall be prepared in accordance with manufacturer's instructions.

*1210.8 Installation*

This subsection of plastic pipe ground-source heat pump loop systems also yields to the manufacturer's instructions. See exact wording below.

**1210.8 Installation.**

Piping, valves, fittings and connections shall be installed in accordance with ANSI/CSA/IGSHPA C448 and the manufacturer's instructions.

## Changes to Chapter 13 – Fuel Oil Piping and Storage

*1301.4 Fuel tanks, piping, fittings and valves*

The word fittings has been added to this section. Fittings for appliances burning oil must meet the requirements of this section.

*Table 1302.3 Fuel oil piping*

Requirements for fittings, in coordination with the requirements of 1301.4, have been added to this table. In addition, stainless steel piping and tubing have been named separately from steel. Below is the updated table.

**TABLE 1302.3 FUEL OIL PIPING**

| MATERIAL | STANDARD (see Chapter 15) |
|---|---|
| Copper or copper-alloy pipe and fittings | ASTM B42; ASTM B43; ASTM B302; ASTM F3226 |
| Copper or copper-alloy tubing and fittings (Type K, L or M) | ASTM B75; ASTM B88; ASTM B135; ASTM B280; ASME B16.51; ASTM F3226 |
| Labeled pipe | (See Section 1302.4) |
| Nonmetallic pipe | ASTM D2996 |
| Steel and stainless steel pipe and fittings | ASTM A53; ASTM A106; ASTM A312; ASTM F3226 |
| Steel and stainless steel tubing and fittings | ASTM A254; ASTM A539; ASTM A269; ASTM F3226 |

*1302.8 Flexible connectors and hoses*

Reference to UL 536 has been eliminated from this section. The requirement now just requires that the connectors and hoses shall be intended for flammable and combustible liquids.

Below is the previous wording.

**1302.8 Flexible connectors and hoses.**

Flexible connectors and hoses shall be *listed* and *labeled* in accordance with UL 536.

The following is the new wording.

> **1302.8 Flexible connectors and hoses.**
>
> Flexible connectors and hoses shall be *listed* and *labeled* as being acceptable for the intended application for flammable and combustible liquids.

*1303.3 Joint preparation and installation*

*1303.3.5 Press-connect joints*

*1303.6 Copper or copper-alloy pipe*

*1303.7 Copper or copper-alloy tubing*

*1303.9 Steel and stainless steel pipe*

*1303.10 Steel and stainless steel tubing*

Press-connect joints have been added to these subsections. Press-connect joints are now allowed for fuel oil piping. In 1303.9 and 1303.10, stainless steel has been listed separately from steel to coordinate with Table 1302.3.

**Changes to Chapter 14 – Solar Systems**

*1402.4.2 Rooftop-mounted solar thermal collectors and systems*

This new subsection to the 2023 code ensures that rooftop-mounted solar thermal collectors and systems are installed on roofs capable of supporting the load and that roofs are made of noncombustible materials or fire-retardant-treated wood. See below for the exact wording.

> **1402.4.2 Rooftop-mounted solar thermal collectors and systems.**
>
> The roof shall be constructed to support the loads imposed by roof-mounted solar collectors. Where mounted on or above the roof covering, the collector array, mounting systems and their attachments to the roof shall be constructed of noncombustible materials or fire-retardant-treated wood conforming to the *Florida Building Code, Building* to the extent required for the type of roof construction of the building to which the collectors are accessory.

*1404.1 Collectors*

Factory-built solar thermal collectors are no longer required to be listed and labeled.

**Changes to Chapter 15 – Referenced Standards**

In general, the approved versions of the referenced standards have been updated. Pay particular attention to the following ASHRAE changes.

| | |
|---|---|
| ASHRAE—2021 | ASHRAE Fundamentals Handbook<br>603.2 |
| 62.1—2019 | Ventilation for Acceptable Indoor Air Quality<br>403.3.1.1.2.3.2 |
| ANSI/AMCA 210-ANSI/ASHRAE 51—2016 | Laboratory Methods of Testing Fans for Aerodynamic Performance Rating<br>403.3.2.4 |

Also review the changes to the NFPA versions. See below.

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|---|---|
| 2—2020 | Hydrogen Technologies Code<br>502.16.1 |
| 30A—2021 | Code for Motor Fuel-dispensing Facilities and Repair Garages<br>304.6 |
| 31—2020 | Standard for the Installation of Oil-burning Equipment<br>701.1, 801.2.1, 801.18.1, 801.18.2, 920.2, 922.1, 1308.1 |
| 58—2020 | Liquefied Petroleum Gas Code<br>502.9.10 |
| 69—2019 | Standard on Explosion Prevention Systems<br>510.9.3 |
| 72—2019 | National Fire Alarm and Signaling Code<br>606.3 |
| 80—2019 | Standard for Fire Doors and Other Opening Protectives<br>607.4.1.2 |
| 82—2019 | Standard on Incinerators and Waste and Linen Handling Systems and Equipment<br>601.1 |
| 85—2019 | Boiler and Combustion Systems Hazards Code<br>1004.1 |

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|---|---|
| 91—2020 | Exhaust Systems for Air Conveying of Vapors, Gases, Mists, and Noncombustible Particulate Solids<br>502.9.5.1, 502.17 |
| 92—2018 | Standard for Smoke Control Systems<br>513.7, 513.8 |
| 96—2021 | Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations<br>507.1 |
| 105—19 | Standard for Smoke Door Assemblies and Other Opening Protectives<br>607.4.1.2 |
| 211—19 | Standard for Chimneys, Fireplaces, Vents and Solid Fuel-burning Appliances<br>806.1 |
| 262—19 | Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-handling Spaces<br>602.2.1.1 |
| 286—2019 | Standard Methods of Fire Tests for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth<br>602.2.1.6 |
| 853—2020 | Standard on Installation of Stationary Fuel Cell Power Systems<br>924.1 |

References to codes in plans and specifications need to be consistent with the current Building Code.

**Conclusion**

While the objective of this course was to review the significant code changes in the 8th Edition (2023) update to the *Florida Building Code, Mechanical* as compared to the 7th Edition 2020 *Florida Building Code, Mechanical*, it does not include all changes. Reference the current code and the current referenced standards in implementing the code.

# References

*Choosing the Right Wood-Burning Stove | US EPA*. (2013, May 13). US EPA. https://www.epa.gov/burnwise/choosing-right-wood-burning-stove#:~:text=While%20older%20uncertified%20stoves%20release,of%20EPA%2Dcertified%20wood%20stoves.

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# 2023 Advanced Building Code - Quiz

**Updated: 8/10/2023**

1. When will/did the 8th Edition of the Florida Building Code become effective?
   a. January 1, 2023
   b. June 1, 2023
   c. December 31, 2023
   d. January 1, 2024

2. What flammability classification has been added to the 8th Edition of the Florida Building Code?
   a. Class 1
   b. Class 2
   c. Class 2L
   d. Class 3

3. True or False? Condensate discharge for fuel-burning appliances must be located within the same occupancy, tenant space or dwelling unit as the source of condensate, if not discharged to grade outdoors.
   a. True
   b. False

4. What is the required ventilation rate for commercial laundries?
   a. 10 cfm/person only
   b. 0.06 cfm/sq. ft. only
   c. 0.12 cfm/sq. ft. only
   d. 5 cfm/person and 0.06 cfm/sq. ft.
   e. 5 cfm/person and 0.12 cfm/sq. ft.

5. What controls are required for an exhaust system serving manicure and pedicure stations?
   a. There are no requirements.
   b. The exhaust system must run 24 hours per day/7 days per week.
   c. The system must run continuously when the space is occupied.
   d. The system must run at least 8 hours per day.

6. Dryer exhaust duct shall terminate not less than 3 feet from which locations?
   a. Windows and doors
   b. Ventilated soffits
   c. Answer a and b
   d. None of the above

7. True or False? Domestic booster fans may be installed in dryer exhaust systems.
   a. True
   b. False

8. What type of reset is required for burner stop of an oil-fired appliance in the event that the venting system is obstructed?
   a. Automatic upon clearing of obstruction
   b. Time-delay
   c. Automatic or time-delay
   d. Manual

9. True or False? Suspended-type unit heaters are allowed in corridors, exit access stairways and ramps, exit stairways and ramps and patient sleeping areas in Group I-2 and ambulatory care facilities, if the heaters are labeled and listed.
   a. True
   b. False

10. Press-connect joints are allowed for fuel oil piping.
    a. True
    b. False

11. Which version of ASHRAE Standard 62.1 is referenced in the 8$^{th}$ edition of the Florida Building Code - Mechanical?
    a. 2012
    b. 2015
    c. 2019
    d. 2020