

1. PURPOSE

This standard specifies safe design, construction, installation, and operation of refrigeration systems.

2. SCOPE

2.1 This standard establishes safeguards for life, limb, health, and property and prescribes safety requirements.

2.2 This standard applies to

- a. the design, construction, test, installation, operation, and inspection of mechanical and absorption refrigeration systems, including *heat-pump* systems used in stationary applications;
- b. modifications, including replacement of parts or components if they are not identical in function and capacity; and
- c. substitutions of *refrigerants* having a different designation.

2.3 This standard *shall not* apply to refrigeration systems using ammonia (R-717) as the *refrigerant*.

Informative Note: See ANSI/IIAR 2¹ for systems using ammonia (R-717).

2.4 This standard does not apply to residential refrigeration systems serving only a single dwelling unit or sleeping unit complying with ASHRAE Standard 15.2².

3. DEFINITIONS

3.1 Defined Terms

administrative control: the use of human action aimed at achieving a safe level of performance from a system or subsystem. Compare to *engineering control*.

air circulation: mechanically inducing airflow within a space or spaces connected by *air ducts*.

approved: acceptable to the authority having jurisdiction (AHJ).

back pressure: the static pressure existing at the outlet of an operating *pressure relief device* due to pressure in the discharge line.

balanced relief valve: a *pressure relief valve* that incorporates means of minimizing the effect of *back pressure* on the operational characteristics of the valve (opening pressure, closing pressure, and relieving capacity).

blends: *refrigerants* consisting of mixtures of two or more different chemical compounds, often used individually as *refrigerants* for other applications.

brazed joint: a gas-tight joint obtained by the joining of metal parts with metallic mixtures or alloys that melt at liquidus temperatures above 840°F (450°C) but less than the melting solidus temperatures of the joined parts.

building code: the building code adopted by the jurisdiction.

- e. Elevator, dumbwaiter, or other shaft containing a moving object

9.12.1.4 Piping in Concrete Floors. *Refrigerant piping* installed in concrete floors *shall* be encased in *pipe duct*. The *piping* *shall* be protected to prevent damage from vibration, stress, and corrosion.

9.12.1.5 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 the requirements of the *building code*. Other building utilities or *piping* systems *shall* be allowed in the *refrigerant piping* shaft.

9.12.1.5.1 Shaft Alternative. A shaft enclosure *shall not be required* for the *refrigerant piping* for any of the following *refrigerating systems*:

- a. Systems using R-718 (water) *refrigerant*
- b. *Piping* in a high-probability system where the *refrigerant* concentration does not exceed the amounts shown in ASHRAE Standard 34³, Table 4-1 or 4-2, for the smallest *occupied space* through which the *piping* passes
- c. *Piping* located on the exterior of the building where vented to the outdoors

9.12.1.6 Exposed Piping Surface Temperature. Exposed *piping* with ready access to nonauthorized