



ADDENDA

**ANSI/ASHRAE Addendum n to
ANSI/ASHRAE Standard 34-2016**

Designation and Safety Classification of Refrigerants

Approved by the ASHRAE Standards Committee on January 20, 2018; by the ASHRAE Technology Council on January 24, 2018; and by the American National Standards Institute on January 25, 2018.

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FOREWORD

Addendum n makes several changes with the purpose of aligning the toxicity classification procedure to be based on the nominal formulation of the blend.

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 n to Standard 34-2016

Modify Section 6.1.3 as follows.

6.1.3 Flammability Classification. Refrigerants shall be assigned to one of three classes (1, 2, or 3) and one optional subclass (2L) based on lower flammability limit testing, heat of combustion, and the optional burning velocity measurement. Flammability tests shall be conducted in accordance with ASTM E681, *Standard Test Method for Concentration Limits of Flammability of Chemicals (Vapors and Gases)*⁷ using a spark ignition source. Testing of all halocarbon refrigerants shall be in accordance with the Annex of ASTM E681. Single-compound refrigerants shall be assigned a single flammability classification. ~~Refrigerant blends shall be assigned flammability classifications as specified in Section 6.1.5.~~ Refrigerant B blends shall be assigned a flammability classification based on their WCF and WCFF, as determined from a

fractionation analysis (see Normative Appendix B, Section B2). A fractionation analysis for flammability is not required if the components of the blend are all in one class; the blend shall be assigned the same class (see Table 6.1.3).

Modify Section 6.1.5 as follows. Add new Sections 6.1.5.1 and 6.1.5.2.

6.1.5 Safety Classification of Refrigerant Blends. ~~Blends, whether zeotropic or azeotropic, whose flammability and/or toxicity characteristics may change as the composition changes during fractionation,~~ shall be assigned a safety group classification based on ~~the worst case of fractionation composition requirements of Sections 6.1.2 and 6.1.3 of this standard.~~ This safety classification shall be determined according to the same criteria as that for a single-compound refrigerant.

~~For flammability, worst case of fractionation is defined as the composition during fractionation that results in the highest concentration of the flammable components in the vapor or liquid phase. For toxicity, worst case of fractionation is defined as the composition during fractionation that results in the highest concentration of the components in the vapor or liquid phase for which the TLV-TWA is less than 400 ppm by volume. The TLV-TWA for a specific blend composition shall be calculated from the TLV-TWA of the individual components.~~

6.1.5.1 Toxicity Classification. The chronic toxicity classification of a refrigerant blend is based on the nominal formulation. The OEL of mixtures upon which the safety classification is based shall be calculated from the TLVs or WEELs of the individual components following ACGIH guidelines⁴.

6.1.5.2 Flammability Classification. Blends shall be assigned a flammability classification based on the requirements in Section 6.1.3.

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.

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