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**December 12, 2024**

## **A2L Refrigerants**

Wisconsin Senate Bill 324 removed restrictions on the use of U.S. Environmental Protection Agency approved refrigerants in the State of Wisconsin.

Current federal law provides that, to the extent practicable, certain ozone-depleting substances must be replaced by chemicals, product substitutes, or alternative manufacturing processes that reduce risks to human health and the environment. The EPA promulgates administrative rules identifying acceptable alternatives to these ozone-depleting substances.

Bill 324 provides that no state agency and no local governmental unit in Wisconsin may prohibit or limit the use of a refrigerant that the EPA has designated as acceptable for use pursuant to [42 USC 7671k](#) provided that any equipment containing the refrigerant is listed and installed in accordance with safety standards and use conditions imposed pursuant to the designation of the refrigerant as acceptable for use.

The purpose of Wisconsin Administrative Code Chapter SPS 345 Mechanical Refrigeration is to establish minimum safety standards for the design, construction, installation, operation, testing, maintenance, repairs and inspection of mechanical refrigeration systems in public buildings and places of employment. Also establishing minimum standards for preventing the release of ozone-depleting refrigerants to the atmosphere.

The A2L subgroup, as categorized by ASHRAE Standard 34, are a class of refrigerants that have lower toxicity and flammability (flame propagation speed is less than 10 cm/s) compared to other classifications — A = non-toxic, 2 = flammable, L = low burning velocity — making it the second-safest refrigerant category.

**A2L refrigerants are required to comply with Chapter SPS 345 and the Group A2 Administration and Enforcement requirements.** SPS 345 currently adopts ANSI/ASHRAE standard 15-2007 and therefore by reference ASHRAE Standard 34, subject to the modifications specified in SPS 345.

**Approved changes to the IMC (related to A2L refrigerants in ASHRAE 15 and 34) are as follows:**

- 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.
- 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.

### **SPS 345.30 Installation registration.**

(1) Classifications. Any installation of the following mechanical refrigeration systems or components thereof shall be registered with the department:

(a) Any system using a Group A1 or B1 refrigerant and having a capacity rated at or greater than 50 horsepower, 50 tons or 50,000 volt-amperes.

(b) Any system using a Group A2, B2, A3 or B3 refrigerant and having a capacity rated at or greater than 10 horsepower, 10 tons or 10,000 volt-amperes.

(c) Any alteration of a mechanical refrigeration system, that causes the system to have or exceed the capacity in par. (a) or (b).

(d) Any alteration or repair of a currently registered mechanical refrigeration system.

(2) Forms. Registration information shall be submitted on form SBD-34.

(3) Submittal deadline.

(a) The registration form shall be submitted to the department at least 20 business days before the system is initially placed in operation.

(b) A registration form shall be submitted to the department at least 20 business days before a system is reactivated after an alteration, repair or replacement.

Note: The purpose of the registration is to inform the Department of the pending activation of the refrigeration system and thereby enable performance of the inspection specified in section SPS 345.31 (2). Under that section, this inspection must be performed within 45 business days after completion of construction or installation.

### **SPS 345.70 Ozone-depleting refrigerants.**

(1) Cleaning of equipment. Ozone-depleting refrigerant may not be used for cleaning purposes, including the cleaning of interior or exterior surfaces of refrigeration equipment.

(2) Transferring refrigerant. Whenever ozone-depleting refrigerant is removed from refrigeration equipment, the ozone-depleting refrigerant shall be transferred to storage containers using equipment that is approved by the department. The department shall approve any transfer equipment if an approved nationally recognized testing laboratory has certified the equipment.

Note: The Department will accept equipment that has been tested and certified in accordance with the Air-Conditioning and Refrigeration Institute (ARI) standard ARI 740.

(3) Releasing refrigerant. Ozone-depleting refrigerant may not be knowingly or negligently released to the environment, except for minimal releases that occur as a result of efforts to recover, reclaim or recycle ozone-depleting refrigerant removed from refrigeration equipment.

(4) Adding refrigerant. Before putting additional ozone-depleting refrigerant into refrigeration equipment, the refrigeration equipment shall be inspected and repaired if a leak is found or suspected. A yearly leak rate identified by the federal environmental protection agency shall be used to determine whether repairs are necessary.

#### **How A2Ls are Different:**

- All refrigerants are required to be classified by toxicity and flammability. A2Ls retain the same toxicity designation — non-toxic — as their predecessor (R-410A). However, the flammability has been reclassified as Class 2L (lower flammability), compared to Class 1 (no flame propagation) for R-410A.
- A2L refrigerants require redesign of the HVAC equipment.
- To address the slight increase in flammability, equipment manufacturers are adding safety features to equipment, revising transportation and handling procedures, and updating installation instructions.

Primary mitigation measures for the building include:

- Minimizing the risk of refrigerant leaks by requiring enhanced testing of refrigerant lines using both pressure and vacuum methods, requiring specific joint types, and requiring nail plates at framing members where lines running through, and
- Controlling the refrigerant concentration in the building in a potential leakage scenario to levels below the flammability limit.

Additional documentation requirements include a permanent label on the equipment listing the company that installed the system and the weight of the installed refrigerant.

**Please see link below for additional program information.**

<https://dsps.wi.gov/Pages/Programs/MR/Default.aspx>