Designation and Safety Classification of Refrigerants


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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 strikethrough (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.

II. RECOMMENDED SIGNIFICANT FIGURES

Table I-1 gives the recommended significant figures.

<table>
<thead>
<tr>
<th>Property</th>
<th>Recommended Data Reporting</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperatures (normal boiling point, critical point, azeotropic, bubble point, dew point, and temperature glide)</td>
<td>0.1</td>
<td>23.0°C (73.4°F)</td>
</tr>
<tr>
<td>Application temperatures</td>
<td>1</td>
<td>-40 to + 10°C</td>
</tr>
<tr>
<td>Pressures</td>
<td>Three (3) significant figures</td>
<td>5.78 MPa</td>
</tr>
<tr>
<td>Specific volume</td>
<td>Three (3) significant figures</td>
<td>0.00195 m³/kg</td>
</tr>
<tr>
<td>Density</td>
<td>Three (3) significant figures</td>
<td>472 kg/m³</td>
</tr>
<tr>
<td>Latent heat of vaporization</td>
<td>Three (3) significant figures</td>
<td>125 kJ/kg</td>
</tr>
<tr>
<td>Specific heat ratio</td>
<td>Three (3) significant figures</td>
<td>1.53</td>
</tr>
<tr>
<td>Compositions (nominal, WCF, WCFF, tolerances)</td>
<td>0.1</td>
<td>(23.0/25.0/52.0)</td>
</tr>
<tr>
<td>Molecular weights</td>
<td>0.01</td>
<td>102.03 g/mole</td>
</tr>
</tbody>
</table>
I2. 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.
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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.

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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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