SOUTH CAROLINA BUILDING CODES COUNCIL
2021 INTERNATIONAL MECHANICAL CODE
MEETING MATERIALS
OCTOBER 6, 2021

2021 International Mechanical Code
South Carolina Building Codes Council
Proposed Modification Continuations from 2018

2021 Code Section: ~~504.8.2.~~ 504.9.2 Duct Installation

Modification: Delete (4ft & 1/8') and Add Language.

Exhaust ducts shall be supported at intervals not to exceed 8 feet and within 16 inches of each side of a joint that is not installed in a vertical orientation, secured in place, making rigid contact with the duct at not less than 4 equally spaced points or 2/3rds contact if strap is used. All brackets and strapping must be noncombustible. The insert end of the duct shall extend into the adjoining duct or fitting in the direction of airflow. The overlap shall comply with Section 603.4.2. Ducts shall not be joined with screws or similar devices that protrude into the inside of the duct. Exhaust ducts shall be sealed in accordance with Section 603.9. Where dryer ducts are enclosed in wall or ceiling cavities, such cavities shall allow the installation without deformation. The duct work may be ovalized as long as it terminates in an approved duct box. Minor imperfections located on the duct, in areas other than along the seam, do not constitute a violation of this section.

Reason: N/A

Proponent: BOASC

Previous Code Cycles	Previous Modification Number	Previous Code Section
IMC 2018	IMC 2018 01	504.8.2

Comments: No language change, but code section changed in 2021.

7/27 Study Committee Recommendation: Support approval with section change.

AIR-CONDITIONING, HEATING, & REFRIGERATION INSTITUTE

we make life better®

[redacted]

2021 IMC 1

September 20, 2021

Dear South Carolina Department of Labor, Licensing and Regulation,

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The *American Innovation and Manufacturing (AIM) Act was* signed into law by President Trump on December 27, 2020. The AIM Act mandates that the U.S. Environmental Protection Agency (EPA) phase down the supply of hydrofluorocarbons (HFCs), including refrigerants.[i]

Together with the U.S. Department of Energy and other stakeholders, AHRI and its members have invested over $7 million in research carefully analyzing refrigerant and equipment behavior related to this transition.[ii] In fact, AHRI completed a project with the standard-setting organization Underwriter Laboratories (UL) and fire service representatives to develop training for first responders to ensure that they have the information needed for this transition.[iii] In light of the passage of the AIM Act, AHRI believes that it is prudent for all stakeholders to start preparing for the transition.[iv]

It is essential that State building codes enable the use of next generation refrigerants required by the AIM Act. If State building codes are not properly amended to accommodate next generation refrigerants, then manufacturers, distributors, and end-users may find themselves unable to simultaneously comply with both federal and state law. It is important for building code changes to be addressed through the amendment process so that all stakeholders know how to comply with state building codes as soon as reasonably possible.

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[ii] *See* AHRI, Flammable Refrigerants Research Initiative, https://www.ahrinet.org/resources/research/ahri-flammable-refrigerants-research-initiative.

[iii] *See* UL Firefighting Safety Research Institute, Advancing Fire Safety Science, https://ulfirefightersafety.org/.

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Manufacturers are transitioning away from UL1995 to UL60335-2-40 for new products because UL1995 will be obsolete effective January 1, 2024. The newest 3rd edition of UL 60335-2-40, published November 2019, has many new requirements for electrical and refrigerant safety, including requirements for UV-C germicidal lamp systems, CO2 systems, photovoltaic systems, new marking requirements, water ingress rating system, and allowances for next generation refrigerants. Manufacturers are already working to certify equipment to the new standard.

Additionally, AHRI is supporting proposed changes to sections 1104.3.1 and 1104.3.2 of the Mechanical Code which have been adopted by ICC for the 2024 IMC. These changes are necessary to fully recognize the use of A2L refrigerants in high probability (direct) air conditioning systems for human comfort. Table 1104.3.2 is deleted in its entirety because the requirements are adequately addressed in the modified Section 1104.3.1 and 1104.3.2.

U.S manufacturers have installed manufacturing capacity within South Carolina that could be negatively impacted if these codes are not updated. However, Most importantly, tens of millions of units have been installed and operate internationally without incident (even in developing nations) in compliance with the International Electrical Code (IEC) 60335-2-40, which is much more liberal than UL/CSA 60335-2-40. Significant research has been completed to inform the more restrictive requirements in UL/CSA 60335-2-40 including a project confirming the functionality of the standard. Training has been developed for both first responders and technicians. Stakeholders are solely waiting for direction from state mechanical codes to prepare for this transition.

AHRI greatly appreciates your consideration of this matter and would be happy to provide further information if helpful.

Sincerely,
Mary E. Koban

Mary E. Koban
Sr. Director Regulatory Affairs
Air-Conditioning, Heating and Refrigeration Institute (AHRI)
[redacted]

South Carolina Department of Labor, Licensing and Regulation
South Carolina Building Codes Council
110 Centerview Dr • Columbia • SC • 29210
P.O. Box 11329 • Columbia • SC • 29211-1329
Phone: 803-896-4688 • contact.bcc@llr.sc.gov • Fax: 803-896-4814
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X Statewide Modification

☐ Local Modification: _____

(List all jurisdictions that apply.)

Association/Jurisdiction: Air Conditioning, Heating, Refrigeration Institute (AHRI)

Address: [redacted] Arlington (City) VA (State) 22201 (Zip)

Name: Mary E. Koban Title/Position: Senior Director Regulatory Affairs

Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified: **2021 International Mechanical Code**

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: **Table 1103.1**

Code section as modified:

(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

TABLE 1103.1
REFRIGERANT CLASSIFICATION, AMOUNT AND OEL

Footnote:

c. The ASHRAE Standard 34 flammability classification for this refrigerant is 2L~~, which is a subclass of Class 2~~.

9/28 Study Committee Recommendation: Support approval

In 200 characters or less, please briefly describe the justification for this modification request. 2021 IMC-2

The change to Table 1103.1 footnote c is to note that A2L is a classification in ASHRAE 34 by itself. It is no longer identified as a subclass of 2. ASHRAE 34 changed the classification of 2Ls in 2018 to a full group resulting in A2L and B2L classification of refrigerants.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mary E. Koban	Sr. Dir. Regulatory Affairs	AHRI	[redacted]	
Helen Walter-Terrinoni	Vice President	AHRI		
Robert Glass	Manager State Regulatory Affairs	Goodman Manufacturing Company		
Andrew Klein	Fire Protection Engineer	AS Klein Engineering, LLC		
Nadja Tremblay	Sr. Mgr, Gov Relations & Stds	Carrier Corp.		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: _____ Date: 9/09/21

Title: SR. DIRECTOR REGULATORY AFFAIRS, AHRI

2021 IMC-2

UL 1995 Transition to UL 60335-2-40

JULY 31
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Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

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Empowering Trust™

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[redacted]

2021 IMC-2

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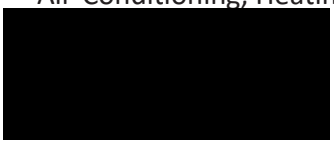

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Phone No.: [redacted] Email Address: [redacted]

Please select the applicable code to be modified: **2021 International Mechanical Code**

Please list the exact code section, table, figure, or appendix to be modified, and attach a photocopy of the applicable code section: **Section 1104.3**

Code section as modified:

Code section as modified:
(Please strike through language being removed, and put language to be added in parentheses. Use additional pages as needed.)

1104.3.1 Air conditioning for human comfort.
High probability systems used for human comfort shall use Group A1 or A2L refrigerant. ~~In other than industrial occupancies where the quantity in a single independent circuit does not exceed the amount in Table 1103.1, Group B1, B2 and B3 refrigerants shall not be used in high-probability systems for air conditioning for human comfort.~~
Exceptions:
1. Equipment listed for and used in residential occupancies containing a maximum of 6.6 pounds (3 kg) of refrigerant.
2. Equipment listed for and used in commercial occupancies containing a maximum of 22 pounds (10 kg) of refrigerant.
3. Industrial occupancies.

1104.3.2 ~~Nonindustrial occupancies~~ Group A2, A3, B2 and B3 refrigerants.
Group A2 and B2 refrigerants shall not be used in high-probability systems. ~~where the quantity of refrigerant in any independent refrigerant circuit exceeds the amount shown in Table 1104.3.2.~~ Group A3 and B3 refrigerants shall not be used except where approved.
Exceptions: This section does not apply to:
1. L~~l~~aboratories where the floor area per occupant is not less than 100 square feet (9.3 m^2).
2. Listed self-contained systems having a maximum of 0.331 pounds (150 g) of Group A3 refrigerant.
3. Industrial occupancies.
4. Equipment listed for and used in residential occupancies containing a maximum of 6.6 pounds (3 kg) of Group A2 or B2 refrigerant.
5. Equipment listed for and used in commercial occupancies containing a maximum of 22 pounds (10 kg) of Group A2 or B2 refrigerant.

~~**TABLE 1104.3.2**~~
~~**MAXIMUM PERMISSIBLE QUANTITIES OF REFRIGERANTS**~~
(Table 1104.3.2 deleted in its entirety)

9/28 Study Committee Recommendation: Referred to full Council

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2021 IMC-3

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Phone No.: [redacted] Email Address [redacted]

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Code section as modified:

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Chapter 15 REFERENCED STANDARDS

CSA

CSA Group
8501 East Pleasant Valley Road
Cleveland, OH 44131-5516

Standard reference number	Title
CSA C22.2 No. 60335-2-40-2019	Household And Similar Electrical Appliances - Safety - Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers – 3rd Edition 908.1, 916.1, 918.1, 918.2, 1101.2

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062-2096

Standard reference number	Title
60335-2-40-~~17~~2019	Household and Similar Electrical Appliances - Safety - Part 2-40: Particular Requirements for Electrical Heat Pumps, Air-Conditioners and Dehumidifiers 908.1, 916.1, 918.1, 918.2, 1101.2

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In 200 characters or less, please briefly describe the justification for this modification request.

Manufacturers are transitioning away from UL1995 to UL60335-2-40 for new products because UL1995 will be obsoleted effective 1/1/2024. The newest 3rd edition of UL60335-2-40, published November 2019, has many new requirements for electrical and refrigerant safety. The 3rd edition includes requirements for UV-C germicidal lamp systems, CO_2 systems, photovoltaic systems, new marking requirements, water ingress rating system as well as allowances for Low Global Warming Potential (Low GWP) Group A2L refrigerants. Nationally Recognized Testing Laboratories (or NRTLs), use the latest version of the UL60335-2-40 for certification testing.

The American Innovation and Manufacturing (AIM) Act of 2020 was signed into law by President Trump. The AIM Act directs EPA to mandate Low GWP refrigerants in air conditioning and refrigeration systems. The current lists of refrigerants in the Mechanical Code that comply with the Low GWP requirements of the AIM Act fall into the classification of Group A2L, B2L, A2, and A3. For high probability systems, manufacturers will be switching to Group A2L refrigerants from the current A1. Therefore, the Mechanical Code needs to be updated to address the use of Group A2L refrigerants in high probability (direct) systems. ASHRAE15-2019 addresses the safety issues regarding the use of Group A2L refrigerants.

Per Regulation 8-240(E)(5), please list the persons with their titles and affiliations, known at the time of submittal, who will provide testimony in favor of the amendment. Due to the possibility of virtual hearings, **all information is the table below is required** to ensure proper notification. Use additional pages as needed.

Name	Title	Affiliation	Phone Number	Email Address
Mary E. Koban	Sr. Dir. Regulatory Affairs	AHRI	[redacted]	
Helen Walter-Terrinoni	Vice President	AHRI		
Robert Glass	Manager State Regulatory Affairs	Goodman Manufacturing Company		
Andrew Klein	Fire Protection Engineer	AS Klein Engineering, LLC		
Nadja Tremblay	Sr. Mgr, Gov Relations & Stds	Carrier Corp.		

Affirmation

I certify that all information in this form, including all supplementary documents submitted with this form, are true and correct to the best of my knowledge after undertaking due diligence to determine their accuracy.

Signature: _____ Date: 9/09/21

Title: SR. DIRECTOR REGULATORY AFFAIRS, AHRI

2021 IMC-4

UL 1995 Transition to UL 60335-2-40

JULY 31
2019

Existing products impacted by, but do not yet comply with the new Electric Heat Back-up Protection requirements or the Ultraviolet Light (UV) requirements noted in UL 1995, 5th edition must be evaluated for compliance

JANUARY 1
2024

All products shall comply with UL 60335-2-40 3rd edition by January 1, 2024. Today, products may be listed to either UL 1995 or UL 60355-2-40. However, with minimum equipment efficiency changes scheduled for 2023 and 2024, coupled with Low GWP refrigerant requirements expected in several states, all equipment within the scope of UL 1995 shall be retested to the requirements in the 3rd edition UL 60335-2-40

UL 60335-2-40 3rd edition is out for ballot. This edition contains A2L refrigerant specific requirements. The scope now aligns with UL 1995

DECEMBER
2018

FEBRUARY 6
2019

60335-2-40 ballot closes

SEPTEMBER 15
2017

UL 60335-2-40, 2nd edition published

- Includes requirements for air-conditioners rated up to 15kV, partial units, and revised electric heat requirements.
- Includes requirements for the use of A2 and A3 (flammable) refrigerants.

JULY 15
2015

UL 1995, 5th edition published

The 5th Edition covers all products..

NOVEMBER 30
2012

UL 60335-2-40, 1st edition published

- Covers products rated less than 600 Volts.
- Does not include requirements for the use of A2 and A3 (flammable) refrigerants.

Currently, manufacturers may have UL 1995 Certified products evaluated to UL 60335-2-40. UL 1995 will remain a valid certification standard through January 1, 2024, when it will be effectively obsoleted. At that time, UL 1995 will no longer be used to certify new products.

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