Advisory Public Review Draft

(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 15-2022 proposes addressing commercial air conditioning and refrigeration systems for the same refrigerant safety group or a different refrigerant safety group. The modifications apply to Sections 5.3, 7.7.3, 7.6.2, and Informative Appendix A for the retrofit guideline.

This proposed change will allow existing commercial refrigeration systems as well as packaged commercial air conditioning systems to be retrofitted or recommissioned for use with the same refrigerant safety group or a different refrigerant safety group in ANSI/ASHRAE Standard 34. The equipment modification would require the detection and mitigation of a refrigerant leak as specified in UL 60335-2-89 2nd edition (2021) and UL 60335-2-40 4th edition (2022) and be evaluated by a National Registered Testing Laboratory (NTRL), a registered design professional, and an Authority Having Jurisdiction (AHJ).

Note: This addendum makes proposed changes to the current standard. These changes are indicated in the text by underlining (for additions) and strikethrough (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 d to Standard 15-2022

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

5. GENERAL REQUIREMENTS

[...]

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: the change of refrigerant shall require AHJ approval.
   a. the original equipment manufacturer
   b. a registered design professional
   c. a nationally recognized testing laboratory

[...]

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

7.6.2 Listing and Installation Requirements. Refrigeration systems shall be listed in accordance with UL 484 11 or UL 60335-2-40 5/CSA C22.2 No. 60335-2-40 6. The 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. Refrigeration systems complying with Section 5.3.4 shall not be required to be listed in accordance with...
**7.7.3 Listing and Installation Requirements.** Refrigeration systems shall be listed to UL 60335-2-89/CSA C22.2 No. 60335-2-89 and shall be installed in accordance with the listing and the manufacturer’s instructions.

**Exceptions to 7.7.3:**
1. These requirements do not apply to industrial occupancies.
2. Refrigeration systems complying with Section 5.3.4 shall not be required to be listed in accordance with UL 60335-2-89/CSA C22.2 No. 60335-2-89.

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

**INFORMATIVE APPENDIX A—EXPLANATORY MATERIAL**

Section 5.3.3
Information Appendix H contains guidelines for conducting a change of refrigerant within the same safety group as part of a retrofit.

Section 5.3.4
Information Appendix H contains guidelines for conducting a change of refrigerant within the same safety group as part of a retrofit.

Add new Informative Appendix H as follows.

**INFORMATIVE APPENDIX H—CHANGE OF REFRIGERANT**

**H1 Guidelines to Field Retrofit Commercial Refrigeration Equipment from the Same Safety Group.** The OEM will develop technical instructions for the field retrofit of the commercial and industrial air conditioning or refrigeration equipment within the same refrigerant safety group per Section 5.3.2a.

**H2 Guidelines to Field Retrofit Commercial and Industrial Air Conditioning or Refrigeration Equipment from a Group A1 Refrigerant to a Group A2L Refrigerant per Section 5.3.2b.** The OEM will collaborate with the NRTL on the written technical instructions for the field retrofit from a Group A1 to a Group A2L refrigerant per Section 5.3.2b. Examples of typical field retrofit requirements for an A2L refrigerant field retrofit of commercial refrigeration equipment include:

a. Demonstration of UL 60335-2-89 and CSA C22.2 No. 60335-2-89 Annex CC compliance applicable.
b. Evaluate the pressure requirements of the field retrofit refrigerant to the original refrigerant.
c. Evaluate the oil requirements for the field retrofit refrigerant to the original refrigerant.
d. Evaluate the sensor requirements of the applicable product safety standard.
e. Evaluate the mitigation requirements of the applicable product safety standard.
f. Shut-off valves tied to leak detection system are installed and functional.
g. The releasable charge size of each independent refrigerant circuit is <260 × LFL.
h. All electrical components inside of the display cases and WICFs are acceptable for use with A2Ls or have changed out to new ones that are per the applicable product safety standard.
i. The manufacturer(s) of the display cases have lab testing that show where the optimal leak 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. The releasable charge for each display case or WICF evaporator (considering the new shut-off valves) has been calculated and tested or proven (with data) shall comply with the limits established in UL 60335-2-89 and CSA C22.2 No. 60335-2-89, as applicable. Testing can be conducted on similar products (with test data).

k. If an existing compressor is reused, has that compressor’s suitability be evaluated by its OEM for the new A2L refrigerant?

I. Evaluate components for compatibility to the field retrofit refrigerant, oils, additives, and replace the components with approved components for the field retrofit class of refrigerant (i.e., replacing seals and filters, etc.).

m. New marking instructions: ANSI/ASHRAE Standard 34 refrigerant designation (e.g., R-454C) and safety group (e.g., A2L) shall be marked on all partial units (e.g., compressor rack, condenser, display case, walk-in unit cooler, etc.).

n. The total refrigerant charge for the system shall be marked on the partial unit containing the compressor or compressors.

**H3 Guidelines to Field Retrofit Commercial and Industrial Air Conditioning or Refrigeration Equipment from a Group A1 Refrigerant to a Group A2 or A3 Refrigerant per Section 5.3.2b.** This type of field retrofit is allowed for commercial and industrial air conditioning or refrigeration equipment that have a releasable charge less than or equal to 4 × LFL per circuit.

The OEM will collaborate with the NRTL on the written technical instructions for the field retrofit from a Group A1 refrigerant to a Group A3 refrigerant per Section 5.3.2b. Examples of typical field retrofit requirements for a Group A3 refrigerant field retrofit of commercial refrigeration equipment.

a. The field retrofit must comply with the product safety standard refrigerant charge limits (i.e., UL 60335-2-89 or CSA No. 22.2 60335-2-89 standards).

b. The field retrofit must comply with the product safety standard refrigerant on the equipment location restrictions (i.e., UL 60335-2-89 or CSA No. 22.2 60335-2-89 standards).

c. Demonstration of Annex CC compliance applicable product safety standard with the same or a similar equipment model, where necessary.

d. Evaluate the pressure requirements of the field retrofit refrigerant to the original refrigerant.

e. Evaluate the oil requirements for the field retrofit refrigerant to the original refrigerant.

f. Evaluate the sensor requirements of the applicable product safety standard.

g. Evaluate the mitigation requirements of the applicable product safety standard.

h. Shut-off valves tied to leak detection system are installed and functional.

i. The releasable charge size of each independent refrigerant circuit is <4 × LFL.

j. All electrical components inside of the display cases and WICFs are acceptable for use with Group A3s or have been changed out to new ones that are per the applicable product safety standard.

k. The manufacturer(s) of the display cases have lab testing that show where the optimal leak 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 diary case).

l. The releasable charge for each display case or WICF evaporator (considering the new shut-off valves) has been calculated and tested or proven (with data) to be less and is less than 4 × LFL as applicable. Testing can be conducted on similar products (with test data).

m. If an existing compressor is reused, has that compressor’s suitability be evaluated by its OEM for the new A3 refrigerant?

n. Evaluate components for compatibility to the field retrofit refrigerant, oils, additives, and replace the components with approved components for the field retrofit class of refrigerant (i.e., replacing seals, filters, etc.).
o. New marking instructions: ANSI/ASHRAE Standard 34 refrigerant designation (e.g., R-290) and safety group (e.g., A3) shall be marked on all partial units (e.g., compressor rack, condenser, display case, walk-in unit cooler, etc.).

p. The total refrigerant charge for the system shall be marked on the partial unit containing the compressor or compressors.