



ANSI/ASHRAE Standard 147-2002

# ASHRAE<sup>®</sup> STANDARD

## Reducing the Release of Halogenated Refrigerants from Refrigerating and Air-Conditioning Equipment and Systems

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## FOREWORD

When the potential link between release of chlorofluorocarbons (CFCs) and depletion of stratospheric ozone was first discussed, ASHRAE appointed a task group to study the issue and to develop appropriate policy and program recommendations to the Board of Directors.

In response, a comprehensive action program was initiated. It included research, education, communication, and training directed toward the various aspects of the CFC issue. A part of this program was the development of a guideline for reducing CFC refrigerant release. This was published as ASHRAE Guideline 3-1990, "Reducing Emission of Fully Halogenated Chlorofluorocarbon (CFC) Refrigerants in Refrigeration and Air Conditioning Equipment and Applications."

Since that date, it has been determined that all chlorine-containing refrigerants release hydrochlorofluorocarbons (HCFCs) as well as CFCs and contribute to depletion of the stratospheric ozone layer and that release of CFCs, HCFCs, and hydrofluorocarbons (HFCs) contributes to global warming. Accordingly it has been determined that release of CFCs, HCFCs, and HFCs should be minimized. Guideline 3 was revised to reflect this more stringent policy.

ASHRAE Guideline 3-1996, "Reducing Emission of Halogenated Refrigerants in Refrigeration and Air-Conditioning Equipment and Systems," was subsequently revised to produce this standard, which prescribes practices and procedures to reduce release into the atmosphere of halogenated refrigerants used in refrigerating and air-conditioning systems. Some material from Guideline 3 has been preserved in the informative annexes to this standard. Annexes A and B, specifically, contain information concerning practices and procedures that are recommended but not required for compliance with this standard.

## ACKNOWLEDGMENTS

In the preparation of this standard, use has been made of the recommendations contained in "Code of Good Practice" issued by the Commission of the European Communities, Report EUR 9509 EN. Additionally, recommendations by other organizations and appropriate provisions of various standards have been important sources of information presented in this standard.

## 1. PURPOSE

This standard establishes practices and procedures that will reduce inadvertent release of halogenated refrigerants.

## 2. SCOPE

The practices and procedures in this standard cover release reduction of halogenated hydrocarbon and halogenated ether refrigerants in the following circumstances:

- (a) from stationary refrigerating, air-conditioning, and heat-pump equipment and systems;

- (b) during manufacture, installation, testing, operation, maintenance, repair, and disposal of equipment and systems.

## 3. DEFINITIONS

Although the following terms may have broader interpretations elsewhere in the industry, their specific meanings as used in this standard are as follows.

**CFC:** a fully halogenated (no hydrogen remaining) halocarbon containing chlorine, fluorine, and carbon atoms.

**HCFC:** a halocarbon that contains fluorine, chlorine, carbon, and hydrogen.

**HFC:** a halocarbon that contains only fluorine, carbon, and hydrogen.

**joint, brazed:** a gas-tight joint obtained by joining metal parts with alloys that melt at temperatures higher than 800°F (426°C) but less than the melting temperatures of the joined parts.

**joint, mechanical:** a gas-tight joint obtained by joining metal parts through a positive holding mechanical construction (such as flanged joint, screwed joint, or flared joint).

**joint, soldered:** a gas-tight joint obtained by joining metal parts with metallic mixtures or alloys, which melt at temperatures above 400°F (204°C) but not exceeding 800°F (426°C).

**joint, welded:** a gas-tight joint obtained by the joining of metal parts in the plastic or molten state or through the use of filler metals that melt at temperatures 800°F (426°C) and above.

**large system:** a system containing 50 lb (23 kg) or more of refrigerant.

**PFC:** a hydrocarbon that contains only fluorine and carbon.

**pressure, design:** the maximum allowable working pressure for which a specific part of a system is designed.

**pressure, high:** systems whose gage pressure at room temperature (74°F [23.3°C]) is typically more than 100 psig (689 kPa). Common high-pressure refrigerants include R-22, R-502, and R-125.

**pressure, low:** systems whose absolute pressure at room temperature (74°F [23.3°C]) is below ambient pressure absolute. Common low-pressure refrigerants include R-11, R-113, and R-123.

**pressure, maximum working:** (see *pressure, design*).

**pressure, medium:** systems whose gage pressure at room temperature (74°F [23.3°C]) is greater than atmospheric pressure but typically less than 100 psig (689 kPa). Common