



**BSR/ASHRAE Addendum aa
to ANSI/ASHRAE Standard 34-2022**

Public Review Draft

Proposed Addendum aa to Standard 34-2022, Designation and Safety Classification of Refrigerants

**First Public Review (April 2024)
(Draft shows Proposed Changes to Current Standard)**

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FOREWORD

This proposed addendum revises the approach to classifying the toxicity of refrigerants.

Note: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and ~~striketrough~~ (for deletions) except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard are open for review and comment at this time. Additional material is provided for context only and is not open for comment except as it relates to the proposed changes.

Addendum aa to Standard 34-2022

Modify Section 6 as follows. The remainder of Section 6 remains unchanged.

6. SAFETY GROUP CLASSIFICATIONS

[...]

6.1.2 Toxicity Classification. Refrigerants shall be assigned to one of two classes, A or B, based on the following:
~~allowable exposure.~~

- ~~a. Class A refrigerants have an OEL of 400 ppm or greater.~~
- ~~b. Class B refrigerants have an OEL of less than 400 ppm.~~

6.1.2.1 Class A. A refrigerant is assigned toxicity classification A where:

- a. Where the refrigerant or refrigerant blend mortality toxic concentration factor (TCF), as described in Section 7.1.1a, ≥ 2500 ppm, except when Section 6.1.2.3 applies,
- b. Where the refrigerant or refrigerant blend
 - 1. cardiac sensitization concentration as described in Section 7.1.1b, and
 - 2. the anesthetic or central nervous system TCF as described in Section 7.1.1c, and
 - 3. other escape-impairing and permanent injury concentration as described in Section 7.1.1d $\geq 10,000$ ppm, except when Section 6.1.2.3, and
- c. The occupational exposure limit (OEL) is ≥ 150 ppm.

6.1.2.2 Class B. Where a refrigerant does not comply with Section 6.1.2.1 for Class A, it shall be assigned toxicity classification B.

6.1.2.3 Exceptions. Non-aromatic flammable hydrocarbon refrigerants with fewer than six carbon atoms are exempt from the acute toxicity criteria.

Informative Note: Non-aromatic flammable hydrocarbons are known to pose low acute toxicity. Exemptions of these fluids are due to cardiac sensitization, anesthetic, or other escape-impairing symptoms and permanent injury toxic concentration factors being at concentrations higher than the values required for what are considered to be safe (regarding flammability hazards) laboratory practices. Where acute toxicity criteria under Section 6.1.2.1 may not be met, the safety classification is to be based on the occupational exposure limit (OEL).

[...]