First Co.

IMC 2021 A2L Refrigerant Ruling

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As stated by the IECC: [1]

Section 1109.2.5 Refrigerant pipe shafts
Refrigerant piping that penetrates two or more floor/ceiling assemblies shall be enclosed in a fire-resistance-rated shaft enclosure. The fire-resistance-rated shaft enclosure shall comply with Section 713 of the *Building Code*.
Exceptions:

- Systems using R-718 refrigerant (water)
- Piping in a direct 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.
- Piping located on the exterior of the building where vented to the outdoors.

Section 1109.3 Installation requirements for Group A2L or B2L refrigerant
Piping systems using Group A2L or B2L refrigerant shall comply with the requirements of Sections 1109.3.1 Pipe protection. In addition to the requirements of Section 305.5, aluminum, copper and steel tube used for Group A2L and B2L refrigerants and located in concealed locations where tubing is installed in studs, joists, rafters or similar member spaces, and located less than 11/2 inches (38 mm) from the nearest edge of the member, shall be continuously protected by shield plates. Protective steel shield plates having a minimum thickness of 0.0575 inch (1.46 mm) (No. 16 gage) shall cover the area of the tube plus the area extending not less than 2 inches (51 mm) beyond both sides of the tube.

Section 1109.3.2 Shaft ventilation
Refrigerant pipe shafts with systems using Group A2L or B2L refrigerant shall be naturally or mechanically ventilated. The shaft ventilation exhaust outlet shall comply with Section 501.3.1. 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 TABLE 1109.3.2

New Refrigerants - Any HVAC system with 6.6# or more (25 linear ft line set)

- High probability equipment using Group A2L, A2, A3 or B1 refrigerant shall comply with UL 484, UL/CSA 60335-2-40, or UL/CSA 60335-2-89. By adding this requirement, the code clarifies what safety standards should be used for equipment utilizing these refrigerants. This is consistent with the ASHRAE 15 Standard, Safety Standard for Refrigeration Systems.
- IMC refrigerant Table 1103.1 was updated with the new refrigerants that have been added to the ASHRAE Standard 34, Designation and Safety Classification of Refrigerants, since the last code cycle. Table 1103.1 is now consistent with ASHRAE 34.
- High probability direct systems for human comfort must use either Group A1 or A2L refrigerant. Other refrigerants can be used provided the maximum charge does not exceed 6.6 pounds for residential applications and 22 pounds for commercial units. This requirement is consistent with ASHRAE 15.
- Machinery rooms for Group A2L and B2L refrigerant must comply with elevated temperature, refrigerant detector and mechanical ventilation requirements consistent with ASHRAE 15.

[1] 2021 International Energy Conservation Code and ANSI/ASHRAE/IES Standard 90.1-2019. Version: Jan 2021. https://codes.iccsafe.org/content/IECCASHRAE2021P1

- The new ASTM A333-18 Standard, Standard Specification for Seamless and Welded Steel Pipe for Low-Temperature Service and other Applications with required Notch Toughness, has been added to Table 1107.4, Refrigerant Pipe. Table 1107.4 is now consistent with ASHRAE 15.

High-probability systems are those in which the basic design or location of components is such that leaked refrigerant from a failed connection, seal, or component has a high probability of entering an occupied space.