INTERPRETATION IC 15-2022-5 OF
ANSI/ASHRAE STANDARD 15-2022
SAFETY STANDARD FOR REFRIGERATION SYSTEMS

Date Approved: January 23, 2024

Request from: Christopher Williams, Trane Technologies, 530 Knox Rd., Chapmansboro, TN 37035.

Reference: This request for interpretation refers to the requirements presented in ANSI/ASHRAE Standard 15-2022, Sections 3.1 and 9.1, regarding evaporators less than or equal to 0.5 ft^3 (0.014 m^3).

Background: When AHJs are reviewing projects, they must determine whether or not a device meets the definition of a *pressure vessel* and is subject to the requirements of Section 9.3 Refrigerant-Containing Pressure Vessels.

To help the user understand what a *pressure vessel* is, ASHRAE Standard 15-2022, Section 3.1 Defined Terms states the following:

> ***pressure vessel:*** any *refrigerant*-containing receptacle in a *refrigerating system*. This does not include *evaporators* where each separate *evaporator* section does not exceed 0.5 ft^3 (0.014 m^3) of *refrigerant*-containing volume, regardless of the maximum *inside dimension*. This also does not include *evaporator coils*, *compressors*, *condenser coils*, controls, *headers*, pumps, and *piping*.

The second sentence of this definition intentionally excludes "*evaporators* where each separate section does not exceed 0.5 ft^3 (0.014 m^3) of *refrigerant*-containing volume, regardless of the maximum *inside dimension."*

Standard 15-2022 3.1 Defined Terms also states the following:

> ***evaporator:*** that part of the *refrigerating system* designed to vaporize liquid *refrigerant* to produce refrigeration.

Examples of devices used to vaporize refrigerant for refrigeration include but are not limited to microchannel heat exchangers, fin tube evaporator coils, plate-type heat exchangers, and more.

Finally, Section 9.3 defines the requirements for refrigerant-containing pressure vessels:

> **9.3 Refrigerant-Containing Pressure Vessels**
> **9.3.1 Inside Dimensions 6 in. (152 mm) or Less.** These vessels have an inside diameter, width, height, or cross-sectional diagonal not exceeding 6 in. (152 mm), with no limitation on length of vessel.
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> **9.3.1.1** *Pressure vessels* having *inside dimensions* of 6 in. (152 mm) or less *shall* be
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> a. *listed* either individually or as part of an assembly by a *nationally recognized testing laboratory*;

b. marked directly on the vessel or on a nameplate attached to the vessel with a "U" or "UM" symbol signifying compliance with *ASME Boiler and Pressure Vessel Code* [15], Section VIII; or
c. when requested by the authority having jurisdiction (AHJ), the *manufacturer shall* provide documentation to confirm that the vessel meets the design, fabrication, and testing requirements of *ASME Boiler and Pressure Vessel Code*, Section VIII.

Pressure vessels having *inside dimensions* of 6 in. (152 mm) or less *shall* be protected by either a *pressure relief device* or a *fusible plug*.

Exception to 9.3.1.1: Vessels having an internal or external *design pressure* of 15 psig (103.4 kPa gage) or less.

9.3.1.2 If a *pressure relief device* is used to protect a *pressure vessel* having an *inside dimension* of 6 in. (152 mm) or less, the *ultimate strength* of the *pressure vessel* so protected *shall* be sufficient to withstand a pressure at least 3.0 times the *design pressure*.

9.3.1.3 If a *fusible plug* is used to protect a *pressure vessel* having an inside diameter of 6 in. (152 mm) or less, the *ultimate strength* of the *pressure vessel* so protected *shall* be sufficient to withstand a pressure 2.5 times the *saturation pressure* of the *refrigerant* used at the temperature stamped on the *fusible plug*, or 2.5 times the *critical pressure* of the *refrigerant* used, whichever is less.

9.3.2 Inside Dimensions Greater than 6 in. (152 mm). *Pressure vessels* having an inside diameter exceeding 6 in. (152 mm) and having an internal or external *design pressure* greater than 15 psig (103.4 kPa gage) *shall* be directly marked, or marked on a nameplate, with a "U" or "UM" symbol signifying compliance with the rules of *ASME Boiler and Pressure Vessel Code* [15], Section VIII.

9.3.3 Pressure Vessels for 15 psig (103.4 kPa gage) or Less. *Pressure vessels* having an internal or external *design pressure* of 15 psig (103.4 kPa gage) or less *shall* have an *ultimate strength* to withstand at least 3.0 times the *design pressure* and *shall* be tested with a pneumatic test pressure no less than 1.25 times the *design pressure* or a hydrostatic test pressure no less than 1.50 times the *design pressure*.

Interpretation: If a plate-type heat exchanger vaporizes refrigerant for refrigeration purposes, it meets the definition of an *evaporator*. If this *evaporator* does not have a marking indicating compliance with a pressure vessel code (e.g., ASME BPVC) and does not exceed 0.5 ft^3 (0.014 m^3) of *refrigerant*-containing volume, regardless of piping connection size, it fails the definition of a *pressure vessel*. Therefore, "Section 9.3 Refrigerant-Containing Pressure Vessels" and its subsections do not apply.

Question: Is this Interpretation correct?

Answer: Yes