



**BSR/ASHRAE Addendum j
to ANSI/ASHRAE Standard 15-2022**

First Public Review Draft

Proposed Addendum j to Standard 15-2022, Safety Standard for Refrigeration Systems

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

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FOREWORD

This proposed addendum removes the exception of Section 7.5.3 which allowed the use of an A3 or B3 refrigerant outdoors with no restriction other than the total charge limitation of Section 7.5.1.1. The proposal also removes the exception of Section 7.8 which allowed without restriction the outdoor use of an A2 refrigerant in high-probability systems for other than human-comfort. These exceptions were added under Addendum l for the 2019 edition of ASHRAE 15 and created an unintended loophole that permitted charge limits of up to 1100 lb (500 kg) if the refrigerating system is installed outdoors. Removal of the exception to Section 7.5.3 does not prohibit the installation of equipment outdoors using A3 or B3 refrigerants. Group A3 and B3 refrigerants may still be used outdoors if they are listed or not listed but approved by the AHJ. At this time, ASHRAE 15 does not address how all equipment must be installed outdoors when utilizing an A2, A3 or B3 refrigerant and there are safety concerns about how refrigerant may leak into spaces surrounding the refrigeration system. Additionally, the term “refrigeration system” replaced “systems” in Section 7.8.

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

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

7. RESTRICTIONS ON REFRIGERANT USE

[...]

7.5 Additional Restrictions

[...]

7.5.3 Class 3 Higher-Flammability Refrigerants for refrigeration systems. Refrigeration systems containing Group A3 and B3 refrigerants ~~shall not shall only~~ be used ~~except where approved by the AHJ~~, at least one of the following is met:

Exceptions to 7.5.3:

1. This restriction does not apply to laboratories a. The refrigeration system is installed in a laboratory with more than 100 ft² (9.3 m²) of space per person.
2. This restriction does not apply to ~~industrial occupancies~~ b. The refrigeration system is installed in an industrial occupancy.
3. This restriction does not apply to ~~listed self-contained systems containing~~ c. The refrigeration system is a self-contained system, is within listed equipment, contains no more than 0.331 lb (150 g) of Group A3 refrigerant, provided that and the equipment is installed in accordance with the listing and the manufacturer’s installation instructions.
4. This restriction does not apply to equipment ~~listed to UL 60335-2-89⁷/CSA C22.2 No. 60335-2-89⁸ containing no more than 0.459 × LFL (lb), where LFL is in lb/1000 ft³ (13 × LFL [kg], where LFL is in kg/m³) of Group A3 refrigerant, provided that the equipment is installed in accordance with the listing and the manufacturer’s installation instructions. Refrigeration systems containing more than 0.141 × LFL (lb) (4 × LFL [kg]) in an independent circuit shall not be installed within 20 ft (6 m) of an open flame.~~ d. The refrigeration system is within equipment listed to UL 60335-2-89⁷/CSA C22.2 No. 60335-2-89⁸ and all of the following provisions are met:
 1. The refrigeration system contains no more than 0.459 × LFL (lb), where LFL is in lb/1000 ft³ (13 × LFL [kg], where LFL is in kg/m³) of Group A3 refrigerant.
 2. A refrigeration system containing more than 0.141 × LFL (lb) (4 × LFL [kg]) in any independent circuit is installed not less than 20 ft (6 m) from an open flame.
 3. The equipment is installed in accordance with the listing and the manufacturer’s installation instructions.

~~5. This restriction does not apply to e. The refrigeration system is within equipment listed to UL 60335-2-40⁵/CSA C22.2 No. 60335-2-40⁶ and containing contains no more than $0.106 \times LFL$ (lb) ($3 \times LFL$ [kg]) of Group A3 refrigerant, provided that and the equipment is installed in accordance with the listing and the manufacturer's installation instructions.~~

~~6. This restriction does not apply to refrigeration systems located in machinery rooms or outdoors. f. The refrigeration system installation is approved by the AHJ and located in a machinery room in accordance with Sections 8.9 and 8.10.~~

[...]

{Note to reviewers: published Addendum e also revises Section 7.8}

7.8 Group A2 Refrigerants for Refrigeration Systems Other than Human Comfort. *High-probability systems* using Group A2 refrigerants for other than human comfort applications shall comply with this section. Refrigeration systems using Group A2 refrigerants shall be limited to listed self-contained systems containing no more than $0.459 \times LFL$ (lb), where *LFL* is in lb/1000 ft³ ($13 \times LFL$ [kg], where *LFL* is in kg/m³), provided that the system is installed in accordance with the listing and the manufacturer's installation instructions. Refrigeration systems containing more than $0.141 \times LFL$ (lb), ($4 \times LFL$ [kg]) in an independent circuit shall not be installed within 20 ft (6 m) of an open flame.

Exceptions to 7.8:

1. This restriction does not apply to laboratories with more than 100 ft² (9.3 m²) of space per person.
2. This restriction does not apply *industrial occupancies*.
3. This restriction does not apply to refrigeration systems located in *machinery rooms or outdoors*.

{Note to reviewers: below is a clean version showing the above proposed changes of Addendum j when combined with published Addendum e, only the proposed changes of Addendum j shown above are open for public comment}

7.8* High-Probability Commercial Refrigeration Systems using Group A2 Refrigerants. *High-probability systems* using Group A2 refrigerants for commercial refrigeration applications within the scope of UL 60335-2-89⁷/CSA C22.2 No. 60335-2-89⁸ shall comply with this section. Refrigeration systems using Group A2 refrigerants shall be limited to listed self-contained systems containing no more than $0.459 \times LFL$ (lb), where *LFL* is in lb/1000 ft³ ($13 \times LFL$ [kg], where *LFL* is in kg/m³), provided that the system is installed in accordance with the listing and the manufacturer's installation instructions. Refrigeration systems containing more than $0.141 \times LFL$ (lb), ($4 \times LFL$ [kg]) in an independent circuit shall not be installed within 20 ft (6 m) of an open flame.

Exceptions to 7.8:

1. This restriction does not apply to laboratories with more than 100 ft² (9.3 m²) of space per person.
2. This restriction does not apply *industrial occupancies*.
3. This restriction does not apply to refrigeration systems located in *machinery rooms*.

7.8.1 Listing and Installation Requirements. Refrigeration systems shall be listed to UL 60335-2-89⁷/CSA C22.2 No. 60335-2-89⁸ and shall be installed in accordance with the listing and the manufacturer's instructions.

Exception to 7.8.1: These requirements do not apply to *industrial occupancies*.