STANDARD

ANSI/ASHRAE Standard 147-2013
(Supersedes ANSI/ASHRAE Standard 147-2002)

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

Approved by the ASHRAE Standards Committee on June 22, 2013; by the ASHRAE Board of Directors on June 26, 2013; and by the American National Standards Institute on June 27, 2013.

This standard is under continuous maintenance by a Standing Standard Project Committee (SSPC) for which the Standards Committee has established a documented program for regular publication of addenda or revisions, including procedures for timely, documented, consensus action on requests for change to any part of the standard. The change submittal form, instructions, and deadlines may be obtained in electronic form from the ASHRAE website (www.ashrae.org) or in paper form from the Manager of Standards. The latest edition of an ASHRAE Standard may be purchased from the ASHRAE website (www.ashrae.org) or from ASHRAE Customer Service, 1791 Tullie Circle, NE, Atlanta, GA 30329-2305. E-mail: orders@ashrae.org. Fax: 404-321-5478. Telephone: 404-636-8400 (worldwide), or toll free 1-800-527-4723 (for orders in US and Canada). For reprint permission, go to www.ashrae.org/permissions.

 ISSN 1041-2336

Approved American National Standard
ANSI
www.ansi.org

SPECIAL NOTE

This American National Standard (ANS) is a national voluntary consensus standard developed under the auspices of ASHRAE. *Consensus* is defined by the American National Standards Institute (ANSI), of which ASHRAE is a member and which has approved this standard as an ANS, as "substantial agreement reached by directly and materially affected interest categories. This signifies the concurrence of more than a simple majority, but not necessarily unanimity. Consensus requires that all views and objections be considered, and that an effort be made toward their resolution." Compliance with this standard is voluntary until and unless a legal jurisdiction makes compliance mandatory through legislation.

ASHRAE obtains consensus through participation of its national and international members, associated societies, and public review.

ASHRAE Standards are prepared by a Project Committee appointed specifically for the purpose of writing the Standard. The Project Committee Chair and Vice-Chair must be members of ASHRAE; while other committee members may or may not be ASHRAE members, all must be technically qualified in the subject area of the Standard. Every effort is made to balance the concerned interests on all Project Committees.

The Manager of Standards of ASHRAE should be contacted for:

a. interpretation of the contents of this Standard,
b. participation in the next review of the Standard,
c. offering constructive criticism for improving the Standard, or
d. permission to reprint portions of the Standard.

DISCLAIMER

ASHRAE uses its best efforts to promulgate Standards and Guidelines for the benefit of the public in light of available information and accepted industry practices. However, ASHRAE does not guarantee, certify, or assure the safety or performance of any products, components, or systems tested, installed, or operated in accordance with ASHRAE's Standards or Guidelines or that any tests conducted under its Standards or Guidelines will be nonhazardous or free from risk.

ASHRAE INDUSTRIAL ADVERTISING POLICY ON STANDARDS

ASHRAE Standards and Guidelines are established to assist industry and the public by offering a uniform method of testing for rating purposes, by suggesting safe practices in designing and installing equipment, by providing proper definitions of this equipment, and by providing other information that may serve to guide the industry. The creation of ASHRAE Standards and Guidelines is determined by the need for them, and conformance to them is completely voluntary.

In referring to this Standard or Guideline and in marking of equipment and in advertising, no claim shall be made, either stated or implied, that the product has been approved by ASHRAE.

CONTENTS

ANSI/ASHRAE Standard 147-2013, Reducing the Release of Halogenated Refrigerants from Refrigerating and Air-Conditioning Equipment and Systems

NOTE

Approved addenda, errata, or interpretations for this standard can be downloaded free of charge from the ASHRAE Web site at www.ashrae.org/technology.

(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

When the potential link between release of chlorofluorocarbons (CFCs) and depletion of stratospheric ozone was first discovered, 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.[C1] *Since that date, it has been determined that* all *releases of chlorine-containing refrigerants, hydrochlorofluorocarbons (HCFCs) as well as CFCs, contribute to depletion of the stratospheric ozone layer. Not long after, it was also determined that the release of CFCs, HCFCs, and hydrofluorocarbons (HFCs) contributes to global warming, adding new urgency to controlling their release. In 1996, Guideline 3 was revised to reflect this need for a more stringent policy, and in 2002 ASHRAE published Standard 147,* Reducing the Release of Halogenated Refrigerants from Refrigerating and Air-Conditioning Equipment and Systems.[C2] *Standard 147 took many of the recommended practices of Guideline 3 and made them mandatory requirements, thus further increasing the stringency of the guideline, which was later withdrawn. However, some of the material from Guideline 3 was preserved in the standard in informative appendices that provide recommended practices that are not required by the standard.*

This revision of Standard 147 updates the 2002 edition by expanding the number of equipment types and systems covered by providing significant requirements for field-erected systems, by adding more sections on leak checking, by adding requirements for systems with larger charges, by addressing the shipping and handling of containers for refrigerants, and by making many formerly recommended practices mandatory.

1. PURPOSE

This standard establishes practices and procedures that will reduce the 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, and
b. during manufacture, installation, testing, operation, maintenance, repair, and disposal of such 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.

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

equipment type: a classification used to distinguish between the different kinds of refrigerant-containing systems and equipment covered by this standard.

Type 1, component: single-refrigerant-containing piece of a refrigeration system (e.g., thermostatic expansion valve [TXV] body, TXV power head, valves, receiver, controls, tube.)

Type 2, small assembly: the extension of the refrigerant volume by brazing/welding/mechanical connection of components and hardware can include other hardware. Internal volume is less than 61 in.^{3} (1 L).

Type 3, large assembly: a further extension of the refrigerant volume by brazing/welding/mechanical connection of multiple components. Internal volume is equal to or greater than 61 in.^{3} (1 L).

Type 4, appliance: a very small, packaged piece of refrigeration equipment that is installed by the consumer and has a refrigerant design operating charge of less than 5 lb (2.3 kg) of refrigerant.

Type 5, small, packaged equipment: A small piece of refrigeration equipment manufactured, assembled in its entirety, typically installed by a contractor, and with a refrigerant design operating charge of less than 50 lb (23 kg) per circuit.

Type 6, small, assembled equipment: small refrigeration equipment that is assembled and installed by a professional and contains a refrigerant design operating charge of less than 50 lb (23 kg) per circuit. These are typically two assemblies, a condensing unit and an evaporator/air handler, but may have as many as three air handling units (AHU)/evaporators.

Type 7, large, packaged equipment: a large piece of refrigeration equipment manufactured and assembled in its entirety in a manufacturing facility, installed by a