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2024 Seattle Mechanical Code

Continued Review of changes not reviewed in 10-15-2026 CCAB Meeting

Chapter 11

[W] 1106.3 Class 2 and 3 refrigerants. Where any flammable refrigerants of Groups A2, A3, B2 and B3 are used, the machinery room shall conform to the Class I, Division 2, hazardous location classification requirements of NFPA 70.

[W] 1106.4 Group A2L and B2L refrigerants. *Machinery rooms* ((~~for~~)) containing any Group A2L ((~~and~~)) or B2L refrigerants and containing no refrigerants of Group A2, A3, B2, or B3 shall comply with Sections 1106.4.1 through 1106.4.3.

1106.4.1 Elevated Temperatures.

~~1106.4.2 Emergency ventilation system.~~

Table 1106.4.2 Minimum Exhaust Rates

1106.4.2 Refrigerant detector.

TABLE 1106.4.2 Group A2L and B2L Detector Activation.

1106.4.3 Mechanical ventilation.

[W] 1107.4 Piping materials standards. Refrigerant pipe shall conform to one or more of the standards listed in Table 1107.4. For refrigeration systems complying with ASHRAE 15.2 used in residential occupancies serving only a single dwelling or sleeping unit, refrigerant piping and tubing shall be limited to aluminum, copper, and copper alloy. The exterior of the pipe shall be protected from corrosion and degradation

[W]TABLE 1107.4 Refrigerant Pipe

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Piping Material	Standard
Aluminum tube	ASTM B210, ASTM B491/B491M
Brass (copper alloy) pipe	ASTM B43
Copper linesets	ASTM B280, ASTM B1003
Copper pipe	ASTM B42, ASTM B302
Copper tube[a]	ASTM B68, ASTM B75, ASTM B88, ASTM B280, ASTM B819
Steel pipe[b]	ASTM A53, ASTM A106, ASTM A333
Steel tube	ASTM A254, ASTM A334
Stainless Steel Pipe	ASTM A312/A312M
Stainless Steel Tube	ASTM A269/A269M, ASTM A632

a. Soft annealed copper tubing larger than 1 3/8 inch (35 mm) O.D. shall not be used for field-assembled refrigerant piping unless it is protected from mechanical damage.
b. ASTM A53, Type F steel pipe shall only be permitted for discharge lines in pressure relief systems.

[W] 1107.5 Pipe fittings. Refrigerant pipe fittings shall be approved for installation with the piping materials to be installed, and shall conform to one of more of the standards *listed* in Table 1107.5 or shall be *listed* and *labeled* as complying with UL 207. For refrigeration systems complying with ASHRAE 15.2 used in residential occupancies serving only a single dwelling unit or sleeping unit, refrigerant fittings shall be limited to aluminum, copper, copper alloys, stainless steel, and steel.

[W]TABLE 1107.5 REFRIGERANT PIPE FITTINGS

FITTING MATERIAL	STANDARD
Aluminum	**ASTM B361**
Copper and copper alloy (brass)	**ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.24, ASME B16.26, ASME B16.50**
Steel	**ASTM A105, ASTM A181, ASTM A193, ASTM A234, ASTM A420, ASTM A707**
Stainless Steel	**ASTM 403-19, ASME B16.11**

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[W]1109.2.2 Refrigerant pipe enclosure.

[W] 1109.2.5 Refrigerant pipe shafts. Refrigerant piping that penetrates ((~~two or more~~)) multiple floor/ceiling assemblies shall be permitted to be enclosed in a fire-resistance-rated shaft enclosure. The fire-resistance-rated shaft enclosure shall comply with Section 713 of the *International Building Code*.

Exceptions:

1. *Refrigeration* systems using R-718 refrigerant (water).
2. Piping in a direct refrigeration system((~~using Group A1 refrigerant~~)) where the refrigerant quantity does not exceed the limits of Table 1103.1 for the smallest occupied space through which the piping passes.
3. Piping located on the exterior of the *building* where vented to the outdoors. Natural ventilation openings shall be distributed vertically along the enclosure to prevent containment of refrigerant piping leaks and be located a minimum of 3 feet (914 mm) from operable openings into the building. Mechanical ventilation of exterior enclosures to comply with Section 1109.3.2.
4. Continuous refrigerant pipe or tube, including joints and connections, that have been tested in accordance with the more stringent requirements of Section 1110.1 or ASHRAE 15 Section 9.13.

[W]1109.2.7 Pipe identification. Refrigerant pipe located in areas other than the room or space where the refrigerating *equipment* is located shall be identified. The pipe identification shall be located at intervals not exceeding 20 feet (6096 mm) on the refrigerant piping or pipe insulation. The minimum height of lettering of the identification label shall be 1/ 2 inch (12.7 mm). The identification shall indicate the *refrigerant designation* and safety group classification of refrigerant used in the piping system. For Group A2L and B2L refrigerants, the identification shall also include the following statement: "WARNING—Risk of Fire. Flammable Refrigerant." For Group A2, A3, B2 and B3 refrigerants, the identification shall also include the following statement: "DANGER—Risk of Fire or Explosion. Flammable Refrigerant." For any Group B refrigerant, the identification shall also include the following statement: "DANGER—Toxic Refrigerant."

Exception: For refrigeration systems complying with ASHRAE 15.2 used in residential occupancies serving only a single dwelling unit or sleeping unit, pipe identification shall not be required.

[W] 1109.3.2 Shaft ventilation. Refrigerant pipe installed within a fire resistance-rated shaft enclosure with systems using Group A2L or B2L refrigerant shall be naturally or mechanically ventilated. Refrigerant pipe shafts with one or more systems using any Group A2, A3, B2 or B3 refrigerant shall be continuously mechanically ventilated and shall include a refrigerant detector. The shaft natural ventilation exhaust outlet and mechanical ventilation discharge exhaust outlet shall comply with Section 501.3.1 and 1105.7. Naturally ventilated shafts shall have a pipe, duct or conduit not less than 4 inches (102 mm) in diameter that connects to the lowest point of the shaft and extends to the outdoors. The pipe, duct or conduit shall be level or pitched downward to the outdoors. Mechanically ventilated shafts shall have a minimum airflow velocity in accordance with Table 1109.3.2. The mechanical ventilation shall be continuously operated or activated by a refrigerant detector. Systems utilizing a refrigerant detector shall activate the mechanical ventilation at a maximum refrigerant concentration of 25 percent of the lower flammable limit of the refrigerant. The detector, or a sampling tube that draws air to the detector, shall be located in an area where refrigerant from a leak will concentrate.

Exceptions:

1. The shaft shall not be required to be ventilated for double-wall refrigerant pipe where the interstitial space of the double-wall pipe is vented to the outdoors.
2. For refrigeration systems complying with ASHRAE 15.2 used in residential occupancies serving only a single dwelling unit or sleeping unit, shaft ventilation shall not be required where the pipe or tube is continuous without fittings in the shaft.
3. The shaft shall not be required to be ventilated where all the refrigerant pipe or tube is continuous and has been in accordance with the more stringent requirements of Section 1110.1 or ASHRAE 15 Section 9.13.5.
4.The shaft shall not be ventilated for systems using only Group A2L and B2L refrigerants where there are no hot surfaces exceeding 1290°F (700°C) in the shaft and the pipe, tubes, joints, or connections have been tested in accordance with the more stringent requirements of Section 1110.1 or ASHRAE 15 Section 9.13.

[W]1110.2 Exposure of refrigerant piping system. Refrigerant pipe and joints installed in the field shall be exposed for visual inspection and testing prior to being covered or enclosed.

Exception: Factory-insulated refrigerant piping line-sets are exempt from exposing the piping material for visual inspection.

Chapter 15—Referenced Standards

ANCE
Associacion de Normalizacion y Certification
1300 North 17th Street, Suite 1752
Rosslyn, VA 22209

[W]UL/CSA/ANCE 60335-2-40—2022	**Household and Similar Electrical Appliances - Safety - Part 2-40: Particular Requirements for Electrical Heat Pumps, Air Conditioners and Dehumidifiers 1101.2**

ASHRAE
180 Technology Parkway,
Peachtree Corners, GA 30092

[W] ASHRAE 15-2024	**Safety Standard for Refrigeration Systems 1101.6, 1104.3.5, 1105.8, 1106.4.3, 1108.1**
[W] ASHRAE 15.2- 2024	**Safety Standard for Refrigeration Systems in Residential Applications 1101.1.1, 1107.4, 1107.5, 1109.2.7, 1109.3.2**
[W]ASHRAE 34-2024	**Designation and Safety Classification of Refrigerants 202, 1102.2.1, 1103.1**
[W[ASHRAE 62.2-2022	**Ventilation and Acceptable Indoor Air Quality in Low-Rise Residential Buildings 401.4, 403.4, 403.4.7.3.3, 403.4.11**

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CSA
8501 East Pleasant Valley Road
Cleveland, OH 44131-5516

[W] UL/CSA/ANCE 60335-2-40—2022	**Household and Similar Electrical Appliances - Safety - Part 2-40: Particular Requirements for Electrical Heat Pumps, Air Conditioners and Dehumidifiers 1101.2**

IEC International Electrotechnical Commission (IEC)
3 rue de Varembé
PO Box 131
CH-1211 Geneva 20
Switzerland

[W] IEC 60335-2-40-2024 (8th Edition),	**Household and similar electric appliances – Safety – Part 2-40: Particular requirements for electrical heat pumps, air-conditioners and dehumidifiers**

(EN) EUROPEAN COMMITTEE FOR STANDARDIZATION
Rue de la Science 23
B-1040
Brussels, Belgium

[W] (EN) 378:2016+A1:2020	**Refrigerating systems and heat pumps. Safety and environmental requirements.**

Home Ventilating Institute
1740 Dell Range Blvd.,
Suite H, PMB 450
Cheyenne, WY 82009

[W] HVI 920-2020:	**Product Performance Certification and Surveillance Procedure** 403.4.6.1, 403.4.6.2, 403.4.7.2, 403.4.7.2.1

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UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

[W] UL/CSA/ANCE 60335-2-40—2022	**Household and Similar Electrical Appliances - Safety - Part 2-40: Particular Requirements for Electrical Heat Pumps, Air Conditioners and Dehumidifiers 1101.2**