



# ADDENDA

**ANSI/ASHRAE Addendum n to  
ANSI/ASHRAE Standard 34-2019**

# Designation and Safety Classification of Refrigerants

Approved by ASHRAE and the American National Standards Institute on September 30, 2020.

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ISSN 1041-2336



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**Cognizant TC: 3.1, Refrigerants and Secondary Coolants**

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## FOREWORD

*Addendum n adds an informative note to Section 9.5.2 that references the new Informative Appendix I.*

**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 34-2019

*Revise Section 9 as shown. The remainder of Section 9 is unchanged.*

#### 9.5.2 Refrigerant Data

***Informative Note: Recommended Precision and Specification of Source.*** The numerical data required in Section 9.5.2 are recommended to conform to the levels of precision stated in Informative Appendix I, “Recommended Significant Figures Reporting of Quantities in Applications to ASHRAE SSPC 34.”

*Add new Informative Appendix I as shown.*

**(This appendix 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.)**

## **INFORMATIVE APPENDIX I** **RECOMMENDED SIGNIFICANT FIGURES REPORTING** **OF QUANTITIES IN APPLICATIONS TO ASHRAE SSPC 34**

This appendix provides guidance on the recommended number of significant figures for refrigerant data in applications for designation and safety group classifications for refrigerants, including blends, in addenda or revisions to the standard on new compounds or blends to be added to the standard.

### **I1. RECOMMENDED SIGNIFICANT FIGURES**

Table I-1 gives the recommended significant figures.

**Table I-1 Recommended Significant Figures**

<b><u>Property</u></b>	<b><u>Recommended Data Reporting</u></b>	<b><u>Examples</u></b>
<u>Temperatures (normal boiling point, critical point, azeotropic, bubble point, dew point, and temperature glide)</u>	<u>0.1</u>	<u>23.0°C (73.4°F)</u>
<u>Application temperatures</u>	<u>1</u>	<u>–40 to + 10°C</u>
<u>Pressures</u>	<u>Three (3) significant figures</u>	<u>5.78 MPa</u>
<u>Specific volume</u>	<u>Three (3) significant figures</u>	<u>0.00195 m<sup>3</sup>/kg</u>
<u>Density</u>	<u>Three (3) significant figures</u>	<u>472 kg/m<sup>3</sup></u>
<u>Latent heat of vaporization</u>	<u>Three (3) significant figures</u>	<u>125 kJ/kg</u>
<u>Specific heat ratio</u>	<u>Three (3) significant figures</u>	<u>1.53</u>
<u>Compositions (nominal, WCF, WCFE, tolerances)</u>	<u>0.1</u>	<u>(23.0/25.0/52.0)</u>
<u>Molecular weights</u>	<u>0.01</u>	<u>102.03 g/mole</u>

## **12. SPECIFICATION OF SOURCES**

The source of all of the quantities required in Section 9.5.2 are recommended to be stated and documented. Examples include the following:

- a. Direct experimental measurement: state method used and experimental uncertainty.
- b. Calculation by an equation of state model: state the program used (e.g., NIST REFPROP, version 10.0).
- c. Literature references for the underlying equations of state for each of the components (e.g., for R-134a: Tillner-Roth, R. and Baehr, H.D., An international standard formulation of the thermodynamic properties of 1,1,1,2-tetrafluoroethane (HFC-134a) for temperatures from 170K to 455K at pressures up to 70 MPa, *J. Phys. Chem. Ref. Data*, 23:657-729, 1994.) and, in the case of mixtures, the mixing rule and associated parameter values.
- d. Calculation by an approximate method, such as the calculation of critical properties given by Section 9.5.2.5 in ANSI/ASHRAE Standard 34 or the calculation of the heat of combustion given by the method in Normative Appendix B of ANSI/ASHRAE Standard 34.

## **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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