



**BSR/ASHRAE Addendum d
to ANSI/ASHRAE Standard 15-2024**

Second Public Review Draft

**Proposed Addendum d to
Standard 15-2024, Safety Standard
for Refrigeration Systems**

**Second Public Review (April 2025)
(Draft shows Proposed Independent Substantive
Changes to Previous Public Review Draft)**

This draft has been recommended for public review by the responsible project committee. To submit a comment on this proposed standard, go to the ASHRAE website at <https://www.ashrae.org/technical-resources/standards-and-guidelines/public-review-drafts> and access the online comment database. The draft is subject to modification until it is approved for publication by the Board of Directors and ANSI. Until this time, the current edition of the standard (as modified by any published addenda on the ASHRAE website) remains in effect. The current edition of any standard may be purchased from the ASHRAE Online Store at www.ashrae.org/bookstore or by calling 404-636-8400 or 1-800-727-4723 (for orders in the U.S. or Canada).

This standard is under continuous maintenance. To propose a change to the current standard, use the change submittal form available on the ASHRAE website, www.ashrae.org.

The appearance of any technical data or editorial material in this public review document does not constitute endorsement, warranty, or guaranty by ASHRAE of any product, service, process, procedure, or design, and ASHRAE expressly disclaims such.

© 2025 ASHRAE. This draft is covered under ASHRAE copyright. Permission to reproduce or redistribute all or any part of this document must be obtained from the ASHRAE Manager of Standards, 180 Technology Parkway NW, Peachtree Corners, GA 30092. Phone: 404-636-8400, Ext. 1125. Fax: 404-321-5478. E-mail: standards.section@ashrae.org.

ASHRAE, 180 Technology Parkway NW, Peachtree Corners, GA 30092

(This foreword 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.)

FOREWORD

This proposed addendum to ANSI/ASHRAE Standard 15-2024 addresses changes of refrigerant to existing refrigeration systems, whether for changes within the same refrigerant safety group or to a different refrigerant safety group. The modifications apply to Sections 5.3, 7.6.2, 7.7.3, Informative Appendix A, and a new Informative Appendix H that provides guidelines for retrofit of certain types of refrigeration systems.

This proposed change clarifies requirements for refrigeration systems retrofitted or recommissioned with a new refrigerant designation. When the new refrigerant is classified (by ASHRAE Standard 34) in a different safety group than the original refrigerant, the equipment must meet the requirements of this standard for a new installation, with some provisions to address the listing requirements. For example, changing from safety group A1 to safety group A2L, A2, or A3 will require modifications such as refrigerant leak detection and mitigation (where applicable), as specified in UL/CSA 60335-2-89 2nd edition (2021) or UL/CSA 60335-2-40 4th edition (2022). The change of refrigerant to a new safety group will be required to be evaluated by a National Recognized Testing Laboratory (NRTL) or be approved by the Authority Having Jurisdiction (AHJ).

Note: This public review draft of addendum d makes proposed independent substantive changes to the previous public review draft. These substantive changes to the previous public review draft are indicated by **blue-colored text** with **double-underlining** (for additions) and **red-colored text** with **strikethrough** (for deletions), except where the reviewer instructions specifically describe some other means of showing the changes. Only these changes to the current standard shown in **blue** or **red** text 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 d to Standard 15-2024

Modify Section 7 as follows. The remainder of Section 7 remains unchanged.

7. RESTRICTIONS ON REFRIGERANT USE

[...]

7.6* High-Probability Air Conditioners, Heat Pumps, and Dehumidifiers Using Group A2L Refrigerants.

[...]

7.6.2 Listing and Installation Requirements. *Refrigeration systems, other than those serving industrial occupancies, shall be listed in accordance with UL 484 ¹¹ or UL 60335-2-40 ⁵ /CSA C22.2 No. 60335-2-40 ⁶. ~~The Each~~ refrigeration system shall be installed in accordance with Sections 7.6.2.1 through 7.6.2.5, the listing, the manufacturer's instructions, and any markings on the equipment restricting the installation.*

Exceptions to 7.6.2:

~~1. These requirements do not apply to industrial occupancies.~~

2. Where changing refrigerant in accordance with Section 5.3, the existing refrigeration system shall not be required, after the change of refrigerant, to be listed in accordance with UL 484 ¹¹ or UL 60335-2-40 ⁵ /CSA C22.2 No. 60335-2-40 ⁶.

[...]

7.7* High-Probability Commercial Refrigeration Systems Using Group A2L Refrigerants.

[...]

7.7.3 Listing and Installation Requirements. *Refrigeration systems, other than those serving industrial occupancies, shall be listed ~~in accordance with~~ UL 60335-2-89 ⁷ /CSA C22.2 No. 60335-2-*

89⁸ ~~and~~ Each refrigeration system shall be installed in accordance with Sections 7.7.3.1 through 7.7.3.4, the listing, and the manufacturer's instructions, and any markings on the equipment restricting the installation.

Exceptions to 7.7.3:

~~1. These requirements do not apply to industrial occupancies.~~

~~2. Where changing refrigerant in accordance with Section 5.3, the existing refrigeration system shall not be required, after the change of refrigerant, to be listed in accordance with UL 60335-2-89⁷/CSA C22.2 No. 60335-2-89⁸.~~

[...]

Note to Reviewer: The following content shows a clean copy of how modified sections of this standard would appear after incorporating updates from the 2022 to 2024 edition, and the net effect of accepted changes from PPR1 and the associated approved comment responses. This includes items that are not independent substantive changes, and that are not open for review.

Modify Section 5 as follows. The remainder of Section 5 remains unchanged.

5. REFRIGERATING SYSTEM CLASSIFICATION

[...]

5.3 Changing Refrigerant. [...]

[...]

5.3.3* Where the replacement *refrigerant* is classified into the same safety group, requirements that were applicable to the existing system *shall* continue to apply.

5.3.4* Where the replacement *refrigerant* is classified into a different safety group, existing listing mark(s) shall be removed and the retrofitted refrigeration system shall comply with the requirements of this standard for a new installation, and written instructions provided by one of the following:

- a. The original equipment manufacturer.
- b. A registered design professional.
- c. A nationally recognized testing laboratory.

The change of refrigerant shall require a field evaluation by a nationally recognized testing laboratory or AHJ approval.

[...]

Modify Section 7 as follows. The remainder of Section 7 remains unchanged.

7. RESTRICTIONS ON REFRIGERANT USE

[...]

7.6* High-Probability Air Conditioners, Heat Pumps, and Dehumidifiers Using Group A2L Refrigerants.

[...]

7.6.2 Listing and Installation Requirements. *Refrigeration systems, other than those serving industrial occupancies, shall be listed in accordance with UL 484¹¹ or UL 60335-2-40⁵ /CSA C22.2 No. 60335-2-40⁶. Each refrigeration system shall be installed in accordance with Sections 7.6.2.1 through 7.6.2.5, the listing, the manufacturer's instructions, and any markings on the equipment restricting the installation.*

Exception to 7.6.2: Where changing *refrigerant* in accordance with Section 5.3, the existing *refrigeration system*

shall not be required, after the change of *refrigerant*, to be *listed* in accordance with UL 484 ¹¹ or UL 60335-2-40 ⁵/CSA C22.2 No. 60335-2-40 ⁶.

[...]

7.7* High-Probability Commercial Refrigeration Systems Using Group A2L Refrigerants.

[...]

7.7.3 Listing and Installation Requirements. *Refrigeration systems*, other than those serving *industrial occupancies*, shall be *listed* in accordance with UL 60335-2-89 ⁷/CSA C22.2 No. 60335-2-89 ⁸. Each *refrigeration system* shall be installed in accordance with Sections 7.7.3.1 through 7.7.3.4, the listing, the *manufacturer's* instructions, and any markings on the equipment restricting the installation.

Exception to 7.7.3: Where changing *refrigerant* in accordance with Section 5.3, the existing *refrigeration system* shall not be required, after the change of *refrigerant*, to be *listed* in accordance with UL 60335-2-89 ⁷/CSA C22.2 No. 60335-2-89 ⁸.

[...]

Modify Informative Appendix A as follows. The remainder of Appendix A remains unchanged.

INFORMATIVE APPENDIX A

EXPLANATORY MATERIAL

Sections of the standard with associated explanatory information in this appendix are marked with an asterisk "*" after the section number.

[...]

Section 5.3.3

Section H1 of Informative Appendix H contains guidelines to field retrofit commercial refrigeration equipment with a *refrigerant* belonging to the same safety group. Guidelines for other equipment may be added in a future edition.

Section 5.3.4

Section H2 of Informative Appendix H contains guidelines to field retrofit commercial refrigeration equipment with a *refrigerant* belonging to a different safety group. Guidelines for other equipment may be added in a future edition.

[...]

Add Informative Appendix H as follows.

INFORMATIVE APPENDIX H

CHANGE OF REFRIGERANT

H1. Guidelines to Field Retrofit Commercial Refrigeration Equipment within the Same Refrigerant Safety Group.

Per Sections 5.3.2 and 5.3.3, where changing the *refrigerant* within the same safety group either the OEM, registered design professional, or *NRTL* may develop technical instructions for the field retrofit of the commercial refrigeration equipment or the *refrigeration system*.

H2. Guidelines to Field Retrofit Commercial Refrigeration Equipment from Refrigerant Safety Group A1 to Refrigerant Safety Group A2L.

Per Sections 5.3.2 and 5.3.4, where changing the *refrigerant* to a different safety group, either the OEM or a registered design professional can collaborate with the *NRTL* to develop the written technical instructions for the field retrofit of the commercial refrigeration equipment or the refrigeration system. Examples of typical requirements for a field retrofit of commercial refrigeration equipment from a safety group A1 to a safety group

A2L *refrigerant* include:

- a. As applicable, demonstration of compliance to Annex CC of UL 60335–2–89 ⁷/CSA C22.2 No. 60335–2–89 ⁸ with the same or a similar equipment model.
- b. Evaluate the *design pressure* requirements for the field retrofit *refrigerant* in accordance with section 9.2.
- c. Evaluate the *refrigeration system* lubricant for the field retrofit *refrigerant* in accordance with section 7.5.1.8.
- d. Evaluate the *refrigeration system* for compliance with *refrigerant* sensor and *refrigerant detection system* requirements of the applicable product safety standard.
- e. Evaluate the mitigation requirements of the applicable product safety standard.
- f. Verify that *safety shutoff valves* activated by a *refrigerant detection system* are installed and functional.
- g. Verify that the maximum *releasable refrigerant charge* from any independent refrigerant circuit is less than $9.2 \times LFL$ (lb) where LFL is in pounds per 1000 ft³ ($260 \times LFL$ [kg] where LFL is in kilograms per m³).
- h. Ensure electrical components inside of the display cases and walk-in coolers/freezers are *listed* for use with safety group A2L *refrigerants* or have been replaced with new ones that are in accordance with the applicable product safety standard.
- i. Verify that the *manufacturer(s)* of the display cases have lab testing that show where the optimal *refrigerant* sensor location is for each different type of merchandiser (*i.e.*, a glass-door reach-in freezer may be different than an open multi-deck dairy case).
- j. Verify that the *releasable refrigerant charge* for any isolated portion of the commercial refrigeration system complies with the limits established in UL 60335–2–89 ⁷/CSA C22.2 No. 60335–2–89 ⁸, as applicable. Testing can be conducted on similar products.
- k. If an existing compressor is reused, determine whether the compressor’s OEM has evaluated its suitability for use with the new safety group A2L *refrigerant* and lubricant.
- l. Evaluate components for compatibility with the field-retrofit *refrigerant*, lubricant, additives, and replace the components with OEM recommended components for the field-retrofit *refrigerant* (*e.g.* replacing seals, drier cores, and filters).
- m. Mark the ASHRAE Standard 34 ³ *refrigerant designation* (*e.g.*, R–454C) and safety group (A2L) on all partial units (*e.g.*, *compressor* rack, *condenser*, display case, walk-in unit cooler).
- n. Mark the *system refrigerant charge* on the partial unit containing the *compressor* or *compressors*.