Errata Sheet for ANSI/ASHRAE Standard 34-2007,
Designation and Safety Classification of Refrigerants

November 19, 2007

The corrections listed in this errata sheet apply to the first printing of ANSI/ASHRAE Standard 34-2007 identified on the outside back cover as “86089 PC 5/07”.

Page	Erratum
Inside Cover	**ASHRAE Standing Standard Project Committee 34.** Some of the initial copies of the first printing of the standard were published with the incorrect SSPC 34 roster on the inside cover. Correct roster attached. *Note that later versions of the first printing of the standard already include the corrected roster as a sticker and therefore this erratum may not apply in all cases.*
18	**Table 2 Data and Safety Classifications for Refrigerant Blends.** Change the composition for refrigerant number 426A from “R-125/134a/600a/601a” to “R-125/134a/600/601a”.
18	**Table 2 Data and Safety Classifications for Refrigerant Blends.** Change the composition tolerances (shaded) in the following footnotes in Table 2 to read: [g]Composition tolerances are (+0.2, -2.0/±2.0/±2.0). [h]Composition tolerances for the individual components are (±2.0/±1.0/±1.0/±2.0) and for the sum of R-152a and R-142b are (+0.0, -2.0). [i]Composition tolerances are (±2.0/±1.0/±1.0). [r]Composition tolerances are (±2.0/+0.1, -1.0/±2.0).

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ANSI/ASHRAE Standard 34-2007
(Supersedes ANSI/ASHRAE Standard 34-2004)
Includes ANSI/ASHRAE Addenda listed in Appendix F

ASHRAE STANDARD

Designation and Safety Classification of Refrigerants

See Appendix F for approval dates by the ASHRAE Standards Committee, the ASHRAE Board of Directors, and the American National Standards Institute.

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 Web site, http://www.ashrae.org, or in paper form from the Manager of Standards. The latest edition of an ASHRAE Standard may be purchased 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).

ISSN 1041-2336

Approved American National Standard
ANSI
www.ansi.org

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
1791 Tullie Circle NE, Atlanta, GA 30329
www.ashrae.org

SPECIAL NOTE

This American National Standard (ANS) is a national voluntary consensus standard developed under the auspices of the American Society of Heating, Refrigerating and Air-Conditioning Engineers (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 Assistant Director of Technology for Standards and Special Projects 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.

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ANSI/ASHRAE Standard 34-2007
Designation and Safety Classification of Refrigerants

NOTE

When addenda, interpretations, or errata to this standard have been approved, they can be downloaded free of charge from the ASHRAE Web site at http://www.ashrae.org.

(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

ANSI/ASHRAE Standard 34-2007 is the latest edition of Standard 34, which describes a shorthand way of naming refrigerants and assigns safety classifications based on toxicity and flammability data. The 2007 edition combines Standard 34-2004 and the 23 approved and published addenda to the 2004 edition, thereby providing an easy-to-use consolidated standard. More specific information on the contents of each addendum and its approval dates is included in an informative appendix at the end of this standard.

First published in 1978, Standard 34 is now updated on a regular basis using ASHRAE's continuous maintenance procedures. According to these procedures, Standard 34 is continuously revised—often several times a year—by addenda that are publicly reviewed, approved by ASHRAE and ANSI, and published on the ASHRAE Web site. Because the standard changes as new addenda are published, users are encouraged to sign up for the free Internet list server for the ASHRAE Standards Actions publication, which provides notice of all public reviews and approved and published addenda and errata. At the minimum, users should periodically review the ASHRAE Web site to ensure that they have all of the published addenda.

Among the key changes that were incorporated in the 2007 edition are the following:

- *Added thirteen refrigerants to Table 2 and three to Table 1.*
- *Added the requirement for refrigerant applications in electronic format in addition to the printed copies.*
- *Added a column to Tables 1 and 2 titled "Highly Toxic or Toxic Under Code Classification," with each refrigerant designated as highly toxic, toxic (as defined by the International Fire Code, Uniform Fire Code, and OSHA), or neither (for refrigerants less toxic than as defined above); also added definitions for these terms and updated the references.*
- *Removed the following four data requirements from the application instructions: freezing point or triple point for individual chemicals, vapor composition for the as-formulated saturated liquid composition at the normal boiling point and at 20°C for all blends, and the dew-point vapor pressure at 20°C and 60°C for zeotropic blends.*
- *Added guidance for the numbering of C4-C8 alkanes.*
- *Revised the refrigerant flammability classification and provided details on the required flammability and fractionation testing procedures.*
- *Added an informative appendix containing refrigerant data such as molecular mass and normal boiling point for the refrigerants listed. It also provides bubble points and dew points for azeotropic blends.*
- *Added a new section to the standard to specify the criteria to determine recommended RCLs in occupied spaces and added refrigerant concentration limit (RCL) values to Tables 1 and 2.*
- *Increased the oxygen deprivation limit (ODL) from 69,100 to 140,000 ppm for locations with altitudes at and below 1000 m (3300 ft) above sea level.*
- *Increased the cardiac sensitization default from 0 to 1000 ppm.*
- *Added an informative appendix containing toxicity and flammability data for single-compound refrigerants.*

Users of the standard are encouraged and invited to use the continuous maintenance procedure to suggest changes for further improvements. A form for submitting proposed changes to the standard is included at the back of this edition. The project committee for Standard 34 will take formal action on all proposals received.

1. PURPOSE

This standard is intended to establish a simple means of referring to common refrigerants instead of using the chemical name, formula, or trade name. It also establishes a uniform system for assigning reference numbers and safety classifications to refrigerants. The standard identifies requirements to apply for designations and safety classifications for refrigerants, including blends, in addenda or revisions to this standard.

2. SCOPE

This standard provides an unambiguous system for numbering refrigerants and assigning composition-designating prefixes for refrigerants. Safety classifications based on toxicity and flammability data are included. This standard does not imply endorsement or concurrence that individual refrigerant blends are suitable for any particular application.

3. DEFINITIONS OF TERMS

acute toxicity: the adverse health effect(s) from a single, short-term exposure, as might occur during an accidental release of refrigerants.

acute-toxicity exposure limit (ATEL): the refrigerant concentration limit determined in accordance with this standard and intended to reduce the risks of acute toxicity hazards in normally occupied, enclosed spaces. ATEL values are similar to the Immediately Dangerous to Life or Health (IDLH) concentrations set by the National Institute of Occupational Safety and Health (NIOSH). ATELs include explicit, additional components for cardiac sensitization and anesthetic effects, but they do not address flammability. The lowest of the ATEL, 50,000 ppm by volume, or 10% of the lower flammability limit, therefore, provides a conservative approximation to IDLH concentrations when needed for refrigerants without adopted IDLH values.

approximate lethal concentration (ALC): the concentration of a substance, a refrigerant in this standard, that was lethal to even a single test animal when tested by the same conditions as for an LC_{50} test.