



# ADDENDA

**ANSI/ASHRAE Addendum c to  
ANSI/ASHRAE Standard 147-2013**

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

Approved by ASHRAE on March 26, 2018, and by the American National Standards Institute on March 27, 2018.

This addendum was approved 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](http://www.ashrae.org)) or in paper form from the Senior Manager of Standards.

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**Cognizant TC: 3.8, Refrigerant Containment**  
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## FOREWORD

*Addendum c addresses needed guidance for Informative Appendix A relative to vibration (Section A2.2.3.1) and water treatment (Section A2.2.3.2). These changes are informative in nature.*

**Note:** In this addendum, changes to the current standard are indicated in the text by underlining (for additions) and ~~strike through~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

### Addendum c to Standard 147-2013

*Revise Section A2.2.3 as shown.*

#### A2.2.3 Evaporative Condensers

~~A2.2.3.1 Proper water treatment can minimize the effects of corrosive elements in the evaporative fluid.~~ **Vibration.** Excessive vibration can cause failure of the tubing connected to the condensers and evaporators, leading to refrigerant leaks. Vibration can come from the compressors, fans, nearby equipment, refrigerant boiling off inside a flooded evaporator, or excessive refrigerant velocity inside the tubing. This problem can be avoided by (a) using vibration dampening pads or

springs at the fans, on the mounting base, or mounting lugs or (b) by changing the spacing of tubing supports as required.

**A2.2.3.2 Water Treatment.** Without a rigorous water treatment regimen, the service and water use costs can negate or even eclipse the energy cost savings of evaporative condensers. Furthermore, poor water treatment practices can indirectly lead to refrigerant leaks when the tubing is descaled. Manual and chemical methods of removing scale can remove enough tubing material to weaken the tubing to the point of failure. The condenser should be evacuated prior to descaling and leak tested prior to use whenever possible. To prevent scale buildup, condenser tubing should be visually inspected often; water distribution nozzles should be thoroughly cleaned on a regular basis to ensure complete coverage; and water quality sensors should be cleaned, maintained, and calibrated frequently to ensure that the chemical or electrical scale prevention systems can perform as designed. The frequency of such service practices, which can vary from every few days to every few months, depends entirely on the water quality at the condenser. See manufacturer recommendations for baseline intervals.

**A2.3 Piping, Tubing, and Connections.** Strainers, filters, and driers should be utilized to control moisture and capture solid contaminants, a process which will minimize damage to moving parts and avoid plugging of refrigerant circuits caused by contaminants in the system. These components should be isolated with valves (or pump-out capability provided) to permit quick recovery of refrigerant before component servicing and to reduce the potential for excessive refrigerant loss. Supports and bimetal transition joints should be designed to guard against electrolytic corrosion.



## **POLICY STATEMENT DEFINING ASHRAE'S CONCERN FOR THE ENVIRONMENTAL IMPACT OF ITS ACTIVITIES**

ASHRAE is concerned with the impact of its members' activities on both the indoor and outdoor environment. ASHRAE's members will strive to minimize any possible deleterious effect on the indoor and outdoor environment of the systems and components in their responsibility while maximizing the beneficial effects these systems provide, consistent with accepted Standards and the practical state of the art.

ASHRAE's short-range goal is to ensure that the systems and components within its scope do not impact the indoor and outdoor environment to a greater extent than specified by the Standards and Guidelines as established by itself and other responsible bodies.

As an ongoing goal, ASHRAE will, through its Standards Committee and extensive Technical Committee structure, continue to generate up-to-date Standards and Guidelines where appropriate and adopt, recommend, and promote those new and revised Standards developed by other responsible organizations.

Through its *Handbook*, appropriate chapters will contain up-to-date Standards and design considerations as the material is systematically revised.

ASHRAE will take the lead with respect to dissemination of environmental information of its primary interest and will seek out and disseminate information from other responsible organizations that is pertinent, as guides to updating Standards and Guidelines.

The effects of the design and selection of equipment and systems will be considered within the scope of the system's intended use and expected misuse. The disposal of hazardous materials, if any, will also be considered.

ASHRAE's primary concern for environmental impact will be at the site where equipment within ASHRAE's scope operates. However, energy source selection and the possible environmental impact due to the energy source and energy transportation will be considered where possible. Recommendations concerning energy source selection should be made by its members.

### **About ASHRAE**

ASHRAE, founded in 1894, is a global society advancing human well-being through sustainable technology for the built environment. The Society and its members focus on building systems, energy efficiency, indoor air quality, refrigeration, and sustainability. Through research, Standards writing, publishing, certification and continuing education, ASHRAE shapes tomorrow's built environment today.

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