



ADDENDA

**ANSI/ASHRAE Addenda w, x, ag, ah, ai, and aj to
ANSI/ASHRAE Standard 34-2010**

Designation and Safety Classification of Refrigerants

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.

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ISSN 1041-2336



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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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FOREWORD

This addendum modifies the definition of Workplace Environmental Exposure Level (WEEL) and adds a reference for AIHA WEEL.

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 w to Standard 34-2010

Revise Section 3 and Section 10 as follows. Modify definition of WEEL and add new reference 5, with all subsequent references to be renumbered accordingly within the text and Section 10, References.

3. DEFINITIONS OF TERMS

workplace environmental exposure level (WEEL): an occupational exposure limit set by the American Industrial Hygiene Association (AIHA)⁵. The TWA concentration, measured in the worker breathing zone, for a normal 8-hour workday, 40-hour workweek, for which it is believed that nearly all workers can be repeatedly exposed without adverse health effects. WEEL values may be expressed as time-weighted average TWA concentrations, Short-Term Exposure Levels (STELs), or ceiling values.

10. REFERENCES

⁵ AIHA 2011 Emergency Response Planning Guidelines and Workplace Environmental Exposure Level Handbook, document AEAH11-559, American Industrial Hygiene Association (AIHA), Fairfax, VA, USA, 2011.

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FOREWORD

This addendum clarifies the conditions for bubble point in Sections B2.4.1 and B2.4.2 of Normative Appendix B.

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

Addendum x to Standard 34-2010

Revise Section B2.4.1 (b) and B2.4.2 (b) in Normative Appendix B as follows.

B2.4.1 Leaks Under Storage/Shipping Conditions. To simulate leaks under storage/shipping conditions, the container shall be filled with the WCF to 90%, by mass, of the maximum fill. The maximum fill is the calculated mass that gives a 100% liquid fill at 54.4°C (130°F). The charged blend shall be vapor leaked, 2% by mass of the initial charge per hour, at the following temperatures:

- a. 54.4°C (130°F),
- b. -40.0°C (-40.0°F) or the bubble point at 101.3 kPa (14.7 psia) plus 10.0°C (18.0°F), whichever is warmer, and
- ...

B2.4.2 Leaks from Equipment. To simulate leaks from equipment, the container shall be filled with the WCF to 15% of the maximum fill (as defined in Section B2.4.1) and then shall be vapor leaked at the following temperatures:

- a. 60.0°C (140°F),
- b. -40.0°C (-40.0°F) or the bubble point at 101.3 kPa (14.7 psia) plus 10.0°C (18.0°F), whichever is warmer, and
- ...

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FOREWORD

This addendum adds new zeotropic refrigerant R-417C 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 ~~striketrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum ag to Standard 34-2010

Revise Table 2 and Table D2 as follows.

TABLE 2 Data and Safety Classifications for Refrigerant Blends

Refrigerant Number = 417C
Composition (Mass %) = R-125/134a/600 (19.5/78.8/1.7)
Composition tolerances = (±1.0 / ±1.0 / +0.1, -0.5)
OEL = 1,000
Safety Group = A1
RCL = 21,000 ppm v/v; 87 g/m³; 5.4 lb/Mcf
Highly Toxic or Toxic Under Code Classification = Neither

TABLE D2 Data for Refrigerant Blends

Refrigerant Number = 417C
Composition (Mass %) = R-125/134a/600 (19.5/78.8/1.7)
Average Molecular Mass = 103.7
Bubble Point (°C) = -32.7
Bubble Point (°F) = -26.9
Dew Point (°C) = -29.2
Dew Point (°F) = -20.6

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FOREWORD

This addendum adds new zeotropic refrigerant R-445A 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 ah to Standard 34-2010

Revise Table 2 and Table D2 as follows.

TABLE 2 Data and Safety Classifications for Refrigerant Blends

Refrigerant Number = 445A

Composition (Mass %) = R-744/134a/1234ze(E)

(6.0/9.0/85.0)

Composition tolerances = (±1.0 / ±1.0 / ±2.0)

OEL = 930

Safety Group = A2L

RCL = 16,000 ppm v/v; 67 g/m³; 4.2 lb/Mcf

Highly Toxic or Toxic Under Code Classification = Neither

TABLE D2 Data for Refrigerant Blends

Refrigerant Number = 445A

Composition (Mass %) = R-744/134a/1234ze(E)

(6.0/9.0/85.0)

Average Molecular Mass = 103.1

Bubble Point (°C) = -50.3

Bubble Point (°F) = -58.5

Dew Point (°C) = -23.5

Dew Point (°F) = -10.3

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FOREWORD

This addendum adds new zeotropic refrigerant R-419B 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 ai to Standard 34-2010

Revise Table 2 and Table D2 as follows.

TABLE 2 Data and Safety Classifications for Refrigerant Blends

Refrigerant Number = 419B

Composition (Mass %) = R-125/134a/E170 (48.5/48.0/

3.5)

Composition tolerances = (±1.0 / ±1.0 / ±0.5)

OEL = 1,000

Safety Group = A2

RCL = 17,000 ppm v/v; 74 g/m³; 4.6 lb/Mcf

Highly Toxic or Toxic Under Code Classification =

Neither

TABLE D2 Data for Refrigerant Blends

Refrigerant Number = 419B

Composition (Mass %) = R-125/134a/E170 (48.5/48.0/

3.5)

Average Molecular Mass = 105.2

Bubble Point (°C) = -37.4

Bubble Point (°F) = -35.3

Dew Point (°C) = -31.5

Dew Point (°F) = -24.7

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FOREWORD

This addendum adds new zeotropic refrigerant R-422E 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 ~~striketrough~~ (for deletions) unless the instructions specifically mention some other means of indicating the changes.

Addendum aj to Standard 34-2010

Revise Section 3 as follows.

TABLE 2 Data and Safety Classifications for Refrigerant Blends

Refrigerant Number = 422E
Composition (Mass %) = R-125/134a/600a (58.0/39.3/2.7)
Composition tolerances = (±1.0 / +1.7, -1.3 / +0.3, -0.2)
OEL = 1,000
Safety Group = A1
RCL = 57,000 ppm v/v; 260 g/m³; 16 lb/Mcf
Highly Toxic or Toxic Under Code Classification = Neither

TABLE D2 Data for Refrigerant Blends

Refrigerant Number = 422E
Composition (Mass %) = R-125/134a/600a (58.0/39.3/2.7)
Average Molecular Mass = 109.3
Bubble Point (°C) = -41.8
Bubble Point (°F) = -43.2
Dew Point (°C) = -36.4
Dew Point (°F) = -33.5

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.

