ANSI/ASHRAE Addenda e, f, g, and h to
ANSI/ASHRAE Standard 34-2010

ASHRAE ADDENDA

Designation and Safety Classification of Refrigerants

Approved by the ASHRAE Standards Committee on January 29, 2011; by the ASHRAE Board of Directors on February 2, 2011; and by the American National Standards Institute on February 3, 2011.

These addenda were 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 Web site (www.ashrae.org) or in paper form from the Manager of Standards.

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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.

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b. participation in the next review of the Standard,
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FOREWORD

This addendum adds 439A, a new zeotropic refrigerant blend, to Table 2 and Table D2.

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

Addendum e to Standard 34-2010

Add the following data to Table 2 and Table D2 in the columns indicated.

TABLE 2 Data and Safety Classifications for Refrigerant Blends

Refrigerant Number = 439A
Composition (Mass %) = R-32/125/600a (50.0/47.0/3.0)
Composition Tolerances = (±1.0 / ± 1.0 / ± 0.5)
OEL = 990
Safety Group = A2
RCL = 26,000 ppm v/v; 76 g/m^3; 4.7 lb/Mcf
Highly Toxic or Toxic Under Code Classification = Neither

TABLE D2 Data for Refrigerant Blends

Refrigerant Number = 439A
Composition (Mass %) = R-32/125/600a (50.0/47.0/3.0)
Average Molecular Mass = 71.2
Bubble Point (°C) = –52.0
Dew Point (°C) = –51.8
Bubble Point (°F) = –61.6
Dew Point (°F) = –61.2

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FOREWORD

This addendum adds 440A, a new zeotropic refrigerant blend, to Table 2 and Table D2.

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

Addendum f to Standard 34-2010

Add the following data to Table 2 and Table D2 in the columns indicated.

TABLE 2 Data and Safety Classifications for Refrigerant Blends

Refrigerant Number = 440A
Composition (Mass %) = R-290/134a/152a (0.6/1.6/97.8)
Composition Tolerances = (±0.1 / ± 0.6 / ± 0.5)
OEL = 1000
Safety Group = A2
RCL = 12,000 ppm v/v; 31 g/m^3; 1.9 lb/Mcf
Highly Toxic or Toxic Under Code Classification = Neither

TABLE D2 Data for Refrigerant Blends

Refrigerant Number = 440A
Composition (Mass %) = R-290/134a/152a (0.6/1.6/97.8)
Average Molecular Mass = 66.2
Bubble Point (°C) = –25.5
Dew Point (°C) = –24.3
Bubble Point (°F) = –13.9
Dew Point (°F) = –11.7

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FOREWORD

This addendum adds 441A, a new zeotropic refrigerant blend, to Table 2 and Table D2.

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

Addendum g to Standard 34-2010

Add the following data to Table 2 and Table D2 in the columns indicated.

TABLE 2 Data and Safety Classifications for Refrigerant Blends

Refrigerant Number = 441A
Composition (Mass %) = R-170/290/600a/600 (3.1/54.8/6.0/36.1)
Composition Tolerances = (±0.3 / ± 2.0 / ± 0.6 / ± 2.0)
OEL = 1000
Safety Group = A3
RCL = 3,200 ppm v/v; 6.3 g/m^3; 0.39 lb/Mcf
Highly Toxic or Toxic Under Code Classification = Neither

TABLE D2 Data for Refrigerant Blends

Refrigerant Number = 441A
Composition (Mass %) = R-170/290/600a/600 (3.1/54.8/6.0/36.1)
Average Molecular Mass = 48.2
Bubble Point (°C) = –41.9
Dew Point (°C) = –20.4
Bubble Point (°F) = –43.4
Dew Point (°F) = –4.7

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FOREWORD

This addendum changes the flammability safety classifications of refrigerants 32, 143a, 717, and 1234yf in Table 1 from Class 2 to its Subclass 2L based on the optional burning velocity measurement. This change in flammability classification is due to the fact that underlying test data demonstrate that these refrigerants have a maximum burning velocity of ≤10 cm/s (3.9 in./s) when tested at 23.0°C (73.4°F) and 101.3 kPa (14.7 psia).

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

Addendum h to Standard 34-2010

Make the following change to the safety classifications of refrigerants 32, 143a, 717, and 1234yf:

TABLE 1 Refrigerant Data and Safety Classifications

Refrigerant	Chemical Formula	Safety Group
32	CH2F2	~~A2~~ A2L
143a	CH3CF3	~~A2~~ A2L
717	NH3	~~B2~~ B2L
1234yf	CF3CF=CH2	~~A2~~ A2L

All other entries for these refrigerants remain unchanged.

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.