# INTERNATIONAL CODE COUNCIL 2024 – 2026 CODE DEVELOPMENT CYCLE

# 2024 REPORT OF THE COMMITTEE ACTION HEARING (CAH1) ON THE 2024 EDITIONS OF THE

ADMINISTRATIVE PROVISIONS CODE (heard by IFGC)
INTERNATIONAL BUILDING CODE®

Fire Safety

General

Means of Egress

Structural (heard by IBC – FS)

INTERNATIONAL FIRE CODE®

INTERNATIONAL FUEL GAS CODE®

INTERNATIONAL MECHANICAL CODE®

INTERNATIONAL PLUMBING CODE®

INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE®

INTERNATIONAL RESIDENTIAL CODE®

Mechanical

**Plumbing** 

INTERNATIONAL SWIMMING POOL AND SPA CODE®
INTERNATIONAL WILDLAND AND URBAN INTERFACE CODE®

COMMITTEE ACTION HEARINGS (CAH1) APRIL7 – 14, 2024

> COMMENT DEADLINE: July 8, 2024

PUBLIC COMMENT DEADLINE FOR GROUP A:
March 14, 2025



2024 – 2026 Code Development Cycle 2024 Report of the Committee Action Hearing (CAH1) on the 2024 Editions of the *International Codes* 

#### First Printing

Publication Date: May 2024

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# INTRODUCTION

This publication contains the 2024 Group A Report of the Committee Action Hearing (ROCAH) on the proposed revisions to the 2024 editions of the *International Building Code (Egress, Fire Safety, General and Structural provisions (heard by the Fire Safety Committee)), International Fire Code, International Fuel Gas Code, International Mechanical Code, International Plumbing Code, International Private Sewage Disposal Code, International Residential Code (Mechanical and Plumbing), International Swimming Pool and Spa Code and the International Wildland-Urban Interface Code. The hearing was held April 7 – 14, 2024* 

This report includes the recommendation of the code development committee and the committee's reason on each proposed item and the committee's numerical vote. Where the committee action was "Approved as Modified", the proposed change, or a portion thereof, is included herein with the modification indicated in strikeout/underline format. Where this report indicates "Withdrawn by Proponent" the proposed change was withdrawn by the proponent and is not subject to any further consideration. Note that total votes per code change for a given committee will vary based on committee members recusing themselves from voting, or abstentions. Click here for the text of the original code change proposals.

### **COMMENT DEADLINE JULY 8, 2024**

Persons who wish to recommend an action other than that taken at the Committee Action Hearing may submit a comment in accordance with Section 7.0 of the CP28. **The deadline for receipt of comments is July 8, 2024. Comments must be submitted online via cdpACCESS by 11:59 pm Pacific.** Proposals, which receive a comment, will be included in the 2<sup>nd</sup> Committee Action Hearing (CAH #2) Agenda for Individual Consideration. Proposals, which do not receive a comment will be included in the consent agenda and be voted with a motion to sustain the action taken at Committee Action Hearing #1 (CAH #1) at the Public Comment Hearing in April of 2026.

#### **PUBLIC COMMENT DEADLINE MARCH 14, 2025**

### SUBMIT COMMENTS ONLINE AT THE cdpACCESS WEBSITE: www.cdpACCESS.com

Please note: The word processing software utilized by cdpACCESS, for submittal of comments, does not permit the use of the "cut and paste" feature from Word documents.

### **ICC WEBSITE**

While great care has been exercised in the publication of this document, errata may occur. Errata will be posted on the Current Code Development Cycle Website.

#### MODIFICATIONS BY COMMENT

Section 7.4.4 of CP28 allows modifications to be proposed by a comment to a code change proposal for consideration at the 2<sup>nd</sup> Committee Action Hearings (CAH #2). For the modification to be considered at the Committee Action Hearing (CAH #2), the comment must request Approval as Modified with the specific modification included in the comment. In accordance with Section 7.4.1, the modification must be within the scope of the original code change proposal, committee action or successful assembly action.

#### COMMENT HEARING CONSIDERATION

The Committee Action Hearings (CAH #2) will be held October 23 – 31st in Long Beach, CA (see the schedule on page iv).

The items that will be on the CAH #2 agenda for Individual Consideration and action are proposed changes that received a comment (CP28 Section 7.0).

Following the Comment Action Hearings (CAH #2), the results including the committee action and reason will be posted on the ICC website. Proposals that received a comment and have been considered and acted upon at the Second Committee Action Hearing (CAH #2) will be the basis for which Public Comments may be submitted (CP28 Section 7.1.1) for consideration at the Public Comment Hearing in the spring of 2026.

#### cdpACCESS UPDATE

#### Current 2024 Group A Cycle

Comment submittal assistance will be provided on the <u>cdpACCESS webpage</u>. We will be posting video tutorials, which outline the navigation steps.

#### 2025 Group B Cycle

The deadline for Group B code change proposal submittals is January 10, 2025. When cdpACCESS is open for Group B submittals, a notice will be posted on our website. Be sure to consult the 2024-2026 ICC Code Development Schedule on page iv for the applicable codes and important scoping information.

ICC continues to receive feedback from users. Be sure to visit the "Support Options" on the <u>cdpACCESS webpage</u> for more information.

#### **ELECTRONIC VOTER VALIDATION REMINDER**

Attention all Governmental Member Voting Representatives: Per CP 28 Section 12.2 the deadline for Governmental membership for its designated representatives to be eligible to vote at the Group A and B Public comment hearings and Online Government Consensus is October 21, 2025. Validation for Governmental Member Voting Representation must be received by the Code Council by March 20, 2026 in order for any designated representative to be eligible to vote.

#### CALL FOR ADOPTION INFORMATION

Please take a minute to visit the International Code Adoptions to update information as it relates to your jurisdiction.

# 2024/2025/2026 ICC CODE DEVELOPMENT SCHEDULE

Originally Published 23.03.17 | Updated 24.03.05

	Originally Fublished 2	DATE					
STEP IN CODE DEVELOPMENT CYCLE	2024 - Group A Codes  IBC - E, IBC - FS, IFC,  IFGC, IMC, IPC, IPSDC,  IRC - M, IRC - P, ISPSC,  IWUIC	2026 - Group A & B Codes  Public Comments Posting, Public  Comment Hearing, Online  Governmental Consensus Vote					
DEADLINE FOR RECEIPT OF ONLINE APPLICATIONS FOR ALL CODE DEVELOPMENT COMMITTEES	June 1, 2023 (See Schedule	Notes)					
cdpACCESS OPEN FOR CODE CHANGE SUBMITTALS	October 16, 2023 (Tentative)	October 15, 2024					
DEADLINE FOR cdpACCESS ONLINE RECEIPT OF CODE CHANGE PROPOSALS	January 8, 2024	January 10, 2025					
WEB POSTING OF "PROPOSED CHANGES TO THE I-CODES" (Monograph)	February 26, 2024	March 13, 2025					
COMMITTEE ACTION HEARING #1 (CAH #1)	April 7 – 16, 2024	April 27 – May 6, 2025					
cdpACCESS OPEN FOR COMMENT SUBMITTALS TO CAH #1 ACTION	May 16, 2024	June 3, 2025					
WEB POSTING OF "REPORT OF THE COMMITTEE ACTION HEARING #1"	May 16, 2024	June 3, 2025					
DEADLINE FOR cdpACCESS ONLINE RECEIPT OF COMMENTS ON CAH #1 ACTIONS	July 8, 2024	July 15, 2025					
WEB POSTING OF "COMMENTS TO CAH #1"	September 5, 2024	September 10, 2025					
COMMITTEE ACTION HEARING #2 (CAH #2)	October 23 – 31, 2024	October 22 - 30, 2025					
WEB POSTING OF "REPORT OF THE COMMITTEE ACTION HEARING #2"	December 2, 2024	November 25, 2025					
cdpACCESS OPEN FOR PUBLIC COMMENT SUBMITTALS FOR 2026 PCH	January 20, 2025 (Tentative)	November 25, 2025 (Tentative)					

	DATE					
STEP IN CODE DEVELOPMENT CYCLE	2024 - Group A Codes  IBC - E, IBC - FS, IFC, IFGC, IMC, IPC, IPSDC, IRC - M, IRC - P, ISPSC, IWUIC	2025 – Group B Codes  Admin, IBC – G, IBC – S, IEBC, IgCC (Ch. 1 & App M), IPMC, IRC – B, IZC	2026 - Group A & B Codes  Public Comments Posting, Public  Comment Hearing, Online  Governmental Consensus Vote			
DEADLINE FOR cdpACCESS ONLINE RECEIPT OF PUBLIC COMMENTS FOR 2026 PCH	March 14, 2025	January 5, 2026				
WEB POSTING OF "GROUP A & B PUBLIC COMMENT AGENDA"	See 2026	See 2026	March 4, 2026			
COMBINED GROUP A & B PUBLIC COMMENT HEARING (PCH)	· ·	Combined Group A & B PCH in 2026	April 19 - 28, 2026			
COMBINED GROUP A & B ONLINE GOVERNMENTAL CONSENSUS VOTING (OGCV) PERIOD	Combined Group A & B OGCV in 2026	Combined Group A & B OGCV in 2026	Starts approx. two - three weeks after the last day of PCH.			
WEB POSTING OF GROUP A & B FINAL ACTION	See 2026	See 2026	Following Validation Committee certification and ICC Board confirmation.			

#### **Schedule Notes:**

- This schedule introduces the restructured process starting in 2024 with two Committee Action Hearings (CAH #1 and CAH #2) for each Code Group in 2024 and 2025, followed by a combined Group A and B PCH and OGCV in 2026. Click here for more information.
- Code Development Committee applications: As noted above, the restructured process will include two CAH's for which the same committee members who presided at CAH#1 will also preside at CAH#2. Previous cycles required Code Development Committee members to preside at only a single CAH in the Spring of the given year. Please be sure to consider this when applying for a Code Development Committee position.
- The "cdpACCESS OPEN" steps noted as "(tentative)" reflect availability of the applicable codes in the cdpACCESS system.
- Web posting of the "Proposed Changes to the I-Codes", "Comments to CAH #1" and "Group A & B Public Comment Agenda" will be posted no later than scheduled. ICC will make every effort to post these documents earlier, subject to code change/comment/public comment volume and processing time.
- "Comment" vs "Public Comment": <u>CP28</u> uses the term "comment" to indicate a submittal in response to CAH #1 action and "public comment" in response to a CAH #2 action to be considered at the PCH. See Sections 7.0 and 9.0 in CP28.

#### 2024 Group A Codes/Code Development Committees:

- IBC-E: IBC Egress provisions. Chapters 10 and 11.
- IBC-FS: IBC Fire Safety provisions. Chapters 7, 8, 9 (partial), 14 and 26. Majority of IBC Chapter 9 is maintained by the IFC. See Code Group Notes.
- IFC: The majority of IFC Chapter 10 is maintained by IBC-E. See Code Group Notes.
- IFGC
- IMC
- IPC
- IPSDC: Code changes heard by the IPC committee (combined IPC & IPSDC committee)
- IRC-M: IRC Mechanical provisions. Chapters 12 23 (code changes heard by the IRC MP committee)
- IRC-P: IRC Plumbing provisions. Chapters 25 33 (code changes heard by the IRC MP committee)
- ISPSC
- IWUIC: Code changes heard by the IFC committee (combined IFC & IWUIC committee)

### 2025 Group B Codes/Code Development Committees:

- Admin: Chapter 1 of all the I-Codes except the IgCC and IRC. Also includes the update of currently referenced standards in all of the 2021 Codes, except the IgCC. See Code Group Notes below for the IECC and the ICC PC.
- IBC-G: IBC General provisions. Chapters 3 6, 12, 13, 27 33.
- IBC-S: IBC Structural provisions. IBC Chapters 15 25 and IEBC structural provisions. See Code Group Notes.
- IEBC: IEBC Non-structural provisions. See Code Group Notes.
- IgCC: The administration provisions of Chapter 1 of the IgCC in order to provide for coordination with the other administrative provisions in the I-Codes. Additionally, Appendix M included as it is not included in ASHRAE Standard 189.1. Remainder of the code is based on the provisions of ASHRAE Standard 189.1 Standard for the Design of High-Performance Green Buildings, Except Low-Rise Residential Buildings.
- IPMC: Code changes heard by the IPM/ZC (combined IPMC & IZC code committee)
- IRC-B: IRC Building provisions. Chapters 1 10
- IZC: Code changes heard by the IPM/ZC (combined IPMC & IZC code committee)

#### **Code Group Notes:**

• Be sure to review the document entitled "2024/2025/2026 Group A and B Code Development Committee Responsibilities Matrix" (matrix) which will be posted. This identifies responsibilities which are different than Group A and B codes and committees which may impact the applicable code change cycle and resulting code change deadline. As an example, throughout Chapter 4 of the IBC (IBC- General), there are numerous sections which include the designation "[F]" which indicates that the provisions of the section are maintained by the IFC committee. Similarly, there are numerous sections in the IEBC which include the designation "[BS]". These are structural provisions which will be heard by the IBC – Structural committee. The designations in the code are identified in the matrix.

- I-Code Chapter 1: Proposed changes to the provisions in Chapter 1 of the majority of the I-Codes are heard in Group B (see Admin above for exceptions). Be sure to review the brackets ([ ]) of the applicable code.
- Definitions. Be sure to review the brackets ([ ]) in Chapter 2 of the applicable code and the matrix to determine which committee will consider proposed changes to the definitions.
- ICC Performance Code (ICC PC): The 2027 edition of the ICC PC will be updated utilizing the ICC Concensus Process . <u>Click link</u> for more information.
- International Energy Conservation Code (IECC) and Chapter 11 of the International Residential Code (IRC): The 2027 edition of the IECC and Chapter 11 of the IRC will be updated utilizing the ICC Concensus Process. <u>Click link</u> for more information.

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# **Administrative Provisions**

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

# ADM1-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 10-0 and agrees that the way the proposal is written is problematic. The consensus is that the proposal should be revisited with a modification to the proposed code language. There are still a lot of questions regarding higher limits, and there are currently no standards to support or list the code language as submitted for this proposal.

ADM1-24

# International Building Code - Fire Safety

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

FS1-24

Committee Action: As Submitted

**Committee Reason:** The committee concluded that the proposal clarifies the requirements of poured cement mixtures. The proposal prevents the code users from unintentionally applying the code text to any gypsum product (Vote: 11-0).

FS1-24

FS2-24

Committee Action: As Submitted

Committee Reason: The committee determined that the proposed exception language clarifies the requirements of "Restrained classification" in the code. The exception is added to avoid sending the RDP to ASTM E119 to determine all concrete connections designed in accordance with ACI 318 for restrained movement relative to the supporting structural members (Vote: 11-0).

FS2-24

FS3-24

**Committee Action:** 

As Modified by Committee (AMC1)

**Committee Modification: 703.2.2 Analytical methods.** The fire resistance of building elements, components or assemblies established by an analytical method shall be by any of the methods listed in this section, based on the fire exposure and acceptance criteria specified in ASTM E119 or UL 263.

- 1. Fire-resistance designs documented in approved sources
- 2. Prescriptive designs of fire-resistance-rated building elements, components or assemblies as prescribed in Section 721.
- 3. Calculations in accordance with Section 722.
- Extension of Use of ASTM E2032 to extend the fire resistance rating data obtained from tests conducted in accordance with ASTM E119 or UL 263 for beams, floor and roof assemblies, columns, ; walls, and partitions, based on the principles contained in ASTM E2032.
- 5. Engineering analysis based on a comparison of building element, component or assemblies designs having fire-resistance ratings as determined by the test procedures set forth in ASTM E119 or UL 263.
- 6. Fire-resistance designs certified by an approved agency

Committee Reason: The committee indicated the proposal provides guidance to the use of ASTM E2032, "Standard Practice for

Extension of Data From Fire Resistance Tests Conducted in accordance with ASTM E 119". The committee agreed that the modification clarifies Section 703.2.2, Analytical methods, by adding "Use of ASTM E2032 to extend". The standard has been used to calculate fire resistance rating data for certain assemblies, as an extension of data obtained from actual fire resistance tests (Vote: 11-0).

FS3-24

### FS4-24

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposed code change in favor of the approval of FS5-24 (Vote: 11-0).

FS4-24

### FS5-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for approval was that the proposal clarifies the intent of section 703.3.1 for non-combustible materials to "pass" the ASTM E136. Alternatively, tested in accordance with ASTM E2652 and "meet" the acceptance criteria prescribed by ASTM E136 (Vote: 11-0).

FS5-24

# FS6-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved the proposal based on the fact that the proposed text is confusing. The committee encouraged the proponent to work on modifying the proposal for the CAH2. Specifically, clarify the aspect ratio of some materials, organic materials, and add more specific language to clarify what needs to be tested. The committee suggested that the proposed modifications during the CAH1 be incorporated (Vote: 8-3).

FS6-24

# FS7-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved the proposal based on the fact that the proposed text is confusing. The committee also wanted to see more data. The committee indicated that the proposal calls for testing that is nonexistent, stating "We do not do those tests in this fashion". The proposed requirement could be located in different section as suggested during the hearing (Vote: 7-4).

### FS9-24

Committee Action: Disapproved

Committee Reason: The committee determined that the proposed language needs more clarification. The committee mentioned that the proposed text is a good starting point and the standard is needed. The proponent needs to look into the issue of adding "steel" in sections 704.5.1 and 704.5.1.1. Also, the proposed text does not address the structural aspect. Although the proponent mentioned that the proposal relocated criteria for the protection of connections between structural wood members from Chapter 23, the committee could not find the text in Chapter 23. The committee has an issue with proposing engineering analysis vs testing (Vote: 9-2).

FS9-24

### FS10-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved the proposal based on the fact that the proposal created unintended consequences. The proposal lacks supporting data on the issue addressed in the proposed code text (Vote: 11-0).

FS10-24

# FS11-24

Committee Action: As Submitted

**Committee Reason:** The committee deemed the proposed code change clarifies the requirements of Section 704.9 Exterior structural members, Item 3 requires a FRR based on fire separation distance (FSD). The proposal adds a requirement that FSD for such members be measured to the structural member (Vote: 11-0).

FS11-24

# FS12-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval was that the proposal clarified the code requirements for combustible construction requirements for balconies and similar projections. The committee agreed with moving 705.2.3.1 into a separate section from 705.2.3 and adding a pointer in Section 705.2.2 (Vote: 11-0).

# FS13-24

Errata: This proposal includes unpublished errata "HT" is existing text in 2024 IBC

#### 705.2.3.1 Balconies and similar projections

3. Balconies and similar projections on buildings of Types III, IV-HT and V construction shall be permitted to be of Type V construction and shall not be required to have a fire-resistance rating where sprinkler protection is extended to these areas.

#### Committee Action:

As Modified by Committee (AMC1)

Committee Modification: 705.2.3.1 Balconies and similar projections. Balconies and similar projections of combustible construction other than fire-retardant treated wood shall be fire-resistance rated where required by Table 601 for floor construction or shall be of heavy timber construction in accordance with Section 2304.11. Fire-retardant treated wood Wood structural elements not complying with Table 2304.11 shall not be permitted for balconies and similar projections on buildings of Type IV-A, IV-B, or IV-C construction. The aggregate length of the projections shall not exceed 50 percent of the building's perimeter on each floor.

#### **Exceptions:**

- 1. On *buildings* of Types I and II construction, three *stories* or less above *grade plane*, *fire-retardant-treated wood* shall be permitted for balconies, porches, decks and exterior *stairways* not used as required exits.
- 2. Untreated *wood and plastic composites* that comply with ASTM D7032 and Section 2612 are permitted for pickets, rails and similar *guard* components that are limited to 42 inches (1067 mm) in height.
- 3. Balconies and similar projections on *buildings* of Types III, IV-HT and V construction shall be permitted to be of Type V construction and shall not be required to have a *fire-resistance rating* where sprinkler protection is extended to these areas.
- 4. Where sprinkler protection is extended to the balcony areas, the aggregate length of the balcony on each floor shall not be limited.
- 5. On buildings of Types IV-A or IV-B construction three stories or less above grade plane, and Type IV-C construction not classified as *high-rise*, non-fire-resistance rated heavy timber building elements shall be permitted for balconies, porches, decks and exterior stairways not used as required exits.

**Committee Reason:** The committee agreed that the modification clarifies the intent of the proposal. The proposed text is a needed clarification to the code users (Vote: 11-0).

FS13-24

# FS14-24

Committee Action: As Submitted

**Committee Reason:** The committee approved the proposal based on the fact that the proposal coordinates with existing requirements for fire-resistance rating (FRR) continuity for all types of supporting construction (Vote: 8-3).

FS14-24

### FS15-24

Committee Action: As Submitted

**Committee Reason:** The committee concluded that the proposal is expanding on what was approved during the last cycle and it is the right step forward (Vote: 9-2).

FS15-24

### FS16-24

Committee Action:

As Modified by Committee (AMC1)

#### **Committee Modification:**

705.8.1 Floor assemblies in Type III construction.

In Type III construction where a <u>portion of a floor assembly within the plane of the exterior wall</u> supports gravity loads from an <u>exterior wall</u> shall be permitted to include the contribution of the ceiling membrane when considering exposure to fire from the inside. Where a floor assembly supports gravity loads from an <u>exterior wall</u>, the <u>building elements</u> of the floor construction within the plane of the <u>exterior wall</u>, including but not limited to rim joists, rim boards and blocking, shall be in accordance with the requirements for interior <u>building elements</u> of Type III construction.

**Committee Reason:** The committee determined that the proposed modifications fix the issue in the original proposal by adding a "portion of a floor". The committee agreed that the added text for supporting the construction of exterior walls is needed (Vote: 11-0).

FS16-24

# FS17-24

Committee Action: As Submitted

Committee Reason: The committee indicated that the proposal clarifies the code requirements for roof assemblies supporting parapets in Type III, IV and V construction. One of the committee members had an issue with what requirements are intended in the proposed text "Where a roof assembly supports gravity loads from a parapet, the building elements of the roof construction within the plane of the exterior wall, including but not limited to, rim joists, rim boards, and blocking, shall be in accordance with the requirements for roof assemblies of the applicable type of construction." (Vote: 10-1).

FS17-24

# FS18-24

#### Committee Action:

#### As Modified by Committee (AMC1)

**Committee Modification: 705.11 Penetrations.** Penetrations into or through exterior walls required to have a fire-resistance rating shall comply with Section 714. Penetrations by ducts and air transfer openings shall comply with Section 705.10-705.11.

**Exception:** Exterior walls that are permitted to have unprotected openings in accordance with Section 705.8705.9 do not require protection of penetrations.

**714.4 Fire-resistance-rated walls.** Penetrations into or through exterior walls, fire walls, fire barriers, smoke barrier walls and fire partitions shall comply with Sections 714.4.1 through 714.4.3. Penetrations in smoke barrier walls shall also comply with Section 714.5.4.

**Exception:** Exterior walls that are permitted to have unprotected openings in accordance with Section 705.8 705.9 do not require protection of penetrations.

**Committee Reason:** The committee deemed that the modification corrects the section references. The proposed code change adds a requirement to protect penetrations where a fire-resistance rated exterior wall is not allowed to have any other unprotected openings (Vote: 10-2).

FS18-24

# FS19-24

#### **Committee Action:**

As Modified by Committee (AMC1)

#### **Committee Modification:**

706.6 Vertical continuity.

Fire walls shall extend from the foundation to a termination point not less than 30 inches (762 mm) above both adjacent roofs.

#### **Exceptions:**

- 1. Stepped buildings in accordance with Section 706.6.1.
- 2. Two-hour fire-resistance-rated walls shall be permitted to terminate at the underside of the roof sheathing, deck or slab, provided that all of the following requirements are met:
  - 2.1. The lower *roof assembly* within 4 feet (1220 mm) of the wall has not less than a 1-hour *fire-resistance rating* and the entire length and span of supporting elements for the rated *roof assembly* has a *fire-resistance rating* of not less than 1 hour.
  - 2.2. Openings in the roof shall not be located within 4 feet (1220 mm) of the fire wall.
  - 2.3. Each building shall be provided with not less than a Class B roof assembly.
- Walls shall be permitted to terminate at the underside of noncombustible roof sheathing, deck or slabs where both buildings are
  provided with not less than a Class B roof assembly. Openings in the roof shall not be located within 4 feet (1220 mm) of the fire
  wall.

- 4. In *buildings* of Types III, IV and V construction, walls shall be permitted to terminate at the underside of combustible roof sheathing or decks, provided that all of the following requirements are met:
  - 4.1. Roof openings are not less than 4 feet (1220 mm) from the fire wall.
  - 4.2. The roof is covered building is provided with a minimum Class B roof assembly.
  - 4.3. The roof sheathing or deck is constructed of *fire-retardant-treated wood* for a distance of 4 feet (1220 mm) on both sides of the wall or the roof is protected with <sup>5</sup>/<sub>8</sub>-inch (15.9 mm) *Type X gypsum board* directly beneath the underside of the roof sheathing or deck, supported by not less than 2-inch (51 mm) nominal ledgers attached to the sides of the roof framing members for a distance of not less than 4 feet (1220 mm) on both sides of the *fire wall*.
- 5. In *buildings* designed in accordance with Section 510.2, *fire walls* located above the 3-hour *horizontal assembly* required by Section 510.2, Item 1 shall be permitted to extend from the top of this *horizontal assembly*.
- 6. Buildings with sloped roofs in accordance with Section 706.6.2.

TABLE 721.1(3) remains the same as 2024 IBC text.

**Committee Reason:** The committee approved the modifications to clarify the intent of the proposed text. The committee stated that the reason for the approval was that the proposal corrects instances where results of ASTM E108 or UL 790 tests are associated with a roof covering or roof-covering assembly instead of a roof assembly (Vote: 11-0).

FS19-24

# FS20-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved the proposal based on the fact that the proposal creates unintended consequences. The committee suggested clarifying the requirements, for example, if there is a residential occupancy within a large building. The committee also indicated that the proposal adds unnecessary cost (Vote: 11-0).

FS20-24

# FS21-24 Part I

Committee Action: Disapproved

Committee Reason: The committee has concerns with "where required by this code". The committee indicated that the proposal needs to maintain the authority between codes. The committee agreed with some of the proposed text for example, the IBC does not state provide "exit doors in accordance with Section 1010" every time an exit door is required. Such language is not necessary and the code does not need to state it, because if the door does not comply then it is not considered an exit door (Vote: 10-1).

# FS21-24 Part II

Committee Action: As Modified by Committee

Committee Modification: 2024 International Fire Code Delete without substitution:

#### 702.1 Construction requirements.

Fire resistance rated construction and smoke limiting construction required by this code shall comply with the following:

- 1. Fire walls shall be constructed in accordance with Section 706 of the International Building Code.
- 2. Fire barriers shall be constructed in accordance with Section 707 of the International Building Code.
- 3. Fire partitions shall be constructed in accordance with Section 708 of the International Building Code.
- 4. Smoke barriers shall be constructed in accordance with Section 709 of the International Building Code.
- 5. Smoke partitions shall be constructed in accordance with Section 710 of the International Building Code.
- 6. Horizontal assemblies shall be constructed in accordance with Section 711 of the International Building Code.

**Committee Reason:** The reason for the approval of the modification was based on the previous action taken on F1. The stated reason for the approval of the proposal with the modification was that it was based on the previous action which provided clarification. (Vote: 14-0)

FS21-24 Part II

## FS22-24

Committee Action: Disapproved

Committee Reason: The committee determined that the proposed language is confusing and not clear (Vote: 11-0).

FS22-24

# FS23-24

Committee Action: Disapproved

Committee Reason: The proposal was disapproved as requested by the proponent to work on the proposal for the CAH2 (Vote: 11-0).

FS23-24

### FS24-24

Committee Action: Disapproved

**Committee Reason:** The committee disagreed with the proposed text to exceptions 2 and 3 in Section 706.5 for horizontal continuity. The committee has an issue with adding "fire-retardant-treated-wood" before the noncombustible exterior sheathing (Vote: 10-1).

FS24-24

### FS25-24

Committee Action: As Submitted

Committee Reason: The committee indicated that the proposal removes redundancies. The committee agreed to move the language in 706.5.1 items #1 and #2 for the location of the firewall to the main scope of section 706.5.1. The committee also agreed on modifying the language to only apply to exterior walls that form an angle of less than 180 degrees (Vote: 11-0).

FS25-24

### FS26-24

Committee Action: Disapproved

**Committee Reason:** The committee agreed that this is a needed clarification. However, the committee suggested to the proponent to work on a scoping statement between IBC and IFC. The committee also suggested providing limitations of implementation to the added text to avoid unintended consequences (Vote: 9-1).

FS26-24

# FS27-24

Committee Action: Disapproved

**Committee Reason:** The committee indicated that the proposal lacks statistical data to show there is an issue that needs to be addressed regarding providing a measure of protection to prevent fire from spreading around the fire barriers and dwelling/sleeping unit fire partitions where they intersect exterior walls. The committee also indicated that the cost statement was missing elements and required full analysis (Vote: 7-4).

FS27-24

# FS28-24

Committee Action: Disapproved

**Committee Reason:** The committee had safety concerns regarding the interpretation of the requirements for an automatic sprinkler system in the proposed text (Vote: 11-0).

FS28-24

## FS29-24

Committee Action: As Submitted

**Committee Reason:** The committee determined that the proposed language provides guidance to ensure proper continuity when this condition is encountered within the built environment (Vote: 11-0).

FS29-24

### FS30-24

Committee Action: As Submitted

**Committee Reason:** The committee indicated the proposal corrects inconsistent language in section 708.4.2, Supporting construction. The committee agreed with revising the section exception to match Section 708.1, Item 7 with reference to 907.2.8.1 and 907.2.9.1, which require fire partitions as part of exceptions for manual fire alarm systems (Vote: 8-3).

FS30-24

# FS31-24

Committee Action: As Submitted

**Committee Reason:** The committee deemed the proposed code change is needed to clarify the requirements for separating smoke compartments. The committee agreed that the pointer to section 909 is needed where the horizontal assembly is required to be a smoke barrier (Vote: 9-2).

FS31-24

# FS32-24

Committee Action: Disapproved

Committee Reason: The committee stated that the proposed text is confusing. Mainly, how to maintain continuity without having a fire-

resistance rating? The committee also suggested correcting the section's references (Vote: 11-0).

FS32-24

### FS33-24

Committee Action: As Submitted

**Committee Reason:** The committee agreed that the clarification is needed. The added exception for horizontal assembly supporting construction FRR makes it clear that this is not required when the FRR is only provided for fire partition continuity requirements and the fire partition itself is exempt from supporting construction requirements (Vote: 9-2).

FS33-24

### FS34-24

**Committee Action:** 

As Modified by Committee (AMC1)

#### **Committee Modification:**

711.2.4.7 Energy Storage Systems. Where required by the *International Fire Code*, Where the *horizontal assembly* separates separating energy storage systems from the remainder of the building, the assembly shall have a minimum 2-hour fire-resistance rating.

**Committee Reason:** The committee concluded that the modification resolved the issue by scoping to the IFC. The committee agreed that this is a needed clarification to Energy Storage Systems requirements (Vote: 11-0).

FS34-24

# FS35-24

Committee Action: Disapproved

Committee Reason: The committee concluded that the proposal is unnecessary since the code already addresses this issue (Vote: 6-5).

FS35-24

# FS36-24

Committee Action: Disapproved

**Committee Reason:** The committee determined that the proposed language still needs more work. The proposed text does not specify fire-resistance-rating. The committee also recommended looking into Section 509.4.2 (Vote: 11-0).

### FS37-24

#### **Committee Action:**

#### As Modified by Committee (AMC1)

#### **Committee Modification:**

**711.4 Roof Openings.** Roof openings, including skylights, in a fire-resistance-rated roof deck or slab are permitted to be unprotected, provided that the structural integrity of the fire-resistance-rated roof assembly is maintained. Unprotected roof openings shall not be permitted in roof assemblies required to be fire-resistance rated in accordance with Section 705.9.6 and shall comply with the opening protectives of Section 716. The supporting construction shall be protected to afford the required fire-resistance rating of the horizontal assembly supported.

**Committee Reason:** The committee indicated that the modification is needed by adding "including skylights". The proposal provide needed clarification for roof openings and roof penetrations (Vote: 11-0).

FS37-24

# FS38-24

Committee Action: Disapproved

**Committee Reason:** The committee deemed the proposed code change is not necessary and already addressed in the code. The committee did not agree with the relocation of the requirements (Vote: 11-0).

FS38-24

# FS39-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval is that the proposal correlates the requirements in Section 713.13.1 with Sections 713.11 exception 2 and 713.13.4 (Vote: 6-5).

FS39-24

# FS40-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved the proposal due to the fact that the standard was not ready. The committee also mentioned that additional clarification is required to address inspection issues (Vote: 11-0).

### FS41-24

Committee Action: Disapproved

**Committee Reason:** The committee indicated that the proposed sections are needed. However, the committee suggested improving the proposed text. The committee wanted to see more clarification to the text, for example: "sufficient documentation", and "an installed system". The committee recommended adding "listed" systems (Vote: 7-4).

FS41-24

### FS42-24

Committee Action: Disapproved

**Committee Reason:** The committee concluded that the proposal needs more work to address different issues. For example, the committee had an issue with "device, label or similar treatment". The committee also recommended establishing limits on joints. The committee thought that an "electronic device readable from a distance of 24 in. (610 mm) at a 45-degree angle" is not needed" (Vote: 11-0).

FS42-24

### FS43-24

**Committee Action:** 

As Modified by Committee (AMC1)

**Committee Modification:** MANUFACTURER'S INSTALLATION INSTRUCTIONS. <u>Printed Published</u> instructions <u>for included with</u> materials, systems, or equipment.

**Committee Reason:** The committee determined that the proposed modification allows for new technologies. The committee agreed that the added text is beneficial to the code users regarding manufacturers' installation instructions (Vote: 11-0).

FS43-24

# FS44-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved the proposal based on the fact that the committee disagreed with the building code regulating labor. The committee also thought that manufacturers should be the ones who qualify installers (Vote: 11-0).

### FS45-24

Committee Action: Disapproved

**Committee Reason:** The committee had issues with the proposed text. The proposed text allows for a large opening next to protected through-penetration (Vote: 9-2).

FS45-24

### FS46-24

Committee Action: As Modified by Committee (AMC1)

#### **Committee Modification:**

714.4.1 Through penetrations.

Through penetrations of fire-resistance-rated walls shall comply with Section 714.4.1.1 or 714.4.1.2.

Exception: Where the penetrating items are steel, ferrous or copper pipes, tubes or conduits, the annular space between the penetrating item and the fire resistance rated wall is permitted to be protected

In concrete or *masonry* walls where the penetrating item is a <u>steel, ferrous or copper pipe, tube or conduit having a maximum 6-inch (152 mm) nominal diameter and the area of the opening through the wall does not exceed 144 square inches (0.0929 m<sup>2</sup>), concrete, grout or *mortar* is permitted where installed the full thickness of the wall or the thickness required to maintain the *fire-resistance rating*.</u>

**Committee Reason:** The committee stated that the reason for the approval was that the modification reasonably revised the code text. The committee determined that the code change eliminates unnecessary language (Vote: 10-0).

FS46-24

# FS47-24

Committee Action: As Submitted

**Committee Reason:** The committee deemed that the proposed text is a necessary clarification. The committee agreed that the proposed text will limit the application of the exception to vehicle ramps serving parking garages where the ramps are not directly above or below the parking areas. This limitation will minimize the chances of a fire from below involving parked vehicles (Vote: 7-4).

FS47-24

### FS48-24

Committee Action: Disapproved

Committee Reason: The committee disapproved this proposed code change in favor of the approval of FS47-24 (Vote: 10-1).

FS48-24

### FS49-24

Committee Action: As Submitted

Committee Reason: The committee concluded that the proposed text is needed. The committee indicated that this is a necessary requirement for the ceiling membrane of a maximum 1-hour fire-resistance-rated horizontal assembly to be permitted to be interrupted with a single 2x wood top plate of a wall assembly that is sheathed with Type X gypsum wallboard. The added text requires that all-penetrating items through the top plate are protected in accordance with Section 714.5.1.1 or 714.5.1.2 and the ceiling membrane is tight to the top plates (Vote: 6-5).

FS49-24

# FS50-24

Committee Action: As Submitted

Committee Reason: The committee approved the proposed language based on the proposal's reason statement (Vote: 11-0).

FS50-24

# FS51-24

Committee Action: As Submitted

**Committee Reason:** The committee indicated that the proposal corrects a misunderstanding relating to the inter-relationship of the two criteria of Section 715.5.4 (Vote: 11-0).

FS51-24

# FS52-24

Committee Action: As Submitted

**Committee Reason:** The committee deemed that the proposal clarifies the technical requirement. The committee agreed that moving the requirements for penetrations in smoke barriers toward the end of Section 714 and placing the language in its own section will allow this requirement to apply to both walls and horizontal assemblies (Vote: 11-0).

FS52-24

### FS53-24

Committee Action: Disapproved

**Committee Reason:** The committee determined that the proposed text is too broad and needs more work. The committee encouraged the proponent to work on limited use (Vote: 12-0).

FS53-24

### FS54-24

Committee Action: Disapproved

**Committee Reason:** The committee determined that the proposal needed more work. The committee also mentioned that the code allows for open floors between levels in parking garages, so to have a protected joint adjacent to an opening that is floor-to-floor, does not make sense (Vote: 10-2).

FS54-24

# FS55-24

#### **Committee Action:**

As Modified by Committee (AMC1)

#### Committee Modification:

**715.4 Exterior curtain wall/fire-resistance-rated floor intersections.** Voids created at the intersection of exterior curtain wall assemblies and fire-resistance-rated floor, floor/ceiling, roof, or roof/ceiling assemblies shall be protected with an *approved perimeter fire containment system* to prevent the <u>interior</u> spread of fire. Such systems shall provide an *F rating* for a time period not less than the *fire-resistance rating* of the floor or floor/ceiling assembly.

**Exceptions:** An approved perimeter fire containment system shall not be required for voids in the following locations:

- 1. Floors within a single dwelling unit.
- 2. Floors and ramps within parking garages or structures constructed in accordance with Sections 406.5 and 406.6.
- 3. Mezzanine floors.

**Committee Reason:** The committee agreed that the modification adds back "interior" to the original proposal. The main proposal provides clarity to the code requirements (Vote: 11-1).

# FS56-24

Committee Action: Disapproved

Committee Reason: The committee disapproved the proposal to be consistent with the action taken on FS54-24 (Vote: 9-3).

FS56-24

### FS57-24

Committee Action: As Submitted

**Committee Reason:** The committee determined that the proposed language is needed. The committee agreed that clarification is needed to the requirements for the exceptions to ASTM E2307 regarding tested perimeter fire containment systems (Vote: 12-0).

FS57-24

### FS58-24

Committee Action: Disapproved

**Committee Reason:** The committee indicated the reason for the disapproval that the language proposed is confusing. The committee suggested broadening the proposed language to include systems and to provide better direction (Vote: 12-0).

FS58-24

# FS59-24

Committee Action: As Submitted

**Committee Reason:** The committee deemed the proposed code change clarifies the code requirements. The committee agreed to add UL 263 into Table 716.1(2), Footnote a, which currently only includes ASTM E119 (Vote: 12-0).

FS59-24

# FS60-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval was that the proposal addressed confusing table requirements. The committee agreed that Table 716.1(2) format is confusing including limiting the size of the glazing in the door vision panel size column to 100 sq. in. only to allow larger sizes in the next column if fire-resistance-rated glazing is used. The committee agreed also with the rest of the clarifications to the code text (Vote: 12-0).

FS60-24

# FS61-24

Committee Action: As Submitted

**Committee Reason:** The committee agreed with the proposed clarification to the type of glazing and frame required in sidelights and transoms in applications where fire protection-rated glazing is not permitted (Vote: 11-1).

FS61-24

### FS62-24

Committee Action: Disapproved

**Committee Reason:** The committee determined that the proposed language is not necessary. The committee indicated that the proponent did not provide data to support the need for this code change (Vote: 9-3).

FS62-24

# FS63-24

Committee Action: Disapproved

**Committee Reason:** The committee determined that the proposed language is not necessary and already addressed in the code (Vote: 9-3).

FS63-24

# FS64-24

Committee Action: As Submitted

Committee Reason: The committee determined that the proposed language is a good addition to doors in interior exit stairways and

ramps and exit passageways. The committee agreed that louvers should be prohibited in fire door assemblies in interior exit stairways and ramps and exit passageways (Vote: 12-0).

FS64-24

### FS65-24

Committee Action: Disapproved

**Committee Reason:** The committee determined that the proposed language is confusing on the location of the fire door. The committee mentioned that the assumption is that the building is sprinkled. The committee disagreed that smoke compartments are the same in Nursing homes vs Assisted living (Vote: 10-2).

FS65-24

### FS66-24

Committee Action: As Submitted

**Committee Reason:** The committee agreed to change the language for requirements for products to "listed and labeled" and change "third-party" to "approved agency" as this term is defined in the IBC and is applicable to the intent of the existing reference to "third-party" (Vote: 12-0).

FS66-24

# FS67-24

Errata: This proposal includes unpublished errata See below requirement #2 correct text: 716.4.1 Testing requirements. Approved fire protective curtain assemblies shall be constructed of any materials or assembly of component materials that conforms to the following test requirements:

- 1. Fire protective curtain assemblies shall be tested without hose stream in accordance with UL 10D.
- 2. Fire protective curtain assemblies shall be tested without hose stream in accordance with UL 10D. Fire protective curtain assemble control door assembly requirements in Section 716.2.2.1.1 when tested in accordance with UL 1784.

Committee Action: Disapproved

**Committee Reason:** The committee determined that the proposed language is confusing between the sections indicated in the code proposal. The committee has an issue with the means of egress portion of the proposal. The committee has an issue with the table footnote and mentioned that the text needs to be revised from "deemed equivalent" to "the same test" (Vote: 12-0).

FS67-24

### FS68-24

Committee Action: Disapproved

**Committee Reason:** The committee determined that the proposed language needs more work. The committee suggested breaking up the proposed text to clarify the requirements. The committee suggested adding the proper standard (Vote: 12-0).

FS68-24

### FS69-24

Committee Action: Disapproved

**Committee Reason:** The committee did not approve adding the proposed text. The committee indicated that the proposed text needs more clarification (Vote: 12-0).

FS69-24

### FS70-24

Committee Action: As Submitted

Committee Reason: The committee concluded that the proposal is a good clarification without making technical changes (Vote: 12-0).

FS70-24

### FS71-24

Committee Action: As Submitted

**Committee Reason:** The committee determined that the proposed language is a good clarification of the code requirements (Vote: 12-0).

FS71-24

# FS72-24

Committee Action: As Modified by Committee (AMC1)

**Committee Modification:** 

2024 International Building Code

**717.5.2 Fire barriers.** Ducts and air transfer openings of *fire barriers* shall be protected with *listed fire dampers* installed in accordance with their listing. Ducts and air transfer openings shall not penetrate enclosures for *interior exit stairways* and *ramps* and *exit passageways*, except as permitted by Sections 1023.5 and 1024.6, respectively.

**Exceptions:** Fire dampers are not required at penetrations of fire barriers where any of the following apply:

- 1. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance-rated assembly.
- 2. Ducts are used as part of an *approved* smoke control system in accordance with Section 909 and where the use of a *fire* damper would interfere with the operation of a smoke control system.
- 3. Such walls are penetrated by fully ducted HVAC systems, have a required *fire-resistance rating* of 1 hour or less, are in areas of other than Group H and are in *buildings* equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the *structure*'s HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. The duct shall not have openings within 6'-0" of the fire resistant rated assembly.

terminate at a wall register in a fire resistance rated wall. The terminal shall be separated from terminals on the opposite side of the fire barrier by a minimum of 24".

Nonmetal flexible air connectors shall be permitted in the following locations:

- 3.1. At the duct connection to the air handling unit or equipment located within the mechanical room in accordance with Section 603.9 of the *International Mechanical Code*.
- 3.2. From an overhead metal duct to a ceiling diffuser within the same room in accordance with Section 603.6.2 of the *International Mechanical Code*.

#### 2024 International Mechanical Code

[BF] 607.5.2 Fire barriers. Ducts and air transfer openings that penetrate fire barriers shall be protected with *listed* fire dampers installed in accordance with their listing. Ducts and air transfer openings shall not penetrate enclosures for interior exit stairways and ramps and exit passageways except as permitted by Sections 1023.5 and 1024.6, respectively, of the International Building Code.

Exception: Fire dampers are not required at penetrations of fire barriers where any of the following apply:

- 1. Penetrations are tested in accordance with ASTM E119 or UL 263 as part of the fire-resistance-rated assembly.
- 2. Ducts are used as part of an *approved* smoke control system in accordance with Section 512 and where the fire damper would interfere with the operation of the smoke control system.
- 3. Such walls are penetrated by fully ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the International Building Code. For the purposes of this exception, a fully ducted HVAC system shall be a duct system for the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than 26 gage [0.0217 inch (0.55 mm)] thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. The duct shall not terminate at a wall register in a fire
  - handling *appliance* or *equipment* to the air outlet and inlet terminals. The duct shall not terminate at a wall register in a fire resistance-rated wall. The terminal shall not have openings within 6'-0" of the fire resistant rated assembly.

be separated from terminals on the opposite side of the fire barrier by a minimum of 24". Flexible air connectors shall be permitted in a fully ducted system, limited to the following installations:

- 3.1. Nonmetallic flexible connections that connect a duct to an air handling unit or *equipment* located within a mechanical room in accordance with Section 603.9.
- 3.2. Nonmetallic flexible air connectors in accordance with Section 603.6.2 that connect an overhead metal duct to a ceiling diffuser where the metal duct and ceiling diffuser are located within the same room.

**Committee Reason:** The committee indicated the modification added 6 feet which is a recognizable distance. The committee suggested adding "measured horizontally from the fire wall". The proposed change provides necessary clarity to the code requirements (Vote: 12-0).

### FS73-24

#### **Committee Action:**

As Modified by Committee (AMC1)

Committee Modification: 2024 International Building Code

**717.5.4 Fire partitions.** Ducts and air transfer openings that penetrate *fire partitions* shall be protected with *listed fire dampers* installed in accordance with their listing.

Exceptions: In occupancies other than Group H, fire dampers are not required where any of the following apply:

- 1. *Corridor* walls in *buildings* equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2 and the duct is protected as a *through penetration* in accordance with Section 714.
- 2. Tenant partitions in *covered and open mall buildings* where the walls are not required by provisions elsewhere in the code to extend to the underside of the floor or roof sheathing, slab or deck above.
- 3. The duct system is constructed of *approved* materials in accordance with the *International Mechanical Code* and the duct penetrating the wall complies with all of the following requirements:
  - 3.1. The duct shall not exceed 100 square inches (0.06 m<sup>2</sup>).
  - 3.2. The duct shall be constructed of steel not less than 0.0217 inch (0.55 mm) in thickness.
  - 3.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.
  - 3.4. The duct shall be installed above a ceiling.
  - 3.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.
  - 3.6. A minimum 12-inch-long (305 mm) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum 1 1/2-inch by 1 1/2-inch by 0.060-inch (38 mm by 38 mm by 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The *annular space* between the steel sleeve and the wall opening shall be filled with mineral wool batting on all sides.

- 4. Such walls are penetrated by ducted HVAC systems, have a required *fire-resistance rating* of 1 hour or less, are in areas of other than Group H, and are in *buildings* equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1 or 903.3.1.2. For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the *structure*'s HVAC system. Such a duct system shall be constructed of sheet steel not less than No. 26 gage thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. The duct shall not have openings within 6'-0" of the fire resistant rated assembly.
  - not terminate at a wall register in a fire resistance rated wall. The terminal shall be separated from terminals on the opposite side of the fire barrier by a minimum of 24".

#### 2024 International Mechanical Code

[BF] 607.5.3 Fire partitions. Ducts and air transfer openings that penetrate fire partitions shall be protected with listed fire dampers

installed in accordance with their listing.

Exception: In occupancies other than Group H, fire dampers are not required where any of the following apply:

- 1. Corridor walls in *buildings* equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the International Building Code and the duct is protected as a through penetration in accordance with Section 714 of the International Building Code.
- 2. The partitions are tenant partitions in covered and open mall *buildings* where the walls are not required by provisions elsewhere in the *International Building Code* to extend to the underside of the floor or roof sheathing, slab or deck above.
- 3. The duct system is constructed of *approved* materials in accordance with Section 603 and the duct penetrating the wall complies with all of the following requirements:
  - 3.1. The duct shall not exceed 100 square inches (0.06 m<sup>2</sup>).
  - 3.2. The duct shall be constructed of steel not less than 0.0217 inch (0.55 mm) in thickness.
  - 3.3. The duct shall not have openings that communicate the corridor with adjacent spaces or rooms.
  - 3.4. The duct shall be installed above a ceiling.
  - 3.5. The duct shall not terminate at a wall register in the fire-resistance-rated wall.
  - 3.6. A minimum 12-inch-long (305 mm) by 0.060-inch-thick (1.52 mm) steel sleeve shall be centered in each duct opening. The sleeve shall be secured to both sides of the wall and all four sides of the sleeve with minimum 1 \(^1/\_2\)-inch by 1 \(^1/\_2\)-inch by 0.060-inch (38 mm by 38 mm by 1.52 mm) steel retaining angles. The retaining angles shall be secured to the sleeve and the wall with No. 10 (M5) screws. The annular space between the steel sleeve and the wall opening shall be filled with rock (mineral) wool batting on all sides.
- 4. Such walls are penetrated by ducted HVAC systems, have a required fire-resistance rating of 1 hour or less, are in areas of other than Group H and are in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the International Building Code. For the purposes of this exception, a ducted HVAC system shall be a duct system for conveying supply, return or exhaust air as part of the structure's HVAC system. Such a duct system shall be constructed of sheet steel not less than 26 gage in thickness and shall be continuous from the air-handling appliance or equipment to the air outlet and inlet terminals. The duct shall not have openings within 6'-0" of the fire resistant rated assembly.

terminate at a wall register in a fire resistance rated wall. The terminal shall be separated from terminals on the opposite side of the fire barrier by a minimum of 24".

**Committee Reason:** The committee deemed the modifications to the proposed code change are necessary clarification. The committee indicated that the proposal adds needed requirements and provides consistency to the code text (Vote: 11-0).

FS73-24

### FS74-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for approval was that the proposal reasonably revised the code text and is consistent with previous committee action (Vote: 9-2).

FS74-24

### FS75-24

Committee Action: Disapproved

**Committee Reason:** The committee mentioned that the proposed text needs more work and the language needs to be specific. The committee indicated that there is a lack of data to support the proposed text. The committee suggested adding the proper standard (Vote: 11-0).

FS75-24

### FS76-24

Committee Action: Disapproved

**Committee Reason:** The committee agreed with the concept of the proposal but the language needs to be correlated better for the CAH2 (Vote: 11-0).

FS76-24

### FS77-24

Committee Action: Disapproved

Committee Reason: The committee disapproved the proposal due to the confusing proposed text (Vote: 11-0).

FS77-24

# FS78-24

Committee Action: As Submitted

**Committee Reason:** The committee determined that the proposed language improves the current code text and adds clarity. (Vote: 11-0).

FS78-24

# FS79-24

Committee Action: Disapproved

Committee Reason: The committee disapproved the proposal due to the fact that the text only referred to the standard. The committee

suggested that more details need to be added to the proposed text instead of only referring to the standard (Vote: 10-1).

FS79-24

### FS80-24

Committee Action: As Submitted

**Committee Reason:** The committee approved the proposal based on the fact that the proposed code change of adding "steel" to item 7 thereby aligning with items 5 and 6 (Vote: 11-0).

FS80-24

### FS81-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval was that the proposed revised Table 721.1(1) reflects current structural steel industry standards. The committee agreed with deleting five archaic systems that are no longer included for new building applications in AISC 360-22's mandatory Appendix 4, Structural Design for Fire Conditions, (specifically Appendix 4, Section 4.3) (Vote: 7-4).

FS81-24

# FS82-24

Committee Action: As Submitted

**Committee Reason:** The committee agreed that the proposal provides additional resources that have been used currently. The committee agreed with adding a reference to ANSI/AWC 2024 Fire Design Specification (FDS) for Wood Construction in Table 721.1(2) R, footnote "r" for tested fire-resistance-rated assemblies in the FDS and adds it as a reference standard. However, the code already allows fire-resistant designs by approved sources which would include this standard. (Vote: 7-4).

FS82-24

# FS83-24

Committee Action: As Modified by Committee (AMC1)

Committee Modification: TABLE 721.1(3) MINIMUM PROTECTION FOR FLOOR AND ROOF SYSTEMS a, q

31. Wood I-joist (minimum I-	31-	Two layers of <sup>1</sup> / <sub>2</sub> " Type C gypsum wallboard applied with the long dimension perpendicular to the I-joists with end joints	-	-	<del>Varies</del>	Varies	-	-	-	1
joist depth 9 <sup>1</sup> / <sub>4</sub> " with a	1.1	staggered. The base layer is fastened with 1" Type S drywall screws spaced 12" o.c. and the face layer is fastened with 1 <sup>5</sup> / <sub>8</sub> "								
minimum flange thickness of		Type S drywall screws spaced 12" o.c. in the field and 8" o.c. on the edges. Face layer edge joints shall not occur on the								
1 <sup>1</sup> / <sub>2</sub> " and a minimum flange		same I-joist as base layer end joints and edge joints shall be offset 24" from base layer joints. End joints centered on bottom								
crosssectional area of 2.25		flange of I-joists and offset a minimum of 48" from those of base layer. Face layer to also be attached to base layer with 1 <sup>1</sup> / <sub>2</sub> "								
square inches; minimum web		Type G drywall screws spaced 8" o.c. with a 4" stagger, placed 6" from face layer end joints. Face layer wallboard joints								
thickness of <sup>3</sup> / <sub>8</sub> ") @ 24" o.c.		taped and covered with joint compound. Screw heads covered with joint compound.								

The rest of the table remain the same as in the original proposal.

**Committee Reason:** The committee approved the modification as it is needed to clarify the table requirements, but maybe should have been proposed separate from the addition of the standard. The committee approved the proposal based on the fact that the added standard is needed. Some felt this is already covered as approved sources in 703.2.2 and is not appropriate in the footnotes. (Vote: 6-5).

FS83-24

### FS84-24

Committee Action: As Submitted

**Committee Reason:** The committee concluded that the proposal adds the prescriptive fire resistance ratings for concrete and masonry assemblies compliant with ACI/TMS 216.1. The standard is a reasonable alternative compliance path for Section 721 (Vote: 11-0).

FS84-24

# FS85-24

Committee Action: As Submitted

Committee Reason: The committee determined that the proposed language reflects current structural steel industry standards. The committee agreed with updating the methodology for the calculation of fire resistance for structural steel assemblies to recognize the applicable portion of AISC 360-22's mandatory Appendix 4, Structural Design for Fire Conditions (specifically Appendix 4, Section 4.3) (Vote: 11-0).

FS85-24

# FS86-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved the proposal based on the approval of FS89-24 and as requested by the proponent (Vote: 10-0).

FS86-24

#### FS87-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved the proposal based on the approval of FS89-24 and as requested by the proponent (Vote: 10-0).

FS87-24

### FS88-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for approval was that the proposal is necessary standard to Section 722.1. The ANSI/AWC 2024 Fire Design Specification (FDS) for Wood Construction. The standard adds provisions for the fire design of wood members (both protected and unprotected), wood assemblies including calculation of structural fire resistance (Vote: 10-0).

FS88-24

#### FS89-24

Committee Action:

As Modified by Committee (AMC1)

#### **Committee Modification:**

722.1.1 Reference standards..

The calculated *fire resistance* of specific materials or combinations of materials shall be in accordance with one of the following:

- 1. <u>Cast-in-place, precast, and precast/prestressed</u> concrete, concrete masonry and clay masonry assemblies shall be permitted in accordance with ACI/TMS 216.1 /TMS 0216
- 2. Precast and precast, prestressed concrete assemblies shall be permitted in accordance with PCI 124
- 3. Steel assemblies shall be permitted in accordance with Chapter 5 of ASCE 29.
- 4. Exposed wood members and wood decking shall be permitted in accordance with Chapter 16 of ANSI/AWC NDS.

**Committee Reason:** The committee agreed that the modification corrects the proposed text. The committee indicated that the proposal provides needed clarification of the code text (Vote: 10-0).

FS89-24

# FS90-24

Committee Action: As Submitted

Committee Reason: The committee approved the proposal based on the fact that the proposal adds clarification to the code text (Vote:

## FS91-24

Committee Action: As Submitted

**Committee Reason:** The committee concluded that the proposal is a good addition to the code text. The committee also determined that the proposed text fills the gap in the code requirements (Vote: 11-0).

FS91-24

## FS92-24

Committee Action: Disapproved

**Committee Reason:** The committee determined that the proposal suggested a major change to the requirements without justification. The committee also indicated that the cost impact statement is not accurate (Vote: 11-0).

FS92-24

# FS93-24

Committee Action: As Submitted

Committee Reason: The committee indicated that the approval is based on the reason statement (Vote: 11-0).

FS93-24

# FS94-24

Committee Action: As Submitted

Committee Reason: The committee deemed the proposed code change clarifies the table requirements (Vote: 11-0).

FS94-24

# FS95-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for approval was that the proposal revises and clarify the language. The committee also indicated that these requirements need to be in the IFC also (Vote: 12-0).

FS95-24

# FS96-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The intent is clear that the whole purpose of keeping the 10% or less is whether something is more than that and when it exceeded it takes away the intent of a decoration. This section is used often in the healthcare industry to keep materials off the wall, and it should not be revised to include those materials that exceed 10%. There needs to be options in the code where you see 10% for those materials to meet a higher standard just needs to be the right test reference. (Vote: 14-0)

FS96-24

### FS97-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was that it reduces the requirements to be substantially less than the existing restrictions. Additionally, there have not been any significant losses because it is already limited in a building with an automatic sprinkler system and the Section 806.4 reference is not a test requirement. It may refer to an area that goes to the testing, but it is not a test. (Vote: 13-1)

FS97-24

# FS98-24

Committee Action: Disapproved

Committee Reason: The proposal was disapproved as requested by the proponent to work on the proposal for the CAH2 (Vote: 12-0).

FS98-24

# FS99-24

Committee Action: Disapproved

**Committee Reason:** The committee determined that the proposed language is not clear and needs to be correlated with the standard (Vote: 12-0).

FS99-24

#### FS100-24

Committee Action: As Modified by Committee (AMC1)

#### **Committee Modification:**

**1402.5 Vertical and lateral flame propagation.** *Exterior walls* on *buildings* of Type I, II, III and IV construction that contain a combustible *exterior wall covering*, combustible insulation or a combustible *water-resistive barrier* shall comply with Sections 1402.5.1 through 1402.5.5, as applicable. Where compliance with NFPA 285 and associated acceptance criteria is required in Sections 1402.5.1 through 1402.5.5, the *exterior wall assembly* shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.

**1402.5.6 Exterior wall <u>coverings</u> <del>veneers</del> manufactured using combustible adhesives. Exterior walls containing exterior wall <u>coverings</u> <del>veneers</del> manufactured using combustible adhesives shall comply with Section 1402.7.** 

1402.5.7 Foam plastic insulation. *Exterior walls* containing *foam plastic insulation* shall comply with Section 2603.

1402.5.8 Fiber-Reinforced Polymer. Exterior walls containing fiber-reinforced polymer shall comply with Section 2613.

**Committee Reason:** The committee indicated that the proposed modification adds clarification. The committee deemed that the proposal correlates the requirements with proper terminologies (Vote: 11-0).

FS100-24

### FS101-24

Committee Action: As Submitted

**Committee Reason:** The committee deemed that the proposed code change is necessary to clarify the technical requirements. The committee also indicated that the proposal is a good first step (Vote: 10-2).

FS101-24

### FS102-24

**Errata:** This proposal includes published errata See the link to the Consolidated Monograph Updates document; https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for disapproval was that the proposed text is not needed and does not have supporting data (Vote: 12-0).

FS102-24

# FS103-24

Committee Action: Disapproved

Committee Reason: The proposal was disapproved as requested by the proponent to work on the proposal for the CAH2 (Vote: 11-0).

FS103-24

## FS104-24

Committee Action: Disapproved

Committee Reason: The proposal was disapproved as requested by the proponent to work on the proposal for the CAH2 (Vote: 12-0).

FS104-24

# FS105-24

Committee Action: As Submitted

**Committee Reason:** The committee determined that the proposal cleans up terminologies of the code section and clarifies the code requirements (Vote: 12-0).

FS105-24

# FS106-24

Committee Action: As Submitted

Committee Reason: The committee approved the proposal due to the fact that the proposal clarifies the code requirements (Vote: 12-0).

FS106-24

# FS107-24

Committee Action: As Submitted

**Committee Reason:** The committee indicated that the reason for the approval is that the proposal clarifies the code requirements (Vote: 12-0).

FS107-24

## FS108-24

Committee Action: Disapproved

**Committee Reason:** The committee deemed that the proposed code change is needed but the language needs to be developed. The committee indicated that inspection and installation need to be addressed in detail (Vote: 9-3).

FS108-24

## FS109-24

**Errata:** This proposal includes unpublished errata ANSI/ABTG FS200.1—2022 standard appears to be written in enforceable language. Identification of a consensus process is provided on the cover. Does not appear to require proprietary materials or agencies.

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval is that the proposal provides guidance and adds a necessary standard (Vote: 12-0).

FS109-24

# FS110-24

Committee Action: As Submitted

Committee Reason: The committee determined that the proposal clarifies the code text and deletes unnecessary text (Vote: 11-0).

FS110-24

#### FS111-24

**Committee Action:** 

As Modified by Committee (AMC1)

**Committee Modification: BACKED VINYL SIDING.** A cladding product with manufacturer-installed foam plastic backing material as an integral part of the cladding product; where used as insulation refer to *insulated vinyl siding*.

**Committee Reason:** The committee indicated that the modification adds clarification. The committee determined that the proposed text clarifies the criteria to the code users (Vote: 11-0).

FS111-24

#### FS112-24

Committee Action: As Submitted

**Committee Reason:** The committee concluded that the proposal adds good clarification to the code text and addresses an issue that the code is silent on(Vote: 12-0).

FS112-24

## FS113-24

Committee Action: Disapproved

**Committee Reason:** The committee determined that the reason for the disapproval is due to the fact that the proposed language is based on a standard that has not been approved yet (Vote: 12-0).

FS113-24

### FS114-24

**Errata:** This proposal includes unpublished errata ANSI/ABTG FS200.1—2022 standard appears to be written in enforceable language. Identification of a consensus process is provided on the cover. Does not appear to require proprietary materials or agencies.

Committee Action: As Submitted

**Committee Reason:** The committee approved the proposal due to the fact that the proposed code change adds needed standards to evaluate those systems (Vote: 12-0).

FS114-24

# FS115-24

**Errata:** This proposal includes unpublished errata ANSI/ABTG FS200.1—2022 standard appears to be written in enforceable language. Identification of a consensus process is provided on the cover. Does not appear to require proprietary materials or agencies.

Committee Action: As Submitted

Committee Reason: The committee approved the proposal due to the fact that the proposed code change adds needed standards to the

## FS116-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval is that the proposal revises and improves the code text regarding MCM and HPL (Vote: 12-0).

FS116-24

#### FS117-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved the proposal due to the fact that there are many questions regarding the standard. The committee indicated that the reason statement does not include details on the necessity of the proposal (Vote: 12-0).

FS117-24

# FS118-24

**Committee Action:** 

As Modified by Committee (AMC1)

#### **Committee Modification:**

**2603.3 Surface-burning characteristics.** Unless otherwise indicated in this section, *foam plastic insulation* and foam plastic cores of manufactured assemblies shall have a *flame spread index* of not more than 75 and a *smoke-developed index* of not more than 450 where tested in the maximum thickness intended for use in accordance with ASTM E84 or UL 723. Loose fill-type *foam plastic insulation* shall be tested as board stock for the *flame spread* and smoke-developed indices.

#### **Exceptions:**

- 1. Smoke-developed index for interior trim as provided for in Section 2604.2.
- 2. In cold storage *buildings*, ice plants, food plants, food processing rooms and similar areas, *foam plastic insulation* where tested in a thickness of 4 inches (102 mm) shall be permitted in a thickness up to 10 inches (254 mm) where the *building* is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1. The *approved automatic sprinkler system* shall be provided in both the room and that part of the *building* in which the room is located.
- 3. Foam plastic insulation where tested at a thickness of 4 inches (102 mm) with a maximum flame spread index of 75 shall be permitted in a thickness greater not less than 4 inches (102 mm) as part of a Class A, B or C roof assembly roof covering assembly. The smoke-developed index shall not be limited.

- 4. Foam plastic insulation that is a part of a Class A, B or C roof-covering assembly provided that the assembly with the foam plastic insulation satisfactorily passes NFPA 276 or UL 1256. The smoke-developed index shall not be limited for roof applications.
- 5. Foam plastic insulation greater than 4 inches (102 mm) in thickness shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches (102 mm), provided that the end use is approved in accordance with Section 2603.9 using the maximum thickness and density intended for use.
- 6. Flame spread and smoke-developed indices for foam plastic interior signs in covered and open mall buildings provided that the signs comply with Section 402.6.4.

**Committee Reason:** The committee determined that the proposed modification corrects terminologies in the original proposal. The committee deemed that the proposal clarifies the requirements to the code users (Vote: 11-0).

FS118-24

## FS119-24

Committee Action:

As Modified by Committee (AMC1)

#### **Committee Modification:**

**2603.3 Surface-burning characteristics.** Unless otherwise indicated in this section, *foam plastic insulation* and foam plastic cores of manufactured assemblies shall have a *flame spread index* of not more than 75 and a *smoke-developed index* of not more than 450 where tested in the maximum thickness intended for use in accordance with ASTM E84 or UL 723. Loose fill-type *foam plastic insulation* shall be tested as board stock for the *flame spread* and smoke-developed indices.

#### **Exceptions:**

- 1. Smoke-developed index for interior trim as provided for in Section 2604.2.
- 2. In cold storage *buildings*, ice plants, food plants, food processing rooms and similar areas, *foam plastic insulation* where tested in a thickness of 4 inches (102 mm) shall be permitted in a thickness up to 10 inches (254 mm) where the *building* is equipped throughout with an *automatic sprinkler system* in accordance with Section 903.3.1.1. The *approved automatic sprinkler system* shall be provided in both the room and that part of the *building* in which the room is located.
- 3. Foam plastic insulation that is a part of a Class A, B or C roof-covering assembly provided that the assembly with the foam plastic insulation satisfactorily passes NFPA 276 or UL 1256.
- 4. The *smoke-developed index* of *foam plastic insulation* shall not be limited for applications that are part of Class A, B or C *roof assemblies*roof covering assemblies.
- 5. Foam plastic insulation greater than 4 inches (102 mm) in thickness shall have a maximum flame spread index of 75 and a smoke-developed index of 450 where tested at a minimum thickness of 4 inches (102 mm), provided that the end use is approved in accordance with Section 2603.9 using the maximum thickness and density intended for use.
- 6. Flame spread and smoke-developed indices for foam plastic interior signs in covered and open mall buildings provided that the signs comply with Section 402.6.4.

Committee Reason: The committee indicated that the modification clarifies the proposed text. The committee also indicated that the

FS119-24

## FS120-24

Committee Action: As Submitted

**Committee Reason:** The committee deemed that the proposed code change is necessary to clarify the code interpretation of roofing requirements for thermal barriers over foam plastic insulation (Vote: 11-0).

FS120-24

### FS121-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval is because the proposal deletes a necessary standard that needs to be maintained in the code (Vote: 11-1).

FS121-24

# FS122-24

Committee Action: As Submitted

Committee Reason: The committee approved the proposal based on the fact that the proposal deletes confusing text (Vote: 12-0).

FS122-24

# FS123-24

Committee Action: As Submitted

**Committee Reason:** The committee approved the proposal based on the fact that the proposal adds specimen preparation and mounting in accordance with ASTM E3202 to the code (Vote: 12-0).

FS123-24

# International Building Code - General

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

## G1-24 Part I

Committee Action: As Submitted

**Committee Reason:** The committee concluded that the proposal creates consistency in the language used in the scope and brings in proper terminologies (Vote: 11-0).

G1-24 Part I

#### G1-24 Part II

Committee Action: As Submitted

**Committee Reason:** The committee agreed that this change to the titles and scope of the first sections of the chapters would add consistency across the codes in the application of the chapters. (Vote 10-3)

G1-24 Part II

# G1-24 Part III

Committee Action: As Submitted

Committee Reason: This is a needed cleanup that will provide consistency across all the codes. (10-0)

G1-24 Part III

# G1-24 Part IV

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (14-0)

G1-24 Part IV

#### G1-24 Part V

Committee Action: As Submitted

Committee Reason: The proposal will provide for consistency across all the I-codes and will simplify use of the codes. (11-0)

G1-24 Part V

#### G1-24 Part VI

Committee Action: As Submitted

Committee Reason: This is good work to cleanup and coordinate all of the codes. (14-0)

G1-24 Part VI

#### G1-24 Part VII

Committee Action: As Submitted

Committee Reason: According to the proponent's justification, the committee voted 14-0 to approve the proposal as submitted. The proposal's proponent argues that scoping language should be added per the chapter's content. Where the existing scoping sections covered the chapter's content, the information was reorganized into a list form to standardize the language used in the scope for all I-Codes for those chapters that lacked one. This action will clarify the chapter's contents and eliminate superfluous administrative language from the existing scoping sections.

G1-24 Part VII

# G1-24 Part VIII

Committee Action: As Submitted

**Committee Reason:** This proposal makes the code more consistent throughout and eliminates laundry lists which have been problematic. (Vote 13-0)

G1-24 Part VIII

G2-24

Committee Action: Disapproved

**Committee Reason:** The new definition was disapproved because the committee felt this was too broad and could be misused. While this is a term currently used in the medical field, it was not clear on who would determine if there was a need. (Vote 10-4)

G2-24

G3-24

Committee Action: Disapproved

Committee Reason: This proposal was disapproved because this issue should be addressed in the code text - this is not something that could be addressed by a change in definitions. Clearly addressing an exterior exit discharge stairway in the text might address some of the issues brought up in the testimony. Requirements should be clearly defined on what is going on on the outside of the building and the protection to address different associated hazards that are present on the exterior versus the interior exit or exit access stairways. Some buildings do not require "registered design professionals" in every state, so who would set this 'point'. (Vote 11-3)

G3-24

G4-24

Committee Action: Disapproved

**Committee Reason:** The committee determined that the proposed language is already addressed in Table 705.9 and Table 705.5. The committee has an issue with using the term "other building component" since it is a broad term for parking garages. The committee also disagreed with the cost impact of the proposal and thought that there would be a cost increase (Vote: 11-0).

G4-24

G5-24

Committee Action: As Submitted

**Committee Reason:** The committee indicated the proposal provides consistency and clarification by changing "weather-resistive barriers" to "water-resistive barriers". "Water-resistive barrier" is the term used within the code (Vote: 11-0).

G5-24

G6-24

Committee Action: As Submitted

Committee Reason: The committee deemed the proposed code change provides consistency. The committee agreed that the Fire

G6-24

# G7-24

Committee Action: As Submitted

Committee Reason: The committee stated that the reason for approval was that the proposal clarifies how the test data from testing under ASTM E84 and UL 723 standards correlates to the FS and SD requirements in the code. The committee agreed with the clarification added to the definitions regarding reporting of ASTM E84 and UL 723 values. The committee concluded that the code change proposal clarifies that the ceiling value is applicable to avoid confusion when ceiling and floor values are reported (Vote: 11-0).

G7-24

### G8-24 Part I

Committee Action: Disapproved

Committee Reason: This proposal was disapproved. For the definition of gross floor area there were questions if the phrase "with no openings" could exclude central light shaft with windows - now called "interior courts" in the current text. While "shafts with no openings" is current text, it is confusing about what this includes. In the 2nd sentence, 'occupiable space' should not be change to 'useable area' - this could exempt useable areas without walls, such as a pavilion. (Vote: 8-6)

G8-24 Part I

## G8-24 Part II

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to accept the proposal as submitted. The argument presented made sense in light of the proponent's justification. Although it is not used in the text, the definition of "floor area, net" is included in the IMC.

G8-24 Part II

# G9-24

Committee Action: As Submitted

**Committee Reason:** The change in the wording in was approved. It is appropriate to apply guard requirements to structures as well as buildings. This would also coordinate with ASCE 7 definitions. (Vote: 13-1)

# G10-24 Part I

**Committee Action:** 

As Modified by Committee (AMC1)

#### **Committee Modification:**

2024 International Building Code

#### Revise as follows:

[BE] HANDRAIL. A horizontal or sloping rail grasped by the hand for guidance or support.

2024 International Fire Code

#### Revise as follows:

[BE] HANDRAIL. A horizontal or sloping rail grasped by the hand for guidance or support.

**Committee Reason:** The modification is better English. The proposal was approved because a definition does not have to indicate the intent. (Vote: 14-0)

G10-24 Part I

#### G10-24 Part II

Committee Action: Withdrawn

G10-24 Part II

# G11-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved the proposal due to safety concerns. The committee did not agree to remove the "toilet room privacy partitions" from the "Interior Wall and Ceiling Finish" definition. The committee indicated that toilet room privacy partitions could increase the fire load in a building that has a lot of people (Vote: 12-0).

G11-24

# G12-24 Part I

Committee Action: Disapproved

Committee Reason: The proposal was disapproved as requested by the proponent to work on the proposal for the CAH2 (Vote: 11-0).

## G12-24 Part II

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The definition is not needed. Noncombustible is used throughout the code. There are performance requirements in the IBC. It is going to further confuse the issue about noncombustible material. (Vote: 14-0)

G12-24 Part II

### G12-24 Part III

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of the proposal. The proposal's proponent asked for the proposal to be disapproved to have an opportunity to work together with stakeholders to bring back a better proposal to CAH2.

G12-24 Part III

# G12-24 Part IV

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of the proposal. The proposal's proponent asked for the proposal to be disapproved to have an opportunity to work together with stakeholders to bring back a better proposal to CAH2.

G12-24 Part IV

# G12-24 Part V

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The problem with the fact that there was not information on the part of the definition that says in the form in which it is used and the other language in the definition that is being deleted. The reference to either 703.3 or 703.3.1 does reference an alternate reference standard which was not substantiated as noncombustible materials. (Vote: 13-0)

G12-24 Part V

#### G13-24

Committee Action: As Submitted

**Committee Reason:** The addition to the definition is consistent with the 2010 ADA Accessibility Standard. This will help clarify the limitations of a restricted entrance for application of the code requirements for public and restricted entrances. (Vote: 14-0)

G13-24

G14-24

Committee Action: Disapproved

**Committee Reason:** The committee felt that the term "independent" would be confused stairways with two separate stairway enclosures. Another word such as "intertwined" might be clearer. Removing 'interlocking' should be coordinated with the text in Section 403.5.1 and 1007.1.1. (Vote: 10-4)

G14-24

G15-24

Committee Action: As Modified by Committee

**Committee Modification:** 

2024 International Building Code

Revise as follows:

[F] 307.1 High-hazard Group H.

High-hazard Group H occupancy includes, among others, the use of a *building* or *structure*, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or *health hazard* in quantities in excess of those allowed in *control areas* complying with Section 414, based on the maximum allowable quantity limits for *control areas* set forth in Tables 307.1(1) and 307.1(2). Hazardous occupancies are classified in Groups H-1, H-2, H-3, H-4 and H-5 and shall be in accordance with this section, the requirements of Section 415 and the *International Fire Code*. *Hazardous materials* stored or used on top of roofs or *canopies* shall be classified as rooftop storage or use and shall comply with the *International Fire Code*. For retail and wholesale storage and display in Group M occupancy display and storage areas occupancies and Group S occupancy storage areas, see Section 414.2.5.

2024 International Fire Code

Revise as follows:

203.6 High-hazard Group H.

High-hazard Group H occupancy includes, among others, the use of a building or structure, or a portion thereof, that involves the manufacturing, processing, generation or storage of materials that constitute a physical or *health hazard* in quantities in excess of those allowed in *control areas* complying with Section 5003.8.3, based on the maximum allowable quantity limits for *control areas* set forth in Tables 5003.1.1(1) and 5003.1.1(2). Hazardous occupancies are classified in Groups H-1, H-2, H-3, H-4 and H-5 and shall be in accordance with this code and the requirements of Section 415 of the *International Building Code*. Hazardous materials stored or used

on top of roofs or canopies shall be classified as rooftop storage or use and shall comply with this code. For retail and wholesale storage and display in Group M occupancy display and storage areas occupancies and Group S occupancy storage areas, see Section 414.2.5 of the International Building Code.

**Committee Reason:** This proposal was approved based upon the proponents reason statement. The modification clarifies how the provisions are written within the IBC and IFC. (Vote 14-0)

G15-24

### G16-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it aligns the requirements for the secondary water supply with the original intent of the IBC. (Vote: 14-0)

G16-24

### G17-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was based on the proponent's reason statement and floor testimony. (Vote: 14-0)

G17-24

# G18-24

Committee Action: As Submitted

**Committee Reason:** The change to the exit provisions for air traffic control towers removes negative language. This coordinates with the single exit provisions as specified elsewhere in the code. The limitation by occupant load alone is appropriate. (Vote: 12-2)

G18-24

# G19-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was that it is a converse comparison to high rise buildings compared to the previous standpipe proposal. There is no justification for it, and this is something that has waffled in

G20-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: There are several words discussed during the floor testimony that need to be revised. There could be a reference to NFPA 409 that provides what types of fire suppression systems are required and it should stick to that. Addressing the language associated with fixed base operator is acceptable but there was objection to the change in hazardous operations. (Vote: 14-0)

G20-24

G21-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was based on the previous committee action on G20 to reference NFPA 409. (Vote: 14-0)

G21-24

G22-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was based on the proponent's reason statement. (Vote: 12-2)

G22-24

G23-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: In the 2009 code development year there was a long discussion about pipe and area tables, firewalls versus fire barriers and the detail that was shown in NFPA 409 was two walls like the opposition talked about. The word should be fire walls and not fire barriers. There has to be a correlation between the defined terms of fire area and fire barrier or building area and fire wall. This has got to go one way or the other to make sure to avoid

G23-24

G24-24

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the action on F190-24. (Vote 12-2)

G24-24

G25-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved based upon the action taken on G24-24 that removes this paragraph as part of a larger reference to NFPA 318. (Vote 14-0)

G25-24

G26-24

Committee Action: As Modified by Committee

Committee Modification: Revise as follows:[F] TABLE 427.2 PERMIT AMOUNTS FOR COMPRESSED GASES

**Committee Reason:** This proposal was approved as it provides the necessary correlation in the IBC as to when these requirement apply. The modification simply removes the term "permit" from the title of the table. (Vote 9-4)

G26-24

G27-24

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the proponents reason statement (Vote 14-0)

G27-24

# G28-24

Committee Action: As Submitted

Committee Reason: This proposal adds clarity for privacy of compartments in specific applications. (13-1)

G28-24

G29-24

Committee Action: Disapproved

Committee Reason: Disapproved based upon the action on F82-24. (Vote 14-0)

G29-24

# International Building Code - Egress

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

## E1-24 Part I

Committee Action: Disapproved

**Committee Reason:** While this is a good clarification for the defined term accessible, in several sections, there was concern about "open" being interpreted as open for business, and not unrestricted access. This would be consistent with comments on E1-24 Part III heard by the Fire Committee. (Vote: 8-4)

E1-24 Part I

## E1-24 Part II

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it is a good clean up to coordinate the codes and eliminates any confusion by replacing words that can be misunderstood. (Vote: 13-0)

E1-24 Part II

## E1-24 Part III

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: There was disagreement over the deletion and replacement of the existing word "accessibility" in Section A103.2 and that the word replacement needs to be determined outside of the hearings. (Vote: 12-1)

E1-24 Part III

# E1-24 Part IV

Committee Action: As Submitted

**Committee Reason:** The committee voted to approve the proposal as submitted by 12-2. Since the word "accessible" is most frequently associated with the need for access for people with disabilities, the committee has agreed with the proponent to change the remaining codes to remove the word "accessible" and replace it with other words, defined terms, or phrases that do not imply the need for access for people who are physically disabled. Where coordination changes were either overlooked or included in new code changes, this

proposal brings clarity and consistency to the remaining codes. It aims to facilitate correlation with earlier proposal initiatives.

E1-24 Part IV

### E1-24 Part V

Committee Action: As Modified by Committee

**Committee Modification:** 

2024 International Residential Code

**P2903.10.1 Service valve.** Each *dwelling unit* shall be provided with a *main* shutoff valve, <u>provided with access and located</u> near the entrance of the water service. The valve shall be of a full-open type having nominal restriction to flow, with provision for drainage such as a bleed orifice or installation of a separate drain valve. Additionally, the water service shall be valved at the curb or *lot line* in accordance with local requirements.

**P2903.11 Hose bibb.** Hose bibbs subject to freezing, including the "frostproof" type, shall be equipped with a stop-and-waste-type valve <u>located</u> inside the *building* and provided with access so that they can be controlled and drained during cold periods.

**Exception:** Frostproof hose bibbs installed such that the stem extends through the building insulation into an open heated or *semiconditioned space* need not be separately valved (see Figure P2903.11).

**Committee Reason:** The committee voted 10-0 to approve Grove-MP1's modified proposal. The final vote is 10-0, as modified. The revised code language clarifies the original suggested code language to reduce any possibility of misunderstanding the intent of the code section.

E1-24 Part V

## E2-24 Part I

Committee Action: As Submitted

**Committee Reason:** This is a clean-up for the scoping and is coordinated with G1-24 Part II. Removal of the definitions section in the IFC would coordinate the IFC with the rest of the codes in how they handle definitions. (Vote: 14-0)

E2-24 Part I

# E2-24 Part II

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was based on the proponent's reason statement. (Vote: 13-0)

## E3-24

Committee Action: Disapproved

**Committee Reason:** The proposal was disapproved because the change in verbiage could be interpreted to broaden this requirement from means of egress to all parts of the building, such as catwalks and tunnel. (Vote: 8-6)

E3-24

#### E4-24

Committee Action: As Submitted

**Committee Reason:** The proposal will align the text with ICC A117.1 and eliminates the confusion between horizontal and protrusion. (Vote: 13-1)

E4-24

# E5-24

Committee Action: As Submitted

**Committee Reason:** The proposal removed redundant language. This would also allow for interior and exterior applications. (Vote: 14-0)

E5-24

# E6-24

Committee Action: As Submitted

**Committee Reason:** The requirement for a space being used for two occupancies should be generally applicable, not just applicable for occupant load. (Vote: 13-1)

E6-24

# E7-24

Committee Action: As Submitted

**Committee Reason:** This requirement for the occupant load for air traffic control towers will be consistent with the Federal Aviation Administration and NFPA 101. (Vote 14-0)

E7-24

### E8-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved. What about automated facilities other than Group H-5? Is this not already permitted in the exception to Section 1004.4? 300 square feet per occupant might not be an accurate number for all facilities - this appears to take away options. Why can this not just be addressed in the occupant load table? The first sentence in the new section is unclear - it needs to be broken up. (Vote: 9-5)

E8-24

## E9-24

Committee Action: As Submitted

**Committee Reason:** The occupant load factor of 500 sq.ft. per person is more consistent with current information technology equipment facilities given the level of automation. This will not reduce safety and will legitimately reduce the fixture count. (Vote: 14-0)

E9-24

## E10-24

Committee Action: Disapproved

**Committee Reason:** A definition for commercial motor vehicles should be added into the code so that this can be uniformly enforced across jurisdictions. There was not justification provided for the occupant load factor for non-CMV areas. What would non-CMV areas include? If aircraft hangers have occupant load factors of 300 sq.ft., the 500 sq.ft. occupant load factor seems high. (Vote: 9-5)

E10-24

# E11-24

Committee Action: As Modified by Committee (AMC1)

#### **Committee Modification:**

#### 2024 International Building Code

#### TABLE 1004.5 MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

FUNCTIONOFSPACE	OCCUPANT LOAD FACTORa
Warehouses, self-service storage facilities	500 gross

#### 2024 International Fire Code

#### [BE]TABLE 1004.5 MAXIMUM FLOOR AREA ALLOWANCES PER OCCUPANT

FUNCTIONOFSPACE	OCCUPANT LOAD FACTORa
Warehouses, self-service storage facilities	500 gross

**Committee Reason:** The modification uses a defined term. The occupant load factor increase from 300 to 500 sq.ft. per person is reasonable based on use. Self-service storage facilities are not warehouses or accessory storage. (Vote 13-1)

E11-24

#### E12-24

Committee Action: As Submitted

**Committee Reason:** This section is for areas outside of the building, so occupiable roofs should not be included in this section. This modification eliminates a conflict. The occupant load factor for occupied roofs should be set by the use of the space in Table 1004.5, not assigned by the building official. (Vote: 10-4)

E12-24

#### E13-24

Committee Action: As Submitted

Committee Reason: The addition of 'maintenance' clarifies the intent. (Vote: 14-0)

E13-24

### F14-24

Committee Action: As Submitted

Committee Reason: The revised text removes redundant language that is included in the definition of 'approved'. It was suggested that 'approved by the building official' should also be revised in other sections in the code (e.g. 1004.5, 1009.8.1, 1013.5). The rewording also clarifies that the concentrated business occupant load factor is a requirement, not a choice in those areas. (Vote: 8-7).

## E15-24

Committee Action: Disapproved

**Committee Reason:** The intent is good, but there are some additional clean ups needed. This might be better located in a subsection. The terminology mixes 'required capacity' and occupant load - this needs to be separated. There should be a pointer in one of the sections to reduce duplication. (Vote: 13-1)

E15-24

## E16-24

Committee Action: As Submitted

**Committee Reason:** This change is consistent with the format in the Chapter 5 tables for NFPA 13, 13R and 13D sprinkler systems. Clarification is needed to indicate travel distance in Group R-2 townhouses, R-3 and R-4 for where an NFPA13D automatic sprinkler system is permitted to be used by Chapter 9. (Vote: 14-0)

E16-24

## E17-24

Committee Action: Disapproved

**Committee Reason:** The proposal is trying to replace the common path of travel with the maximum travel distance limits. This is not a correct application of the code. The common path of travel is a subset of exit access travel distance, and the common path of travel can be within a single exit space in a two exit building. (Vote: 13-1)

E17-24

# E18-24

Committee Action: Disapproved

**Committee Reason:** The change adds confusion. Does a pedestrian trafficway require a sidewalk or barriers along the vehicle ramp? If you have a pedestrian route, this is not longer a "vehicular ramp only for vehicle traffic." (Vote: 14-0)

E18-24

#### E19-24

Committee Action: Disapproved

Committee Reason: There were several questions about the proposal. Does this apply to equipment platforms inside and outside a building? How would you determine the occupant load of an equipment platform when this space is defined as non-occupied. How would a code official determine and occupant load where there is no occupant load in the table? Would ladders be permitted as a exit they are permitted in Section 505.3? What is the justification for the size limits? Should there be separation requirements for the two exits? (Vote: 14-0)

E19-24

# E20-24

Committee Action: As Submitted

**Committee Reason:** The path of exit access travel distance should be in Section 1017, not Section 1006 with exits from stories. There was discussion as to if this should have been moved to Section 1016 instead. The requirement of only one story for exit access is clarified in Section 1019.1 by the added reference. (Vote: 14-0)

E20-24

## E21-24

Committee Action: As Submitted

**Committee Reason:** The modification adds clarity and removes a loophole in the code. The modification to exception 2 removes the mis-interpretation to use exit stairways as a path from upper stories rather than discharge directly to the level of exit discharge. (Vote: 10-4)

E21-24

# E22-24

Committee Action: Disapproved

Committee Reason: Is a NFPA13D permitted in a townhouse? It needs to be clarified that a NFPA13D system is limited to three story units so it will not be interpreted to be allowed in taller Group R-2 dwelling units. Is a NFPA13D system permitted in a Group R-2 with sleeping units? (Vote: 12-2)

E22-24

#### E23-24

Committee Action: Disapproved

**Committee Reason:** Combining the two tables appears to increase the number of sleeping units permitted to have a single exit. The revised table could be read to allow each of the sleeping units to have 20 occupants - there should be a unit count. The title on the third column of 'maximum number' is not clear. (Vote: 8-5)

E23-24

### E24-24

Committee Action: Disapproved

Committee Reason: The cost to build the single exit building with all the added requirements would negate the savings for the area with the single stairway. There seems to be a disregard for the fire service operations and basic code concepts. How would the emergency escape and rescue openings work in this taller building. This needs to be coordinated with Table 504.4 for types of construction and height limitations. Many jurisdictions are not dealing with infill lots, so this is not justified for new construction with larger lot sizes. Egress stairways are also used for other purposes other than egress from fire, such as police or emergency service responses. This might be better as an appendix for adoption by jurisdictions that have have a need. There should also be a height limit since stories can have different heights and mezzanines in the space - so a six story building could very widely in height. There should be more industry reports showing how the 2nd stairway is actually the limiting factor - what is provided seems to be antidotal. The loss of the 2nd stairway greatly increases the risk for the occupants. (Vote: 14-0)

E24-24

# E25-24

Committee Action: Disapproved

**Committee Reason:** The disapproval is consistent with the committee action on E24-24. The transient nature of the occupants decreases the familiarity of the occupants with the building, so this single exit building should not be permitted for Group R-1 occupancies. (Vote: 14-0)

E25-24

# E26-24

Committee Action: As Submitted

**Committee Reason:** The change is necessary to clarify the requirements for travel distance in these configurations. This will aid the code official in determining measurements. (Vote: 13-1)

### E27-24

Committee Action: Disapproved

**Committee Reason:** While the word 'reasonable' is subjective, there is no justification for the 1/4 separation. There is no reduction allowances for a sprinklered building. Travel distance is to the closest exit - the modification would reduce design flexibility by limiting the travel distance options. The separation would be a problem for long narrow buildings that are open only on the narrow ends. The intent for separation so that exits are not blocked is clear in the existing text. (Vote: 10-4)

E27-24

### E28-24

Committee Action: Disapproved

**Committee Reason:** While this proposal eliminates redundant language and focuses on defined terms, Section 1008.2.1 will be misread without 'landings'. (Vote: 10-4)

E28-24

## E29-24

Committee Action: As Submitted

**Committee Reason:** The change will allow for exit access stairways to be illuminated to the same level as the rest of the exit access path of travel. The proponents could look at contrasting requirements for exit access stairways as an alternative for exit access stairways in low light environments. More light is not always better. Exterior exit stairway and exit discharge is addressed in another section and proposal E30-24. (Vote: 10-4)

E29-24

# E30-24

Committee Action: As Submitted

**Committee Reason:** Photometric plans can be provided by the designer to verify compliance. The average lighting level will address areas with shadows. The current requirement for a minimum of 10 foot candles would require lighting levels much too high. This proposal matches lighting design recommendations. The 1 footcandle minimum will still be applicable. (Vote: 12-2)

E30-24

#### E31-24

Committee Action: As Submitted

**Committee Reason:** This gives a measurement point to determine averages for officials and designers. The proposal puts the lighting levels on the walkline within reach of the handrail - this is where the lighting is most needed. (AS 11-3)

E31-24

#### E32-24

Committee Action: Disapproved

**Committee Reason:** There needs to be greater than just emergency lighting levels when an occupant sensor fails - there needs to be a failsafe level set. There needs to be additional clarification for what happens as a person moves up or down the stairway. (Vote: 8-6)

E32-24

#### E33-24

Committee Action:

As Modified by Committee (AMC1)

#### **Committee Modification:**

#### 2024 International Building Code

**1008.2.1 Illumination level under normal power.** The interior—means of egress illumination level shall be not less than 1 footcandle (11 lux) at the walking surface. Along *exit access stairways*, exit stairways and at their required landings, the illumination level shall not be less than 10 footcandles (108 lux) at the walking surface when the *stairway* is in use.

**Exception:** For auditoriums, theaters, concert or opera halls and similar assembly occupancies, the illumination at the walking surface is permitted to be reduced during performances by one of the following methods provided that the required illumination is automatically restored upon activation of a premises' *fire alarm system*:

- 1. Externally illuminated walking surfaces shall be permitted to be illuminated to not less than 0.2 footcandle (2.15 lux).
- 2. Steps, landings and the sides of *ramps* shall be permitted to be marked with *self-luminous* materials in accordance with Sections 1025.2.1, 1025.2.2 and 1025.2.4 by systems *listed* in accordance with UL 1994.

#### 2024 International Fire Code

**[BE] 1008.2.1 Illumination level under normal power.** The interior—means of egress illumination level shall be not less than 1 footcandle (11 lux) at the walking surface. Along exit access stairways, exit stairways and at their required landings, the illumination level shall not be less than 10 footcandles (108 lux) at the walking surface when the stairway is in use.

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- 1. Externally illuminated walking surfaces shall be permitted to be illuminated to not less than 0.2 footcandle (2.15 lux).
- 2. Steps, landings and the sides of *ramps* shall be permitted to be marked with self-luminous materials in accordance with Sections 1025.2.1, 1025.2.2 and 1025.2.4 by systems *listed* in accordance with UL 1994.

**Committee Reason:** The modification is to delete 'interior' from Section 1008.2.1 was approved so that lighting will still be required on exterior exit stairways or egress balconies. The proposal will clarify requirements for illumination of the path of exit discharge. This is consistent with emergency lighting level. (Vote: 14-0)

E33-24

## E34-24

Committee Action: Disapproved

**Committee Reason:** Will the glare rate requires more fixtures? This is too broad and does not include allowances for lighting coming from surrounding properties. IES TM-15 is a technical memorandum, not a standard - there is little to no enforcement language in this document. This cannot be field verified so enforcement would be very difficult. (Vote: 12-2)

E34-24

## E35-24

Committee Action: Disapproved

Committee Reason: The original requirement was for multi-stall toilet rooms. Why is emergency lighting required in single occupant restroom where there might not be emergency lighting required in the space the toilet room was located in? As written this would require emergency lighting on individual stalls where the compartments extended floor to ceiling - that is a very high cost with minimal gain. (Vote: 11-3)

E35-24

# E36-24

Committee Action: As Submitted

**Committee Reason:** While these areas are typically already illuminated as part of the stairways, adding these areas to the list reinforces the importance of these areas being illuminated and will help in rescue assistance by emergency responders. (Vote: 13-1)

E36-24

#### E37-24

Committee Action: Disapproved

**Committee Reason:** In a two exit building with an elevator, adding the elevator does not preclude the fire department from using either stairway and the elevator. Requiring the elevator and one of the stairways to be separated would conflict with fire service access elevator requirements and center core buildings. Adding this additional criteria would complicate accessible means of egress further. The added sentence in Section 1009.1 is difficult to understand and enforce. See E38-24. (Vote: 12-2)

E37-24

### E38-24

Committee Action: As Submitted

**Committee Reason:** The continuity requirements are moved from Section 1009.7 and allows for an exception for an accessible route to the public way from both options at the level of exit discharge where an accessible route is not available to the public way. This proposal is preferred over E37-24. (Vote: 14-0)

E38-24

## E39-24

Committee Action: As Submitted

Committee Reason: The proposal better clarifies where elevators are required for assisted rescue. (Vote: 13-0)

E39-24

# E40-24

Committee Action: As Submitted

**Committee Reason:** It makes sense that the elevator is not needed to serve as an accessible means of egress from the first floor. At this level the egress path is to the exterior. (Vote: 14-0)

E40-24

# E41-24

Committee Action: Disapproved

**Committee Reason:** This clarification is needed to address occupied roofs. However, the exception does not address what happens in the basement levels - either address these or limit the exception to above grade. (Vote: 14-0)

E41-24

#### E42-24

Committee Action: As Submitted

**Committee Reason:** This closes loopholes in the code and clarifies that vehicle ramps cannot serve as an accessible means of egress and that the ramps must extend between levels. (Vote: 13-0)

E42-24

## E43-24

Committee Action: As Submitted

**Committee Reason:** This proposal provides guidance for an additional option for accessible means of egress in parking garages. This coordinates with the committee action on E42-24. (Vote: 12-1)

E43-24

## E44-24

Committee Action: Disapproved

**Committee Reason:** Contrast on stairways should be addressed directly in the code. A reference to ICC A117.1 for this would cause confusion. (Vote: 14-0)

E44-24

# E45-24

Committee Action: As Submitted

**Committee Reason:** This proposal better organizes the door height and width requirements. This also clarifies requirements for doors with 2 leaves with opposite swinging doors. (Vote: 14-0)

E45-24

#### F46-24

Committee Action: Disapproved

**Committee Reason:** The new Item 2 has no loss history to support the additional requirement for door swing. See also E47-24. (Vote: 11-3)

E46-24

#### E47-24

Committee Action: Disapproved

**Committee Reason:** The new Item 2 has no loss history to support the additional requirement for door swing. This is consistent with the committee action on E46-24. (Vote: 11-3)

E47-24

## E48-24

Committee Action: Disapproved

**Committee Reason:** The proposal was disapproved. This is not an issue - changing this will cause confusion. Removing "floor" would add confusion for threshold measurements in Section 1010.1.6. Landings are part of a floor, so they can be the same location. There are not boundary explanation on where a landing ends and a floor would start. (Vote: 13-1)

E48-24

# E49-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved. It is not clear on what the maximum height would be under Section 1709.5. How would this be evaluated, inspected or reviewed? This could be a conflict with ICC A117.1 and Fair Housing requirements. Hurricane and wind storm requirements are not applicable for all areas of the country like it is in Florida. (Vote: 14-0)

E49-24

# E50-24

Committee Action: Disapproved

Committee Reason: Places of detention or restraint are needed in many other occupancies other than just Group I-3. This includes police and courthouses with fewer than 6 occupants in the jail. Several other areas were identified in the testimony that should be allowed to use this section appropriately. This change does not address the issue of the schools misinterpreting this section for classrooms. (Vote: 14-0)

E50-24

#### E51-24

**Committee Action:** 

As Modified by Committee (AMC1)

**Committee Modification:** 

2024 International Building Code

**1010.2.1 Unlatching.** The unlatching of any door or leaf for egress shall require not more than one motion in a single linear or rotational direction to release all latching and all locking devices. locking devices. *Manual bolts* are not permitted.

#### **Exceptions:**

- 1. Places of detention or restraint.
- 2. Doors with manual bolts, automatic flush bolts and constant latching bolts as permitted by Section 1010.2.4, Item 4.
- 3. Doors from individual dwelling units and sleeping units of Group R occupancies as permitted by Section 1010.2.4, Item 5.
- 4. Doors serving individual toilet or bathing room or compartment shall not require more than two non-simultaneous motions.

#### 2024 International Fire Code

[BE] 1010.2.1 Unlatching. The unlatching of any door or leaf for egress shall require not more than one motion in a single linear or rotational direction to release all latching and all locking devices. locking devices. Manual bolts are not permitted.

#### **Exceptions:**

- 1. Places of detention or restraint.
- 2. Doors with manual bolts, automatic flush bolts and constant latching bolts as permitted by Section 1010.2.4, Item 4.
- 3. Doors from individual dwelling units and sleeping units of Group R occupancies as permitted by Section 1010.2.4, Item 5.
- 4. Doors serving individual toilet or bathing room or compartment shall not require more than two non-simultaneous motions.

**Committee Reason:** The modification clarified that operation is limited to two motions and not simultaneous motions. This proposal allows for a reasonable level of privacy and egress in these locations. This solves a problem with trying to allow for privacy indicators on single user restrooms. This will align with NFPA 101 which allows for two motions with a maximum load of 3 occupants. (Vote: 13-1)

E51-24

#### E52-24

Committee Action: As Submitted

Committee Reason: This coordinates the ISPSC and the IBC for swimming pool barriers. (Vote: 14-0)

E52-24

E53-24

Committee Action: Disapproved

**Committee Reason:** The concept is good, but there appears to be a conflict with the change in Section 403.5.3.1 with the exit discharge section in Section 1028. The proposed text could allow for the door at the stairway door discharging into the lobby to be locked. (Vote: 14-0)

E53-24

E54-24

Committee Action: Disapproved

**Committee Reason:** You could do a single action lock set on the bedroom to get the security you needed. There is a concern if there could be one of these on the bedroom and a second set on the unit door - there should not be two in a row. (Vote: 12-2)

E54-24

E55-24

Committee Action: As Submitted

**Committee Reason:** This is a good clarification for deadbolts - indicating that you should not have to open the deadbolt and operate the door handle at the same time. (Vote: 14-0)

E55-24

E56-24

Committee Action: As Submitted

**Committee Reason:** This proposal clarifies and cleans up the table and makes it more understandable. Allowances for mercantile occupancies that need wider doors to stock are addressed. (Vote: 12-1)

## E57-24

Committee Action: As Submitted

**Committee Reason:** This is necessary for today's high security environment. This improves and clarifies the types of locks permitted on schools that need to be used for school safety. This will help prevent the installation of barrier devices that do not allow access for emergency responders. This also addresses school security vestibules to allow for screening. (Vote: 10-4)

E57-24

### E58-24

Committee Action: As Submitted

Committee Reason: This removes a perceived conflict between Sections 1010.2.8 and 1010.4 for stadium gates. (Vote: 13-1)

E58-24

## E59-24

Committee Action: As Submitted

Committee Reason: This clarifies the requirements for electrical equipment rooms and coordinates with NFPA 70. (Vote 14-0)

E59-24

## E60-24

Committee Action: Disapproved

Committee Reason: The proposal was disapproved. Item 4 is a good clarification, however there was concerns about Exception 3 in Item 5. Where there are two doors in a series with delayed egress locks, should there be syncing of the doors; or is this all doors that could be reached? Exception 3 in item 5 is too difficult to program and test and should be addressed through alternative means on a case by case basis. (Vote: 11-2)

E60-24

## E61-24

Committee Action: As Submitted

**Committee Reason:** The proponent addressed many of the concerns brought up for control devices in the last cycle. While the occupant load is limited, this can be used for small areas with limited access in larger facilities such as clean rooms or cash rooms. (Vote: 8-6)

E61-24

E62-24

Committee Action: As Submitted

Committee Reason: The reference to Section 1010.1 for doors adjacent to revolving doors improves options. (Vote: 14-0)

F62-24

### E63-24

Committee Action: Disapproved

Committee Reason: These types of doors should be included in the code, but the requirements need further work. Items 3 and 4 could not be verified by the code official since they would not have access to airport security items. Several of the new terms used in the proposal should be defined. Should there be a minimum depth between doors? Item 2 needs to provide guidance for the code official for access controls, connection to alarm systems, limitations for the number of occupants, etc. similar to the other special locking arrangements. (Vote: 12-2)

E63-24

### E64-24

Errata: This proposal includes unpublished errata IBC and IFC

1010.5.1.2 Operation. Each device shall operate freely in the direction of egress travel.

**Exception:** Free operation in the direction of egress travel is not required for power controlled devised device that fail open when primary power is lost and on manual release by an employee in the area.

Committee Action: As Submitted

Committee Reason: This proposal provides good guidance for these types of turnstiles. (Vote: 13-1)

E64-24

## E65-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved. The committee felt that E64-24 was more comprehensive. The proposed language would be difficult to enforce. (Vote: 14-0)

E65-24

## E66-24

Committee Action: As Submitted

**Committee Reason:** This proposal clarifies requirements for curved and spiral stairway landings. This would be consistent with the International Residential Code. (Vote: 14-0)

E66-24

### E67-24

Committee Action: Disapproved

Committee Reason: This proposal is overly complicated and confusing. (Vote: 9-5)

E67-24

## E68-24

Committee Action: Disapproved

**Committee Reason:** The intent of the language for the nosing projection measurements is an improvement, however, the revised text is confusing. (Vote: 8-6)

E68-24

## E69-24

Errata: This proposal includes unpublished errata for IBC and IFC

The following language was shown as struck out in the 3rd sentence of the proposal. However, this language is not current text. This language will be removed from the proposal.

"depth of landings shall be measured in the direction of travel of the flight served and shall be not less than"

Committee Action: As Submitted

**Committee Reason:** This proposal clarifies the requirements for measurement of the landings. The committee was concerned that this proposal removed "floor or" that was disapproved by the committee in E48-24. (Vote: 12-2)

E69-24

### E70-24

Committee Action: Disapproved

**Committee Reason:** This proposal should be addressed in Section 1023 for the stairway enclosure, not the general stairway provisions. As written, it could be read to apply to exit access stairways. There should be a separate exception for an exterior wall. The exception needs to clarify if this is for stairways totally within the enclosure, or supporting elements that come through the enclosure walls. (Vote: 14-0)

E70-24

## E71-24

Committee Action: Disapproved

**Committee Reason:** There was a discussion on if the edge of the tread would be considered a walking surface that was subject to the floor walking surface requirements or not. The committee had different opinions on if the gap at the side of a tread would be a hazard for persons on the stairway using a cane or crutches. Some members felt that if the gap was away from the walkline it would not be a safety hazard. The proposal should be brought back with some of the clarifications proposed in the floor modifications. (Vote: 8-4).

E71-24

## E72-24

Committee Action: As Submitted

Committee Reason: This proposal provides guidance for limits for landing slope. (Vote 11-3)

E72-24

## E73-24

Committee Action: Disapproved

Committee Reason: While contrast on stairways is important, the proposed requirements are not clear. The committee felt that the language was not clear enough to apply consistently and correctly in the field. The terms 'steps' is not defined in the code - this should be 'treads'. The requirements for the treads and landings should be in Sections 1011.5 and 1011.6. The application of this to "interior and exterior stairways" would include to all convenience stairways (exit access), as well as stairways in the exit discharge - this is over reaching. Are there any studies that have taken into consideration stairway continuity and handrails to address the safety concerns brought up by the proponents? What would be an acceptable material for the stripes? How would you verify contrast on stairways that were not a solid color? See also E74-24. (Vote: 13-1)

E73-24

### E74-24

Committee Action: Disapproved

**Committee Reason:** Same reasons as E73-24. In addition, the width of the stripes should be a maximum of 2 inches. There were several issues brought up during the testimony regarding testing - how and where do you take the measurements? Can interpretations be based on plans, or is the only option to field verify? Direction must be provided for the code official. ASTM E1331-15 does not specifically address contrast. This is not the right standard. This is already addressed in Section 1025.4. (Vote: 13-1)

E74-24

### E75-24

Committee Action: As Modified by Committee (AMC1)

#### **Committee Modification:**

2024 International Building Code

Revise as follows:

**1011.8 Vertical rise.** A *flight* of *stairs* shall not have a vertical rise greater than <del>12 feet 7 inches (3835 mm)</del> <u>12 feet (3658mm)</u> between floor levels or landings.

#### **Exceptions:**

- 1. Spiral stairways used as a means of egress from technical production areas.
- 2. Within individual dwelling units and sleeping units in Group R-2 and R-3 occupancies, the vertical rise shall not be greater than 12 feet 7 inches (3835mm) between floor levels or landings.

2024 International Fire Code

Revise as follows:

[BE] 1011.8 Vertical rise. A *flight* of *stairs* shall not have a vertical rise greater than <del>12 feet 7 inches (3835 mm)</del> <u>12 feet (3658 mm)</u> between floor levels or landings.

#### Exceptions:

1. Spiral stairways used as a means of egress from technical production areas.

2. Within individual dwelling units and sleeping units in Group R-2 and R-3 occupancies, the vertical rise shall not be greater than 12 feet 7 inches (3835mm) between floor levels or landings.

**Committee Reason:** The modification recognizes that the change from 12'-0" to 12'-7" for the stairway run is based on the stairway configuration (tread/riser size) permitted in residential units. There is no justification for this in other occupancies. The proposal as modified would coordinate with the International Residential Code. (Vote:14-0)

E75-24

### E76-24

#### **Committee Action:**

As Modified by Committee (AMC1)

#### Committee Modification:

#### 2024 International Building Code

**1011.11 Handrails.** Flights of stairways shall have handrails on each side and shall comply with Section 1014. Where glass is used to provide the handrail, the handrail shall comply with Section 2407.

#### **Exceptions:**

- 1. Flights of stairways within dwelling units and flights of spiral stairways are permitted to have a handrail on one side only.
- 2. Decks, patios and walkways that have a single change in elevation where the landing depth on each side of the change of elevation is greater than what is required for a landing do not require *handrails*.
- 3. In Group R-3 occupancies, a change in elevation consisting of a single riser at an entrance or egress door does not require *handrails*.
- 4. Changes in room elevations of three or fewer risers within *dwelling units* and *sleeping units* in Groups R-2 and R-3 do not require *handrails*.
- 5. Where a platform lift is in a stationary position and the floor of the platform lift serves as the upper landing of a *stairway*, *handrails* shall not be required on the *stairway*, provided that all of the following criteria are met:
  - 5.1. The stairway contains not more than two risers.
  - 5.2. A handhold, positioned horizontally or vertically, is located on one side of the stairway adjacent to the top landing.
  - 5.3. The handhold is located not less than 34 inches (864 mm) and not more than 42 inches (1067 mm) above the bottom landing of the *stairway*.
  - 5.4. The handhold gripping surface complies with Section 1014.4, and is not less than 4.5 inches (114 mm) in length.
- 6. A flight of stairs between a stage and the audience seating area and in view of the audience is permitted to have a handrail on <u>only</u> one side where the stairs are not required for egress.

#### 2024 International Fire Code

[BE] 1011.11 Handrails. Flights of stairways shall have handrails on each side and shall comply with Section 1014. Where glass is used to provide the handrail, the handrail shall comply with Section 2407 of the International Building Code.

#### **Exceptions:**

1. Flights of stairways within dwelling units, and flights of spiral stairways are permitted to have a handrail on one side only.

- 2. Decks, patios and walkways that have a single change in elevation where the landing depth on each side of the change of elevation is greater than what is required for a landing do not require *handrails*.
- 3. In Group R-3 occupancies, a change in elevation consisting of a single riser at an entrance or egress door does not require *handrails*.
- 4. Changes in room elevations of three or fewer risers within *dwelling units* and *sleeping units* in Group R-2 and R-3 do not require *handrails*.
- 5. Where a platform lift is in a stationary position and the floor of the platform lift serves as the upper landing of a *stairway*, *handrails* shall not be required on the *stairway*, provided that all of the following criteria are met:
  - 5.1. The *stairway* contains not more than two risers.
  - 5.2. A handhold, positioned horizontally or vertically, is located on one side of the stairway adjacent to the top landing.
  - 5.3. The handhold is located not less than 34 inches (864 mm) and not more than 42 inches (1067 mm) above the bottom landing of the *stairway*.
  - 5.4. The handhold gripping surface complies with Section 1014.4 and is not less than 4.5 inches (114 mm) in length.
- 6. A flight of stairs between a stage and the audience seating area and in view of the audience is permitted to have a handrail on <u>only</u> one side where the stairs are not required for egress.

**Committee Reason:** The modification to add the word 'only' was for additional clarification. This is a reasonable level of safety for stairways to stages. There is not history of injuries at this location. This is commonly permitted with many stages. (Vote: 13-1)

E76-24

## E77-24 Part I

Committee Action: As Submitted

**Committee Reason:** The requirements for stairway access to the roof is more appropriately relocated in Chapter 12 in the IBC and Chapter 5 in the IFC. (Vote: 12-2)

E77-24 Part I

### E77-24 Part II

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it addresses access to unoccupied spaces, and it is being appropriately located accordingly. It was additionally noted that it makes no technical changes to the code requirements. (Vote: 13-0)

E77-24 Part II

### E78-24

Committee Action: Disapproved

**Committee Reason:** As written the pictogram is required. This should allow for this the pictogram as an option and/or an exit only sign so that people can get used to this type of exit sign. This is only included under externally illuminated exit signage - what about internally illuminated exit signage. The cost impact indicates this a cost savings, but requiring additional signage would be a cost increase. (Vote: 14-0)

E78-24

### E79-24

Committee Action: Disapproved

**Committee Reason:** Since this is a non-required handrail, this should not be an exception under required handrails, and it can be any size or shape - so this section would not apply. This is over reaching when applied to all occupancies. If this is a concern for health care facilities, it should be a requirement limited to those occupancies. (Vote: 14-0)

E79-24

## E80-24

Committee Action: Disapproved

**Committee Reason:** The text provides clarity, but a graphic should be included. This allows for thin horizontal flat rails - this would not be comfortably grasped, so this should also be addressed. See E81-24. (Vote: 14-0).

E80-24

## E81-24

Committee Action: Disapproved

Committee Reason: Same reasons as E80-24. (Vote: 14-0)

E81-24

## E82-24

Committee Action: As Submitted

**Committee Reason:** Moving this text from an exception to the mandatory requirements is appropriate. There was a suggestion to add 'where provided'. (Vote: 9-3)

E82-24

#### E83-24

#### Committee Action:

As Modified by Committee (AMC1)

#### **Committee Modification:**

#### 2024 International Building Code

**1014.7 Handrail extensions.** Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent flight of stairs or ramp run. Where handrails are not continuous between flights, the handrails shall extend horizontally not less than 12 inches (305 mm) beyond the top landing nosing and continue to slope for the depth of one tread beyond the bottom tread nosing. At ramps where handrails are not continuous between runs, the handrails shall extend horizontally above the landing 12 inches (305 mm) minimum beyond the top and bottom of ramp runs. The extensions of handrails shall be in the same direction of the flights of stairs at stairways and the ramp runs at ramps and shall extend the required minimum length before any change in direction and decrease in the clearance required by Section 1014.5 and 1014.8.

#### **Exceptions:**

- 1. Handrails within a dwelling unit that is not required to be accessible need extend only from the top <u>landing</u> nosing to the bottom <u>tread</u> nosing <u>within</u> <u>of</u> the flight.
- 2. *Handrails* serving *aisles* in rooms or spaces used for assembly purposes are permitted to comply with the handrail extensions in accordance with Section 1030.16.
- 3. Handrails for alternating tread devices and ships ladders are permitted to terminate at a location vertically above the top and bottom risers. Handrails for alternating tread devices are not required to be continuous between flights or to extend beyond the top or bottom risers.

#### 2024 International Fire Code

[BE] 1014.7 Handrail extensions. Handrails shall return to a wall, guard or the walking surface or shall be continuous to the handrail of an adjacent *flight* of stairs or *ramp* run. Where handrails are not continuous between *flights*, the handrails shall extend horizontally not less than 12 inches (305 mm) beyond the top landing nosing and continue to slope for the depth of one tread beyond the bottom tread nosing. At *ramps* where handrails are not continuous between runs, the handrails shall extend horizontally above the landing 12 inches (305 mm) minimum beyond the top and bottom of *ramp* runs. The extensions of *handrails* shall be in the same direction of the *flights* of stairs at stairways and the ramp runs at *ramps* and shall extend the required minimum length before any change in direction and decrease in the clearance required by Section 1014.5 and 1014.8.

#### **Exceptions:**

- 1. Handrails within a dwelling unit that is not required to be accessible need extend only from the top <u>landing</u> nosing to the bottom <u>tread</u> nosing <u>within</u> <u>of</u> the flight.
- 2. *Handrails* serving *aisles* in rooms or spaces used for assembly purposes are permitted to comply with the handrail extensions in accordance with Section 1030.16.
- 3. Handrails for alternating tread devices and ship's ladders are permitted to terminate at a location vertically above the top and bottom risers. Handrails for alternating tread devices are not required to be continuous between flights or to extend beyond the top or bottom risers.

**Committee Reason:** The modifications made the language in exception 1 consistent with the terminology above and provides a correct reference point. The proposal improves consistency in the requirements and exceptions for handrail extensions. (Vote: 12-0)

E83-24

### E84-24

Committee Action: Disapproved

**Committee Reason:** The exception does not address ramps. Section 1014 is for required handrails; non-required handrails do not need to be exempted. It is an interpretation issue for the code official for what should be required for additional handrails. (Vote: 14-0)

E84-24

## E85-24

Committee Action:

As Modified by Committee (AMC1)

#### **Committee Modification:**

**1014.8 Clearance.** Clear space between a *handrail* and a wall or other surface shall be not less than  $1^{1}/_{2}$  inches (38 mm). A *handrail* and a wall or other surface adjacent to the *handrail* shall be free of any sharp or abrasive elements.

**Exceptions:** Beyond the length of the required handrail extension the following exceptions to clearance shall be allowed:

- 1. A decrease in the clearance due to the curvature or angle of handrail returns.
- 2. Mounting flanges not more than  $\frac{1}{2}$ -inch (12.7 mm) in thickness at the returned ends of handrails.

2024 International Fire Code

[BE] 1014.8 Clearance.

Clear space between a handrail and a wall or other surface shall be not less than  $1^{1}/_{2}$  inches (38 mm). A handrail and a wall or other surface adjacent to the handrail shall be free of any sharp or abrasive elements.

#### **Exceptions:**

Beyond the length of a required handrail extension the following exceptions to clearance shall be allowed:

- 1. A decrease in the clearance due to the curvature or angle of handrail returns.
- $\underline{\text{2. }} \underline{\text{Mounting flanges not more than }} \underline{\text{1}} \underline{\text{2-inch (12.7 mm) in thickness at the returned ends of handrails.}}$

**Committee Reason:** The modification restored the exceptions but added clarity for the requirements in the rewording. The modified proposal will coordinate with A117.1 requirements for handrail extensions. (Vote: 14-0)

E85-24

#### F86-24

Committee Action: Disapproved

**Committee Reason:** While some of the committee felt that this was a clarification, where the handrail overlaps the required stairway width, the stairway can be wider than 60" and a person could still be within 30" of a handrail. The confusion is a misinterpretation of the difference between provided stairway width and required stairway width. See also E87-24. (Vote: 9-5)

E86-24

### E87-24

Committee Action: Disapproved

**Committee Reason:** The term monumental stairways is commonly understood. The proponent should review the submitted modification and work with the proponents of E86-24. (Vote: 13-1)

E87-24

### E88-24

Committee Action: As Submitted

**Committee Reason:** This provides consistency with the International Residential Code and is an editorial clarification for application of the code. (Vote: 14-0)

E88-24

### E89-24

Committee Action: As Modified by Committee (AMC1)

# Committee Modification: 2024 International Building Code

accordance with Section 1607.9.

**1015.2 Where required.** *Guards* shall be located along open-sided walking surfaces, such as *mezzanines*, *equipment* platforms, aisles, stairs, ramps and landings, that are located more than 30 inches (762 mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side, at the perimeter of occupiable roofs, and at walking surfaces near retaining walls in accordance with Section 1807.2.5. *Guards* shall be adequate in strength and attachment in

**Exceptions:** Guards are not required for the following locations:

1. On the loading side of loading docks or piers.

- 2. On the audience side of stages and raised platforms, including stairs leading up to the stage and raised platforms.
- 3. On raised stage and platform floor areas, such as runways, ramps and side stages used for entertainment or presentations.
- 4. At vertical openings in the performance area of *stages* and *platforms*.
- 5. At elevated walking surfaces appurtenant to *stages* and *platforms* for access to and utilization of special lighting or equipment.
- 6. Along vehicle service pits not accessible to the public.
- 7. In assembly seating areas at cross aisles in accordance with Section 1030.17.2.
- 8. On the loading side of station platforms on fixed guideway transit or passenger rail systems.
- 9. Portions of an *occupiable roof* located less than 30 inches (762 mm) measured vertically to adjacent unoccupiable roof areas where *approved guards* are present at the perimeter of the roof.
- 10. At portions of an *occupiable roof* where an *approved* barrier is provided.

#### 2024 International Fire Code

[BE] 1015.2 Where required. Guards shall be located along open-sided walking surfaces, such as mezzanines, equipment platforms, aisles, stairs, ramps and landings, that are located more than 30 inches (762 mm) measured vertically to the floor or grade below at any point within 36 inches (914 mm) horizontally to the edge of the open side, at the perimeter of occupiable roofs, and at walking surfaces near retaining walls in accordance with Section 1807.2.5 of the International Building Code. Guards shall be adequate in strength and attachment in accordance with Section 1607.9 of the International Building Code.

**Exception:** Guards are not required for the following locations:

- 1. On the loading side of loading docks or piers.
- 2. On the audience side of stages and raised platforms, including stairs leading up to the stage and raised platforms.
- 3. On raised stage and platform floor areas, such as runways, ramps and side stages used for entertainment or presentations.
- 4. At vertical openings in the performance area of stages and platforms.
- 5. At elevated walking surfaces appurtenant to stages and platforms for access to and utilization of special lighting or equipment.
- 6. Along vehicle service pits not accessible to the public.
- 7. In assembly seating areas at cross aisles in accordance with Section 1030.17.2.
- 8. On the loading side of station platforms on fixed guideway transit or passenger rail systems.
- 9. Portions of an *occupiable roof* located less than 30 inches (762 mm) measured vertically to adjacent unoccupiable roof areas where approved guards are present at the perimeter of the roof.
- 10. At portions of an *occupiable roof* where an *approved* barrier is provided.

**Committee Reason:** The modification removed subjective language. The requirement should be in the guards section, not in Section 1807.2.5, however, until this gets relocated, the proposal added a necessary pointer for guards on retaining walls. (Vote: 12-2)

E89-24

#### E90-24

Committee Action: As Submitted

**Committee Reason:** The term 'approved' is not needed in Exception 9. This is the only place in the code 'approved guards' is used. Elements other than guards area allow in Exception 10. (Vote: 13-1)

E90-24

E91-24

Committee Action: Disapproved

Committee Reason: This is a run on sentence that needs to be edited. (Vote: 14-0)

E91-24

E92-24

Committee Action: Withdrawn

E92-24

E93-24

Committee Action: Disapproved

**Committee Reason:** The proposal needs to clarify that Group R-2 townhouses are limited to 3 stories when using a NFPA13D system this might be in the new footnote. It needs to be clarified where Group R-3 and R-4 are allowed to not have a limit on the exit access travel distance. Section 1006.2.2.6 this appears to reduce the travel distance to 125' for Group R-3 and 75' for Group R-4. (Vote:12-2)

E93-24

E94-24

Committee Action: As Modified by Committee (AMC1)

**Committee Modification:** 

2024 International Building Code

**1017.2.3 Group H-5 increase.** The maximum exit access travel distance shall be 300 feet (91 m) in the *fabrication areas* of Group H-5 occupancies where all of the following conditions are met:

- 1. The width of the fabrication area is 300 feet (91 m) or greater.
- 2. The area of the *fabrication area* is 220,000 square feet (18 600 m<sup>2</sup>) or greater.
- 3. The height of the *fabrication area*, measured between the raised metal floor and the clean filter ceiling, is 16 feet (48 768 mm) or greater.
- 4. The supply ventilation rate is 20 cubic feet per minute per square foot (0.556 m<sup>3</sup>/min/m<sup>2</sup>) or greater and shall remain operational.
- 5. A smoke detection system with remote indication and manual shutoff capability of the HVAC system at the emergency control station is required.

#### 2024 International Fire Code

**[BE] 1017.2.3 Group H-5 increase.** The maximum *exit access* travel distance shall be 300 feet (91 m) in the fabrication areas of Group H-5 occupancies where all of the following conditions are met:

- 1. The width of the fabrication area is 300 feet (91 m) or greater.
- 2. The area of the fabrication area is 220,000 square feet (18 600  $\mathrm{m}^2$ ) or greater.
- 3. The height of the *fabrication area*, measured between the raised metal floor and the clean filter ceiling, is 16 feet (48 768 mm) or greater.
- 4. The supply ventilation rate is 20 cubic feet per minute per square foot (0.556 m<sup>3</sup>/min/m<sup>2</sup>) or greater and shall remain operational.
- 5. A smoke detection system with remote indication and manual shutoff capability of the HVAC system at the emergency control station is required.

**Committee Reason:** The modification indicates which systems are being shut off. The proposal is appropriate based on the modeling performed and referenced in the reason statement. The proponent indicated the increase in travel distance was based on assumption of this system being in place. This would be consistent with the committee action for the IMC and IFC. (Vote: 11-3)

E94-24

### E95-24

Committee Action: As Submitted

**Committee Reason:** The revised table clarifies application of the code for corridor fire-resistance rating where an NFPA13D system is provided. (Vote 10-4)

E95-24

## E96-24

Committee Action: Disapproved

Committee Reason: The proposal was disapproved. The school fire in 1958 is not an appropriate reference for school buildings as they

are built today - schools are constructed with passive and active fire protection systems. Children have monthly fire drills their entire life, so they are well trained in school evacuation. There have been no fire deaths in a school since 1958. There is no recent fire data provided for this significant change in cost for schools - this is not an incremental cost as indicated in the cost impact statement. Closers on classrooms doors are a problem for younger children to open on their own - so fire rated doors will be propped open by the teacher. (Vote: 14-0)

E96-24

### E97-24

Committee Action: Disapproved

Committee Reason: The proposal was disapproved. To leave a protected exit stairway for a path open to the outside and then back into a protected exit stairway does not seem to maintain the the same level of protection to the exit discharge. If an 'exit pathway' is a new exit element, it should be in it's own section, similar to exit passageways, not lumped under the general exit requirements in Section 1022. The stairway termination requirements need to be addressed. Ways to keep the outside path clear need to be addressed. Either clarify what markings are required, or provide something more substantial than just a marked path. There are no limitation on the use of the roof for other occupancies that might be an obstruction for the path of egress. There are no travel distance limits for this element. This seems like it could already be addressed with horizontal exits. (Vote: 13-0)

E97-24

## E98-24

**Committee Action:** 

As Modified by Committee (AMC1)

#### Committee Modification:

2024 International Building Code

**1023.2 Construction.** Enclosures for interior exit *stairways* and *ramps* shall be constructed as *fire barriers* in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 711, or both. *Interior exit stairway* and *ramp* enclosures shall have a *fire-resistance rating* of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of *stories* connected by the interior exit *stairways* or *ramps* shall include any *basements*, but not any *mezzanines*. Enclosures for interior *exit stairways* and *ramps* shall have a *fire-resistance rating* not less than the floor assembly penetrated, but need not exceed 2 hours.

#### **Exceptions:**

- 1. Interior exit stairways and ramps in Group I-3 occupancies in accordance with the provisions of Section 408.3.8.
- 2. Interior exit stairways within an atrium enclosed in accordance with Section 404.6.
- 3. Interior exit stairways in accordance with Section 510.2.
- 4. Interior exit stairways in Group R-3 occupancies connecting less than 4 stories within and serving an individual unit. s in Group R-3 occupancies and not connecting more than 4 stories are not required to enclosed.

5. Interior exit stairways in Group R-3 occupancies, where the interior exit stairway does not serve more than one dwelling unit and where the interior exit stairway does not connect more than 3 stories, are not required to enclosed within the unit it serves.

2024 International Fire Code

[BE] 1023.2 Construction. Enclosures for *interior exit stairways* and *ramps* shall be constructed as *fire barriers* in accordance with Section 707 of the International Building Code or *horizontal assemblies* constructed in accordance with Section 711 of the International Building Code, or both. *Interior exit stairway* and *ramp* enclosures shall have a *fire-resistance rating* of not less than 2 hours where connecting four stories or more and not less than 1 hour where connecting less than four stories. The number of stories connected by the *interior exit stairways* or *ramps* shall include any *basements*, but not any *mezzanines*. Enclosure for *interior exit stairways* and *ramps* shall have a *fire-resistance rating* not less than the floor assembly penetrated, but need not exceed 2 hours.

#### **Exceptions:**

- 1. Interior exit stairways and ramps in Group I-3 occupancies in accordance with the provisions of Section 408.3.8.
- 2. Interior exit stairways within an atrium enclosed in accordance with Section 404.6.
- 3. Interior exit stairways in accordance with Section 510.2.
- 4. Interior exit stairways in Group R-3 occupancies connecting less than 4 stories within and serving an individual unit. s in Group R-3 occupancies and not connecting more than 4 stories are not required to enclosed.
- 5. Interior exit stairway in Group R-3 occupancies, where the interior exit stairway does not serve more than one dwelling unit and where the interior exit stairway does not connect more than 3 stories, are not required to enclosed within the unit it serves.

**Committee Reason:** The modification combines the intent of the proposed new exceptions 4 and 5 into one exception and clarifies the intent of the original proposal. This proposal would allow for stacked units to not separate the enclosed stairway leading to grade from the interior of the unit similar to what is permitted for exit access stairways within the unit. (Vote: 9-4)

E98-24

E99-24

Committee Action: As Submitted

Committee Reason: This proposal provides clarification for where an exit starts with an exit passageway. (Vote: 14-0)

E99-24

E100-24

Committee Action: Disapproved

**Committee Reason:** A horizontal exit cannot be constructed on a roof, so this exception does not belong in this section. The intent is confusing; is this for an occupied roof with two exits, or is this intended to serve as a third exit on the roof? Or is this trying to develop the idea of a horizontal fire separation for an occupied roof? (Vote: 14-0)

### E101-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved because the committee felt this requirement was already addressed in the code and was redundant. (Vote: 14-0)

E101-24

### E102-24

Committee Action: Disapproved

Committee Reason: The committee disapproved this change based on their action on E103-24. (Vote: 14-0)

E102-24

### E103-24

Committee Action: As Modified by Committee (AMC1)

#### **Committee Modification:**

2024 International Building Code

**1027.2** Use in a means of egress. *Exterior exit stairways* shall not be used as an element of a required *means of egress* for Group I-2 occupancies. For occupancies in other than Group I-2, *exterior exit stairways* and *ramps* shall not be used as an element of a required *means of egress* where the highest walking surface of the exterior exit stairway or ramp exceeds <del>7565</del>-feet above the lowest finished grade below the stairway.

2024 International Fire Code

[BE] 1027.2 Use in a means of egress. Exterior exit stairways shall not be used as an element of a required means of egress for Group I-2 occupancies. For occupancies in other than Group I-2, exterior exit stairways and ramps shall not be used as an element of a required means of egress where the highest walking surface of the exterior exit stairway or ramp exceeds 7565-feet above the lowest finished grade below the stairway.

**Committee Reason:** The modification proposed 65 feet instead of 75 feet so this requirement is not attached to high rise buildings. This justification of this height is based on studies for vertigo. The proposal chose an actual height limit to address vertigo on the exterior exit stairway rather than story height. This addresses just the stairway, not the height of the building, so this will help with multi-level buildings. This will allow for uniform application. (Vote: 14-0)

E103-24

### E104-24

Committee Action: As Submitted

**Committee Reason:** This provides for a similar options that will provide equivalent venting of smoke for the exterior exit stairway, the same as the current requirements. This allows for a performance based requirement. (Vote: 13-1)

E104-24

### E105-24

Committee Action: Disapproved

Committee Reason: The committee preferred the language in E106-24. The imaginary lot line provisions are confusing. (Vote: 14-0)

E105-24

## E106-24

Committee Action: As Submitted

**Committee Reason:** Fire separation distance is not the correct term for exterior exit stairways. This is a nice clean up that allows for stairways on the sides open to a street. (Vote: 14-0)

E106-24

## E107-24

Committee Action: Disapproved

**Committee Reason:** There should be a limit to the distance for the exterior wall length when the building is recessed. It needs to be more specific on the extent of the wall protection. Suggestion to remove "recessed" and find better wording. (Vote: 12-2)

E107-24

## E108-24

Committee Action: As Submitted

Committee Reason: This clarifies the original intent of the code for exterior exit stairway protection. (Vote: 14-0)

### E109-24

Committee Action: Disapproved

**Committee Reason:** The proposal was disapproved. The separation of the entrance to exits is sufficient for protection from the fire in the building. Holding the exit discharge to this same separation requirement is unnecessary and overly restrictive. The protection is needed from a fire inside the building, not from a fire outside the building. In addition, the allowances for lobbies, vestibules and horizontal exits in exceptions 1, 2 and 3 would be held to the same separation requirements. (Vote: 14-0)

E109-24

### E110-24

Committee Action: As Submitted

**Committee Reason:** This will help identify requirements for lobby exit options for how to determine "readily visible and identifiable". If someone used this exception, this would over ride the exception for lobby entrances to not have exits signs in Section 1013.1. (Vote: 13-0)

E110-24

### E111-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved. It is not necessary to protect the entire floor where the intent is to protect the area where occupants are discharging. Protecting stories below would include protecting the entire supporting elements and would be a high cost for minimal benefits. Adding "stories" would not address crawl spaces or other areas below that are not a true story. (Vote: 13-0)

E111-24

## E112-24

Committee Action: As Submitted

Committee Reason: This will be a benefit for situations where there are multiple buildings on top of a large continuous podium building below. This allowance should be permitted for exit discharge across the roof of the lower portion of a podium building with direct access to grade. This is a common practice that is currently being handled through alternative means. There were some additional suggestions for improvements. There was a suggestion to say to extend to the public way so that the roof of the building is not used as a safe dispersal area. Should the path be delineated? Should there be a travel distance limit across the roof? (Vote: 8-6)

## E113-24

Errata: This proposal includes unpublished errata for IBC and IFC

**1031.2 Where required.** In addition to the means of egress required by this chapter, emergency escape and rescue openings shall be provided in the following occupancies:

- 1. Group R-2 occupancies located in stories with only one exit or access to only one exit as permitted by Tables 1006.3.4(1) and 1006.3.4(2).
- 2. Group R-2 occupancies with only one exit or access to only one exit as permitted by Section 1006.3.4 Exceptions-Item 2 and 5.
- 3. Group R-3 and R-4 occupancies.

Basements and sleeping rooms below the fourth story above grade plane shall have not fewer than one emergency escape and rescue opening in accordance with this section. Where basements contain one or more sleeping rooms, an emergency escape and rescue opening shall be required in each sleeping room, but shall not be required in adjoining areas of the basement. Such openings shall open directly into a public way or to a yard or court that opens to a public way, or to an egress balcony that leads to a public way. Exceptions:

- 1. Basements with a ceiling height of less than 80 inches (2032 mm) shall not be required to have emergency escape and rescue openings.
- 2. Emergency escape and rescue openings are not required from basements or sleeping rooms that have an exit door or exit access door that opens directly into a public way or to a yard, court or exterior egress balcony that leads to a public way.
- 3. Basements without habitable spaces and having not more than 200 square feet (18.6 m2) in floor area shall not be required to have emergency escape and rescue openings.
- 4. Storm shelters are not required to comply with this section where the shelter is constructed in accordance with ICC 500.
- 5. Within individual dwelling and sleeping units in Groups R-2 and R-3, where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, 903.3.1.2 or 903.3.1.3, sleeping rooms in basements shall not be required to have emergency escape and rescue openings provided that the basement has one of the following:
- 5.1. One means of egress and one emergency escape and rescue opening.
- 5.2. Two means of egress.

Committee Action: As Submitted

**Committee Reason:** Single exit dwelling units should always have emergency escape and rescue openings in the sleeping units. This closes a current loophole in the code in Section 1006.3.4 Items 2 and 5. (Vote: 13-1)

E113-24

## E114-24

Committee Action: Disapproved

**Committee Reason:** How is the path guaranteed and maintained to the public way? The exception is not needed - it can be permitted with current text. (Vote: 13-1)

E114-24

## E115-24

Committee Action: As Submitted

**Committee Reason:** The proposal coordinates with the IRC. It improves the language for emergency escape and rescue openings and includes fall prevention devices. (Vote: 14-0)

E115-24

### E116-24

Committee Action: As Submitted

**Committee Reason:** This proposal coordinates with the 2010 ADA Accessibility Standard. The exception is restored to the 5 guestrooms and the operator's/owner's apartment. (Vote: 14-0)

E116-24

## E117-24

Committee Action: As Submitted

**Committee Reason:** Allowing for one accessible entrance for apartment buildings would be consistent with Fair Housing. This will also align with Sections 1105.1.8 and 1108.4. (Vote: 10-4)

E117-24

## E118-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved. Parking spaces are better handled through zoning. How do you verify that the spaces are being assigned? Where EV charging stations would be required to be added, this could be a large cost increase - the cost impact says decrease. (Vote: 13-1)

F118-24

## E119-24

Committee Action: As Submitted

**Committee Reason:** This is a clarification for where visitor/business parking is indicated on the site. This matches the current intent of the code and this is how this is commonly interpreted. (Vote: 10-4)

#### E120-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved. The next edition of the A117.1 will include technical criteria for EV charging spaces so a lot of this text is not needed. The proponent might want to consider coming back with just the requirement for the accessible route from the EV charging spaces to the building. (Vote 11-2)

E120-24

#### F121-24

Committee Action: As Submitted

**Committee Reason:** This allows for a Type A unit without requiring the installation of a platform lift or elevator within the unit. This clarified dispersion options, and is consistent with ADA interpretations. (Vote 13-0)

E121-24

### E122-24

Errata: This proposal includes unpublished errata in the following sections of the IBC.

**1108.5.1.1 Accessible units.** In Group I-1, Condition 1, at least 4 percent, but not less than one, of the dwelling units and sleeping units shall be Accessible units. Accessible dwelling units and sleeping units shall be dispersed among the various classes of units.

#### **Exceptions:**

- 1. Water closets shall be permitted to comply with assisted toileting requirements in accordance with ICC A117.1 Section 611 in not more than 50 percent of the Accessible units.
- 2. Roll-in-type showers shall be permitted to comply with assisted to tolering bathing requirements in accordance with ICC A117.1 Section 611.7 in not more than 50 percent of the Accessible units.

**1108.5.1.2** Accessible units in Group I-1, Condition 2. In Group I-1, Condition 2, at least 10 percent, but not less than one, of the dwelling units and sleeping units shall be Accessible units. Accessible dwelling units and sleeping units shall be dispersed among the various classes of units.

#### **Exceptions:**

- 1. Water closets shall be permitted to comply with assisted toileting requirements in accordance with ICC A117.1 Section 611, in not more than 50 percent of the Accessible units.
- 2. Roll-in-type showers shall be permitted to comply with assisted to to the decessible units.

  Section 611.7 in not more than 50 percent of the Accessible units.

**1108.5.2.1 Accessible units.** At least 50 percent but not less than one of each type of the dwelling units and sleeping units shall be Accessible units.

#### **Exceptions:**

1. Water closets shall be permitted to comply with assisted toileting requirements in accordance with ICC A117.1 Section 611 in not

more than 90 percent of the Accessible units.

2. Roll-in-type showers shall be permitted to comply with assisted to toler to

**1108.5.4 Group I-2 rehabilitation facilities.** In hospitals and rehabilitation facilities of Group I-2 occupancies that specialize in treating conditions that affect mobility, or units within either that specialize in treating conditions that affect mobility, 100 percent of the dwelling units and sleeping units shall be Accessible units.

#### **Exceptions:**

- 1. Water closets shall be permitted to comply with assisted toileting requirements in accordance with ICC A117.1 Section 611 in not more than 50 percent of Accessible units.
- 2. Roll-in-type showers shall be permitted to comply with assisted to tolering bathing requirements in accordance with ICC A117.1 Section 611.7 in not more than 50 percent of Accessible units.

Committee Action: Disapproved

Committee Reason: These criteria should not be deleted until the next edition of the ICC A117.1 is finalized. (Vote: 12-0)

E122-24

## E123-24

Committee Action: Disapproved

**Committee Reason:** This is already addressed in Chapter 3 for all buildings used for two purposes. A change of occupancy can be address through enforcement. (Vote: 11-1)

E123-24

### F124-24

Committee Action: Disapproved

**Committee Reason:** How would you determine the occupant load without seats? The definition is too broad and could be read to conflict with bleacher requirements. This needs to clarify the different things this type of seating will affect. (Vote: 13-0)

E124-24

## E125-24

Committee Action: As Submitted

**Committee Reason:** The proposal clarifies that the accessible route and the general circulation route to the stage shall be in the same location. (Vote: 14-0)

## E126-24 Part I

Errata: This proposal includes unpublished errata

**for the following sections in the IBC.1110.2.1.1 Standard.** Family or <u>assisted use companion</u> toilet and bathing rooms shall comply with Sections 1110.2.1.2 through 1110.2.1.6.

Committee Action: As Submitted

**Committee Reason:** This clarifies the four items listed in the definitions and will work with the scope. This will clarify the requirements and will reduce confusion with these similar terms. This will be consistent with the Plumbing Code committee action on E126-24 Part 2. (Vote: 14-0)

E126-24 Part I

### E126-24 Part II

Committee Action: As Submitted

Committee Reason: The new term provides needed clarity to the code. (Vote: 14-0)

E126-24 Part II

## E127-24 Part I

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved because while a safety standard for adult changing tables are important, the IAPMO Z1390 is not yet finalized. (Vote: 10-4)

E127-24 Part I

## E127-24 Part II

Committee Action: As Submitted

Committee Reason: The committee agreed with the published reason statement. (Vote: 10-3)

E127-24 Part II

## International Building Code - Structural

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

S1-24

Committee Action: As Submitted

**Committee Reason:** Approved as submitted as this proposal clarifies the UL standard 7103 used to test and certify BIPV systems and assists code officials for changing products. (Vote 11-0)

S1-24

S2-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved as the proposed ASTM standard draft is not complete. The committee was glad to see the process has been started and recommends checking all new language. (Vote 11-1)

S2-24

S3-24

Committee Action: As Submitted

**Committee Reason:** Approved as submitted as the proposal simply adds manufacturing installation instructions and is consistent with previous action (Vote 12-0)

S3-24

S4-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved, although they liked the idea of the proposal, they felt it has unintended consequences, is too broad, and needs to be cleaned up with more specific requirements. (Vote 12-0)

S4-24

### S5-24

Committee Action: Disapproved

Committee Reason: The committee disapproved, and suggested the proposed ASTM standard needs to be complete (Vote 9-3)

S5-24

## S6-24

Committee Action: As Submitted

**Committee Reason:** Approved as submitted as the proposal allows for the understanding of qualifications of special inspectors for special inspection of penetrations of firestop systems and fire-resistant joint systems. (Vote 11-1)

S6-24

### S7-24

Committee Action: As Submitted

**Committee Reason:** Approved as submitted as the proposal adds specificity to the code for the appropriate ASTM for specimen preparation and mounting of wood products. (Vote 12-0)

S7-24

## S8-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved per the request of the proponent, to allow the proponents of S8 & S9 to reach an agreement for a coordinated table. (Vote 12-0)

S8-24

## S9-24

Committee Action: Disapproved

**Committee Reason:** The committee disapproved per the request of the proponent, to allow the proponents of S8 & S9 to reach an agreement for a coordinated table. (Vote 12-0)

## International Fire Code

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

F1	-24
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Committee Action:

As Modified by Committee

Committee Modification:

Revise as follows:

SECTION 4002 NONAPPLICABILITY

**4002.1 Nonapplicability** of other chapters. Chapter 50 and Chapter 57 are not applicable to the storage of distilled spirits and wines in barrels and casks where stored in compliance with this chapter.

#### Delete without substitution:

702.1 Construction Requirements.

Fire-resistance-rated construction and smoke-limiting construction required by this code shall comply with the following:

- 1. Fire walls shall be constructed in accordance with Section 706 of the International Building Code.
- 2. Fire barriers shall be constructed in accordance with Section 707 of the International Building Code.
- 3. Fire partitions shall be constructed in accordance with Section 708 of the International Building Code.
- 4. Smoke barriers shall be constructed in accordance with Section 709 of the International Building Code.
- 5. Smoke partitions shall be constructed in accordance with Section 710 of the International Building Code.
- 6. Horizontal assemblies shall be constructed in accordance with Section 711 of the International Building Code.

**Committee Reason:** This proposal was approved as it makes the IFC consistent with other I-Codes which had removed the list of definitions within chapter several cycles ago. This proposal does so without requiring significant renumbering. The committee modifications reflect inappropriate language for Chapter 7 and section title change to remove duplicative titles in the sections. (Vote 13-0)

F1-24

F2-24

Committee Action: As Modified by Committee

**Committee Modification:** 

#### Retain the following code language:

#### 901.6.3 Records information.

Initial records shall include the name of the installation contractor, type of components installed, manufacturer of the components.

Iocation and number of components installed per floor. Records shall include the manufacturers' operation and maintenance instruction

manuals. Such records shall be maintained for the life of the installation.

#### 901.5 Administration of installation acceptance testing.

Fire protection and *life safety* systems and appurtenances thereto shall be subject to acceptance tests as contained in the installation standards and as approved by the *fire code official*. The *fire code official* shall be notified before any required acceptance testing.

#### 501.3 Construction documents.

Construction documents for proposed fire apparatus access, location of fire lanes, security gates across fire apparatus access roads and construction documents and hydraulic calculations for fire hydrant systems shall be submitted to the fire department for review and approval prior to construction.

#### 901.2 Construction documents.

The fire code official shall have the authority to require construction documents and calculations for all fire protection and life safety systems and to require permits be issued for the installation, rehabilitation or modification of any fire protection and life safety systems. Construction documents for fire protection and life safety systems shall be submitted for review and approval prior to system installation.

**Committee Reason:** The proposal appropriately unnecessary pointers to permits with Section 105 throughout the code. The modification was felt necessary as the construction document language needs to be retained. (Vote 13-0)

F2-24

### F3-24

Committee Action: As Submitted

**Committee Reason:** Proposal adds necessary plastic aerosol 2 classification to the permit section and the proponents reason statement. (Vote 13-0)

F3-24

### F4-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

105.5.14 Energy storage systems.

An operational permit is required for <u>stationary and</u> mobile energy storage systems regulated by Section 1207. <u>Operational permits shall</u> <u>not be required for ESS located at detached one- and two-family dwellings and townhouses, other than Group R-4</u>.

**Committee Reason:** This proposal was approved based upon the reason statement however the modification reflects the need to only allow this exception for one and two family dwellings. (Vote 14-0)

F4-24

#### F5-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that the addition of "portable outdoor fireplaces" to the exception makes sense because it is contained and safer than open burning. (Vote: 14-0)

F5-24

F6-24

Committee Action: Disapproved

**Committee Reason:** This section was not seen as necessary as there are already a number of requirements associated with a Group A occupancy classification. (Vote 14-0)

F6-24

### F7-24

Committee Action: Disapproved

Committee Reason: The proposal was disapproved based upon technical problems with the classifications that need to be addressed. The GHS definition does not appropriately address heat of combustion which was the primary criteria for aerosols as addressed in NFPA 30B. If the GHS definition is used, there will also need to be additional information, guidance, and criteria to address this key criteria. (Vote 13-1)

F7-24

F8-24

Committee Action: As Submitted

**Committee Reason:** Based upon the reason statement and addresses fueling operations for seaplanes which has always been the intent. (Vote 14-0)

F8-24

F9-24

Committee Action: As Submitted

**Committee Reason:** Adequately addresses the difference between GHS and OSHA references in these definitions that are currently missing for the application of Safety Data Sheets (SDS). (Vote 14-0)

F9-24

### F10-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was based on the testimony and request of the proponent. Additionally, the committee stated that the proposal come back with the specific sections, so that it can be addressed in context at the second committee action hearing. (Vote: 14-0)

F10-24

### F11-24

Committee Action: As Submitted

**Committee Reason:** Provides more detail on the newer battery technologies. The definitions were coordinated with industry. There was some concern on the subjectively of the definitions along with the level of detail for provided. However, there was concern without this level of detail it would be more difficult to regulate the hazards. (Vote 10-4)

F11-24

## F12-24

Committee Action: As Submitted

**Committee Reason:** The chart in the reason statement explained the change, however there was some concern that the GHS categories may be more difficult to follow. (Vote 12-2)

F12-24

## F13-24

Committee Action: Disapproved

**Committee Reason:** Limiting to vehicles in commerce does not reduce the fuel load that should still be regulated. This definition has much broader implications than RV and or van pool storage. (Vote 12-2)

## F14-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

#### 2024 International Fire Code

COMPRESSED GAS. A material, or mixture of materials that:

- 1. Is a gas at 68°F (20°C) or less at 14.7 psia (101 kPa) of pressure; and
- 2. Has a *boiling point* of 68°F (20°C) or less at 14.7 psia (101 kPa) which is either liquefied, nonliquefied (gaseous) or in solution (dissolved), except those gases which have no other health- or physical-hazard properties are not considered to be compressed until the gauge pressure in the packaging exceeds 41 psia (282 kPa) 29 psig (200 kPa) at 68°F (20°C).

#### 2024 International Building Code

COMPRESSED GAS. A material, or mixture of materials that:

- 1. Is a gas at 68°F (20°C) or less at 14.7 psia (101 kPa) of pressure; and
- 2. Has a *boiling point* of 68°F (20°C) or less at 14.7 psia (101 kPa) which is either liquefied, nonliquefied (gaseous) or in solution (dissolved), except those gases which have no other health- or physical-hazard properties are not considered to be compressed until the <u>gauge</u> pressure in the packaging exceeds 41 psia (282 kPa) 29 psig (200 kPa) at 68°F (20°C).

**Committee Reason:** The proposal was approved as it brings correlation with GHS and provides supporting definitions. The modification makes it clear that the pressure is based upon gauge pressure. (Vote 14-0)

F14-24

### F15-24

Committee Action: As Submitted

**Committee Reason:** The definition appropriately incorporates the necessary technical requirements for both eye and skin damage. (Vote 14-0)

F15-24

## F16-24

Committee Action: As Submitted

**Committee Reason:** The use of the GHS reference makes the code easier to apply, however it was suggested that the wording of the definitions could be simplified. (Vote 14-0)

F16-24

## F17-24

Committee Action: As Submitted

**Committee Reason:** Clarifies how to address a single control area in a building which often causes confusion withe the definition stating "spaces with a building." (Vote 14-0)

F17-24

### F18-24

Committee Action: As Submitted

**Committee Reason:** Based upon the reason statement and the fact that the six hazard class divisions of explosives in the IFC are aligned with the GHS subdivisions. (Vote 14-0)

F18-24

## F19-24

Committee Action: As Submitted

Committee Reason: Based upon the reason statement, and the clarity that the new language linking to GHS provide. (Vote 14-0)

F19-24

## F20-24

Committee Action: As Submitted

**Committee Reason:** Approval was based upon the reason statement. Also, by referencing the GHS classifications additional testing criteria, which has not historically been used to assess IFC flammable solids, including a separate test for metal powders is provided. (Vote 14-0)

F20-24

#### F21-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

#### 2024 International Fire Code

FLAMMABLE GAS. A material that is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a *boiling point* of 68°F (20°C) or less at 14.7 psia (101 kPa)] subdivided as follows:

- 1. Category 1A. A gas that meets either of the following:
  - 1.1. Ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air.
  - 1.2. A flammable range at 14.7 psia (101 kPa) with air of not less than 12 percent, regardless of the lower limit, unless data shows compliance with Category 1B.
- 2. Category 1B. A gas that meets the flammability criteria for Category 1A, is not pyrophoric or chemically unstable, and meets one of more of the following:
  - 2.1. A lower flammability limit of more than 6 percent by volume of air.
  - 2.2. A fundamental burning velocity of less than 3.9 inches/second (99 mm/s).

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E681.

Where not otherwise specified, the term "flammable gas" includes both Categories 1A and 1B.

In the absence of test data demonstrating classification into Category 1B, a flammable gas that meets the criteria of a Category 1A gas shall default into Category 1A.

#### 2024 International Building Code

[F] FLAMMABLE GAS. A material that is a gas at 68°F (20°C) or less at 14.7 pounds per square inch atmosphere (psia) (101 kPa) of pressure [a material that has a *boiling point* of 68°F (20°C) or less at 14.7 psia (101 kPa)] subdivided as follows:

- 1. Category 1A. A gas that meets either of the following:
  - 1.1. Ignitable at 14.7 psia (101 kPa) when in a mixture of 13 percent or less by volume with air.
  - 1.2. A flammable range at 14.7 psia (101 kPa) with air of at least 12 percent, regardless of the lower limit, unless data shows compliance with Category 1B.
- 2. Category 1B. A gas that meets the flammability criteria for Category 1A, is not pyrophoric or chemically unstable, and meets one or more of the following:
  - 2.1. A lower flammability limit of more than 6 percent by volume of air.
  - 2.2. A fundamental burning velocity of less than 3.9 inches/second (99 mm/s).

The limits specified shall be determined at 14.7 psi (101 kPa) of pressure and a temperature of 68°F (20°C) in accordance with ASTM E681.

Where not otherwise specified, the term "flammable gas" includes both Category 1A and 1B.

In the absence of test data demonstrating classification into Category 1B, a flammable gas that meets the criteria of a Category 1A gas-shall default into Category 1A

**Committee Reason:** The revision to the definition was seen as necessary where there is a lack of data. There was some concern that this should be addressed more globally and not within a definition. The modification removed redundant language from the definition. (Vote 14-0)

F21-24

## F22-24

Committee Action: As Submitted

**Committee Reason:** Proposal appropriately removes technical requirements from the definition and simply states what is considered high-piled combustible storage. (Vote: 14-0)

F22-24

## F23-24

Committee Action: Disapproved

Committee Reason: The table provided is useful in explaining the alignment or lack thereof with GHS Categories. Highly toxic materials align well but toxic materials do not. This will potentially increase the cost of construction as more buildings will need to be classified as Group H-4 without proper justification. The cost impact statement does not reflect these impacts. More technical data is needed to identify where the requirements are going to change based on a broader toxic designation. Potentially an analysis is needed to understand the significance of the hazard or the risk associated with the materials. The MAQ tables will need evaluation and revision potentially. (Vote 13-1)

F23-24

## F24-24

Committee Action: Disapproved

**Committee Reason:** The proposal is not in alignment to have this term used throughout the body of the code. There was concern that term compressed needs to be addressed in the definition (Vote 8-5)

F24-24

### F25-24

Committee Action: As Submitted

Committee Reason: Provides the necessary clean up and correlation of liquid storage rooms and liquids storage warehouses in the IFC and IBC. (Vote 12-1)

F25-24

## F26-24

Committee Action: As Submitted

Committee Reason: The use of the GHS criteria enhances and aligns with the IFC definition. (Vote 14-0)

F26-24

## F27-24

Committee Action: As Submitted

**Committee Reason:** This proposal provides more technical and accurate information for the definition and is an improvement to the code. (Vote 14-0)

F27-24

# F28-24

Committee Action: As Submitted

Committee Reason: The intent of the code is to regulate as a compressed gas and this definition as revised is appropriate. (Vote 14-0)

F28-24

# F29-24

Committee Action: As Submitted

**Committee Reason:** The proposal was approved based upon the proponent's reason statement. Additionally, this revision retains the fire code definition for those materials that can't be categorized correctly. (Vote 13-1)

# F30-24

Committee Action: As Modified by Committee

**Committee Modification:** 

2024 International Fire Code

Revise as follows:

**SMOKING.** Possessing a <u>lighted</u> pipe, cigar or cigarette or <u>operating</u> <del>operation of</del> an e-cigarette, vape pen or similar apparatus that is heated, lighted or burning.

**Committee Reason:** The committee stated the reason for the approval of the modification and the proposal was that it addresses the confusion with the question about whether just possessing one of these devices is outside the definition. Additionally, it adds clarity because of the changing technologies out there for these different types of devices compared to what is traditional smoking and it has expanded this definition, by capturing and recognizing that. (Vote: 12-2)

F30-24

## F31-24

Committee Action: Disapproved

Committee Reason: The action taken on F203-24 was preferred over this proposal. (Vote 11-2)

F31-24

# F32-24

Committee Action: As Submitted

**Committee Reason:** Approval was based upon the reason statement. Additionally, the deletion of "or in the presence of contaminants, or in contact with incompatible materials" was seen as beneficial as it removes a conflict within the current definition since such materials are to be considered unstable in the absence of an inhibitor. (Vote 14-0)

F32-24

# F33-24

Committee Action: As Submitted

**Committee Reason:** Water reactive materials are very hard to regulate and even with items identified by the proponent were there may be differences with GHS, the cleanup is still beneficial to the code. (Vote 14-0)

# F34-24

Committee Action: Disapproved

**Committee Reason:** Disapproval is based upon concern that International Fire Code Table 5003.1.1(5) IFC is not necessarily the same exemptions as International Building Code Table 307.1.1 as these tables serve different purposes. (Vote 14-0)

F34-24

## F35-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was opposition to limiting the section to just "roofing" kettles that would then exclude other types of kettles that are similar hazards. The committee suggested that a better term be proposed. (Vote: 13-0)

F35-24

# F36-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The language is too broad. Weeds, grass, or other growth that is capable of being ignited can be interpreted that you can't have any grass bordering the building. It was noted that there is an enforcement issue. It should not be applicable to single family homes because too many weekend workers go out and do their own stuff and it will put them in violation because they put mulch down. (Vote: 13-0)

F36-24

# F37-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it cleans up the pointer in Appendix O to correlate with the changes made in the last code development cycle. (Vote: 13-0)

F37-24

#### F38-24

Committee Action: As Submitted

**Committee Reason:** Approval is based upon the action taken on F37-24 and because the proposal removes redundant language. (Vote 13-0)

F38-24

### F39-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was opposition to the deletion of all the "other on-site fire extinguishing equipment" text and the addition of the "verified to be fully" text before "extinguished" in Section 307.5. (Vote: 13-0)

F39-24

## F40-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The appendix was just added to 2024 IFC and as it was stated, it is not known yet how this is going to affect the adoption. Since it is in the appendix, jurisdictions do have the opportunity to allow it, if it is appropriate in the location. Until it is known if there are problems that are created either with it or without it, then it should remain where it is. Leaving it in the appendix allows some jurisdictions to adopt and follow it and it allows others not to. (Vote: 12-2)

F40-24

## F41-24

Errata: This proposal includes unpublished errata

#### 2024 International Fire Code

Revise as follows:

#### 308.3.1 Open-flame decorative devices.

Open-flame decorative devices shall comply with all of the following restrictions:

- 1. Class I and Class II liquids and LP gas shall not be used.
- 2. Fuel gas appliances shall be listed and installed in accordance with the International Fuel Gas Code.

- 2. Liquid- or solid-fueled lighting devices containing more than 8 ounces (237 ml) of fuel must self-extinguish and not leak fuel at a 3.
- 3. The device or holder shall be constructed to prevent the spillage of liquid fuel or wax at the rate of more than 0.25 teaspoon per
- <u>4.</u>
- 4. The device or holder shall be designed so that it will return to the upright position after being tilted to an angle of 45 degrees (0.7
- 5. **Exception:** Devices that self-extinguish if tipped over and do not spill fuel or wax at the rate of more than 0.25 teaspoon per r
- $\frac{5.}{1.0}$  The flame shall be enclosed except where openings on the side are not more than 0.375-inch (9.5 mm) diameter or where open
- 6. seconds.
- 6. Chimneys shall be made of noncombustible materials and securely attached to the open-flame device.
- Exception: A chimney is not required to be attached to any open-flame device that will self-extinguish if the device is tipped of
- 7. Fuel canisters shall be safely sealed for storage.

<u>8.</u>

8. Storage and handling of combustible liquids shall be in accordance with Chapter 57.

<u>9.</u>

9. Shades, where used, shall be made of noncombustible materials and securely attached to the open-flame device holder or chim

<u>10.</u>

40. Candelabras with flame-lighted candles shall be securely fastened in place to prevent overturning, and shall be located away from

<u>11.</u>

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was it makes a good connection for the fire code official to have a pointer to the IFGC for these types of appliances when they are installed. (Vote: 13-0)

F41-24

# F42-24

Committee Action: As Submitted

**Committee Reason:** The committee stated the reasons for the approval of the proposal were: It addresses the different hazards with the different types of fueling for industrial equipment and industrial trucks. It adds clarity and will work with the other proposals on battery hazards. (Vote: 14-0)

F42-24

# F43-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The electrical classification should

be clearly identified where required. The listing or labeling of the equipment being intended for use makes it less usable to the reader that there is a hazard present, and it should be addressed. Changing it from hazardous locations to all locations and everything really expands this requirement. There is no direction for an existing powered industrial truck that would move into a requirement for listing in a non-hazardous area. (Vote: 9-4)

F43-24

### F44-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The definition approved by F30-24 adds clarity to what is covered by "no smoking" and by changing the sign, there is then going to be a laundry list on signs. It is going to say no smoking, no smoking this, no smoking that, no vaping. Instead by keeping the sign simple and tying it back to the definition just approved is all that is necessary in the code. The proposal reason statement needs to include the actual evidence that supports the change. (Vote: 14-0)

F44-24

# F45-24

Committee Action: Disapproved

**Committee Reason:** Though the intent was good there were a variety of concerns with this proposal in its current form. A feature or appliance can be a wide variety of things which may not be the intent of this section. More wording to clarify that these provisions apply "where required" is necessary. These revisions may also cause confusion for other types of needs for impact protection besides within a garage. The language should be carefully reviewed for the use of "ESS." (Vote 8-6)

F45-24

# F46-24

Committee Action: As Modified by Committee

Committee Modification:

2024 International Building Code

Revise as follows:

**413.1 General.** High-piled combustible storage in any occupancy group shall comply with Section 315 or and Chapter 32 of the International Fire Code.

**Committee Reason:** The committee stated that the reason for the approval of the modification was the need to use "and" instead of "or" to indicate that both the section and chapter are required. The stated reasons for the approval of the proposal with the modification were: Changing areas to where spaces are adds clarity because areas can be confused with fire areas. The improvement of adding pointers in IBC Section 413.1 directing you when you have combustible high piled storage where you need to be looking for the additional

### F47-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: It will allow the use of a fire and life safety system for security purposes, and this creates additional risk by activating the fire alarm system. This activation would then cause confusion in the building. These devices were prohibited in the past and by putting the word unexpectedly in the section basically would say now it is acceptable. Additionally, if it accidentally went off, it could stop first responders in any form or fashion and give them opportunity to hurt themselves. (Vote: 13-0)

F47-24

## F48-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: Concerns with just some of the vagueness in some of the language. For example, there are legible warning signs required elsewhere in the code that have some significant details about what constitutes legible and the required size. There is a reference in the marking section about a recognized symbol that would be nice to see what that symbol is as part of the reason statement to have consistency about what would be considered a recognized sign. Also, the requirement for the fire department shut off switch to be readily marked needs more details such as how it is marked and where it is located, if it's a large fence, if there is more than one shut off, maybe at every entrance that the emergency services may use. (Vote: 9-4)

F48-24

# F50-24

Errata: This proposal includes unpublished errata The sub definitions did not appear in the monograph:

**ADDITIVE MANUFACTURING.** A process of joining materials to make objects from 3D model data, usually layer upon layer, sometimes referred to as 3D printing. This code recognizes two types of additive manufacturing:

**Industrial additive manufacturing.** 3D printing operations that typically utilize combustible powders or metals, an inert gas supply, a combustible dust collection system, or that create a hazardous (classified) location area or zone outside the equipment.

**Nonindustrial additive manufacturing.** 3D printing operations that do not create a hazardous (classified) location area outside the equipment and do not utilize an inert gas supply or a combustible dust collection system.

Committee Action: As Modified by Committee

**Committee Modification:** 

#### 2024 International Fire Code

#### Revise as follows:

**ADDITIVE MANUFACTURING.** A process of joining materials to make objects from 3D model data, usually layer upon layer, sometimes referred to as 3D printing. This code recognizes two types of additive manufacturing:

**Industrial additive manufacturing.** 3D printing operations, including pre-processing and post-processing, that can typically utilize combustible powders or metals, an inert gas supply, a combustible dust collection system, or that create a hazardous (classified) location area or zone outside the equipment.

**Nonindustrial additive manufacturing.** 3D printing operations that do not create a hazardous (classified) location area outside the equipment and do not utilize an inert gas supply or a combustible dust collection system.

**Committee Reason:** The committee stated that the reason for the approval of the modification was that it completes the proposal and without it, it is an incomplete proposal. The stated reason for the approval of the proposal with the modification was that it is a good change which has brought back the lessons learned in the last three years and it has now improved the code sections accordingly. (Vote: 12-0)

F50-24

### F51-24

Committee Action: As Submitted

Committee Reason: The committee stated that the reasons for the approval of the proposal were: It will exclude from the requirements the 300-watt-hours or less lithium-ion batteries and it also adds clarification about a lithium metal battery. These are often confused about what the limitations are and above that, this section would apply and at or below that, it will now comply with the new exception. It was also noted that this aligns with NFPA 55. (Vote: 14-0)

F51-24

# F52-24

Committee Action: As Submitted

Committee Reason: The committee stated that the reasons for the approval of the proposal were: It closes some gaps in the code and correlates with the industry requirements and provides the correct references to DOT shipping requirements. It is a good addition to the code. (Vote: 14-0)

F52-24

# F53-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: It addresses some important gaps and provides guidance about the technical report. Specifically, it evaluates the hazards on a site-specific basis, picking up the weather

F53-24

## F54-24

Committee Action: As Submitted

Committee Reason: The committee stated that the reasons for the approval of the proposal were: It holistically addresses battery storage by expanding the chapter to address lithium-ion batteries, lithium metal batteries, and other battery chemistries. And there are appropriate requirements tied to the hazard of the particular type of battery chemistry for batteries in storage. Because there are a lot of different types of batteries in storage, we need to regulate them because they each pose significant hazards and these requirements bring in the appropriate risk management or risk reduction that is necessary. (Vote: 14-0)

F54-24

## F55-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it is a good editorial change that removes an exception that is not needed. (Vote: 13-0)

F55-24

# F56-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval were: Based on the many floor modifications discussed it is definitely not ready. The testing section in Section 322.1 that puts in a pointer really appears to be just a solution in search of a problem and there is no value in solving the problem. Opposition to the laundry list of things that would be considered noncombustible. It will result in many unintended consequences. There are a lot of places where noncombustible is used and it just does not address all of those in the reason statement. (Vote: 13-0)

F56-24

# F57-24

Committee Action: As Submitted

Committee Reason: The committee stated that the reasons for the approval of the proposal were: There has been a lot of attention on

micro mobility and lithium-ion battery fires and there are new types of charging devices that are entering the marketplace. This provides some reasonable requirements to embrace that new technology and it is needed in the code. There is one word that changes the entire section, which is the addition of "charged" in Section 322.1. This is the biggest part of the change, and it allows the fire code official to use all of Section 322, which may be currently limited. For building managers across the country, specifically in urban areas, who are struggling with this issue, this is something that can be used to go to the local code official and say they would like to be able to be use the requirements. (Vote: 12-2)

F57-24

### F58-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was based on the proponent's reason statement and specifically that it provides clarity for the requirements that are being relocated into one section. (Vote: 7-6)

F58-24

## F59-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: As Modified by Committee

#### **Committee Modification:**

2024 International Fire Code

Revise as follows:

**322.6 Battery containment enclosures.** Where provided, to reduce separation distances as permitted by 322.4 (6) and (7), containment enclosures for storage or charging of lithium-ion batteries or lithium-ion battery powered appliances shall be in accordance with one of the following:

- 1. Listed and labeled in accordance with UL 1487.
- 2. Specially designed and approved for such purpose.

**Committee Reason:** The committee stated that the reason for the approval of the modification was that it provides clarification on the reduction for the separation distances. The stated reason for the approval of the proposal with the modification was that because UL 1487 appears to be a collaborative standard with the development still in process, having option number 2 for cabinets specially designed and approved for such purposes allows for existing cabinets to remain. This is a great addition to the code. (Vote: 12-0)

F59-24

# F60-24

Committee Action: As Submitted

Committee Reason: The committee stated that reason for the approval of the proposal was that as stated in the reason statement, it takes care of the issue dealing with replacement and aftermarket devices, which is a critical issue for these types of devices and solves some of the major problems that are occurring. (Vote: 11-2)

F60-24

# F61-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved as requiring compliance with the IBC would be problematic. In particular the IBC would require compliance for accessibility along with typical egress features such as stairway requirements, railings and guardrails. These buildings are only built occasionally and NFPA 1400 can be applied in those instances through the alternative methods and materials section. (Vote 14-0)

F61-24

## F62-24

Committee Action: As Modified by Committee

Committee Modification: 2024 International Fire Code

105.6.17 Modular Rooms. A construction permit is required to install modular rooms.

#### 323.2 Construction Permits.

A construction permit in accordance with Section 105.6.17 shall be required for the installation of modular rooms.

Committee Reason: The committee stated that the reason for the approval of the modification was that it cleans up the revisions to provide the necessary information for the Chapter 1 requirements. The stated reasons for the approval of the proposal with the modification were: The new section provides information for these modular rooms being used throughout the world in locations such as airports and hotels. The definition makes it clear what these things are and what is being regulated in the section and it is very appropriate to be in the IFC. (Vote: 14-0)

F62-24

# F63-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: There were concerns about different types of parking systems, charging stations, tiers versus height and other requirements. This does not address other types such

as below grade enclosed garages. The 150 feet is too far to have access to these structures. Questions about electrical vehicle charging stations and it does not make sense to say that they're prohibited, especially if they are used for something other than commercial sales. If you are going to be storing vehicles that are coming off the street at your office building or wherever else, and you are going to utilize something like this, which has been done for decades in our major cities, you are going to have electric vehicle charging and there is no reason not to allow it. (Vote: 14-0)

F63-24

### F64-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: A lot of these items are already in the code and a technical report is necessary. Specifically, it is necessary because of the technology and the methods of the different batteries they are creating. (Vote: 13-1)

F64-24

## F65-24

Committee Action: As Submitted

Committee Reason: The proposal appropriately revises the language to use the correct terminology. (Vote 14-0)

F65-24

## F66-24

Committee Action: As Submitted

**Committee Reason:** This better explains that the fire safety and evacuation plan may not require everyone to evacuate. Likewise if there is no fire safety and evacuation plan required this enables the code official to enforce the evacuation of a building as needed. (Vote 14-0)

F66-24

# F67-24

Committee Action: As Modified by Committee

**Committee Modification:** 

403.7.3.2 Fire safety plan. A copy of the fire safety plan shall be maintained at the facility at all times. The plan shall include both of the

following in addition to the requirements of Section 404.2.2:

- 1. Location and number of cells.
- 2. Location of special locking arrangements.
- 3. Where locked doors are permitted in the means of egress, the location of keys that operate such doors installed in the means of egress shall be identified in the fire safety and evacuation plan.

**403.7.3.3 Staff training.** Staff shall be periodically instructed and kept informed of their duties and responsibilities under the plan. Records of instruction shall be maintained. Such instruction shall be reviewed by staff at intervals not exceeding 3 months. Training of new staff shall be provided promptly upon entrance to duty.

- 1. Staff shall be instructed in the proper use of portable fire extinguishers and other manual fire suppression equipment.
- 2. Where locked doors are permitted in the means of egress, staff shall be trained on the identification and use of keys that are necessary for unlocking such doors -that are installed in the means of egress.

**Committee Reason:** The committee agreed that keys need to be identified in the fire safety and evacuation plan and should be included in staff training. The modification reflects necessary clarification that the focus is on doors that are permitted to be locked. Without this clarification it could encourage doors to be locked within the means of egress path that should not be. (Vote 12-2)

F67-24

### F68-24

Committee Action: As Modified by Committee

#### Committee Modification:

**403.10.6.1 Mitigation planning.** The approved fire safety and evacuation plan shall include thermal runaway event mitigation measures. These measures shall include activities undertaken to prevent thermal runaway, early detection of a thermal runaway event, reporting of unplanned thermal runaway events to the fire <u>code</u> official, and mitigation measures to be undertaken to limit the size and impact of the event on occupants and the facility.

**Committee Reason:** This proposal provides the ability to better understand the hazards that exists if incidents are reported. The focus is on unplanned thermal runaway events versus those that are occurring purposely associated with testing and research. The modification was simply to use the proper term "fire code official." (Vote 14-0)

F68-24

# F69-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved as it uses undefined terms, appeared to exempt agricultural buildings and pull in homes. (Vote 14-0)

# F70-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved as there were coordination issues that need to be resolved with industry. (Vote 13-0)

F70-24

### F71-24

Committee Action: Disapproved

**Committee Reason:** Virtual reality simulations can be useful for certail occupancies. The use of such technology should be addressed on a case by case basis. (Vote 13-0)

F71-24

# F72-24

Committee Action: Disapproved

**Committee Reason:** This was disapproved with general concern for how it would be integrated in existing communities and infrastructure. In addition communities vary widely in their needs. It was felt such specific requirements would be better located within an appendix. (Vote 13-0)

F72-24

# F73-24

Committee Action: Disapproved

**Committee Reason:** Though the intent was understood there was concern that water supply issues generally go beyond what NFPA 13 addresses. (Vote 11-2)

F73-24

# F74-24

Committee Action: Disapproved

**Committee Reason:** Generally it was felt that this concept belongs in an appendix. Also concern with the wording of "where it is adopted" and how it applies to the use of NFPA 1142 and the WUIC. It was noted that NFPA 1142 has good information but it is generally easy to apply when needed without being referenced in the code. (Vote 12-0)

F74-24

# F75-24

Committee Action: As Submitted

**Committee Reason:** The addition of the new language requiring identification of standby generator transfer switches is good for first responder safety. (Vote 11-3)

F75-24

## F76-24

Committee Action: As Submitted

**Committee Reason:** The proposal clarifies the qualification requirements of designers, installers and maintenance and testing personnel. These revisions will provide better coordination with the now available standard requirements and eliminates possible conflicts. It also appropriately pulls in the frequency license holder to determine if a communications coverage system is not needed. (Vote12-2)

F76-24

# F77-24

Committee Action: Disapproved

**Committee Reason:** The elimination of the exception was seen as inappropriate. Having systems in small buildings will overtax the coverage levels available in the area. These buildings are small enough that an airhorn can be used to alert first responders. (Vote 14-0)

F77-24

# F78-24

Committee Action: As Submitted

**Committee Reason:** This proposal appropriately pulls in the frequency license holder in to the determination of whether communication coverage is needed. (Vote 12-2)

F78-24

### F79-24

Committee Action: Disapproved

**Committee Reason:** This topic was not seen to be within scope of the IFC as it was seen as social/welfare. Additionally, there was some concern how these infant drop boxes may require in existing buildings. Finally, the monitoring requirements were seen as unenforceable. (Vote 12-1)

F79-24

### F80-24

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the proponent's reason statement. (Vote 14-0)

F80-24

### F81-24

**Errata:** This proposal includes unpublished errata The standard analysis for UL 2930 has been updated and can be found here. https://www.iccsafe.org/wp-content/uploads/2024-Proposed-Standards Group-A.pdf

Committee Action: As Modified by Committee

#### **Committee Modification:**

603.5.1.1 Listing in Group I-2 occupancies and ambulatory care facilities.

In Group I-2 occupancies and ambulatory care facilities, relocatable power taps shall be *listed* and *labeled* in accordance with UL 1363 except under the following conditions:

- 1. In Group I-2, Condition 2 occupancies, relocatable power taps providing power to patient care-related electrical equipment in the patient care vicinity, as defined by NFPA 99, shall be *listed* and *labeled* in accordance with <u>UL 1363A</u>, UL 2930, or be integral to equipment listed and labeled to UL 60601-1.
- 2. In Group I-2, Condition 1 facilities, in care recipient rooms using line-operated patient care-related electrical equipment, relocatable power taps in the patient care vicinity, as defined by NFPA 99, shall be *listed* and *labeled* in accordance with <u>UL1363A</u>, UL 2930, or be integral to equipment listed and labeled to UL 60601-1.

3. In ambulatory care facilities, relocatable power taps providing power to patient care-related electrical equipment in the patient care vicinity, as defined by NFPA 99, shall be *listed* and *labeled* in accordance with <u>UL 1363A</u>, UL 2930, or be integral to equipment listed and labeled to UL 60601-1.

**Committee Reason:** This adds the necessary standard for relocatable power taps in used in I-2 and ambulatory care facilities. The modification addresses the need to keep the reference to UL 1363A for special purpose relocatable power taps since UL 2930 is not yet recognized by CMS. Additionally UL 1363A addresses specific application needs within healthcare facilities. (Vote 13-0)

F81-24

### F82-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved as there was concern that the machine room ventilation may be losing the necessary standby power and heating is not explicitly addressed. (Vote 14-0)

F82-24

### F83-24

**Errata:** This proposal includes unpublished errata The standard analysis for UL 1889-1996 has been updated and can be found here. https://www.iccsafe.org/wp-content/uploads/2024-Proposed-Standards\_Group-A.pdf

Committee Action: As Submitted

Committee Reason: This proposal was approved as it clarifies which UL standard should be used filter systems. (Vote 13-0)

F83-24

# F84-24

**Errata:** This proposal includes unpublished errata The standard analysis for UL 1963-2011 has been updated and can be found here. https://www.iccsafe.org/wp-content/uploads/2024-Proposed-Standards\_Group-A.pdf

Committee Action: As Modified by Committee

#### **Committee Modification:**

**608.18.4 Refrigerant recovery and recycling equipment.** Electrically operated equipment used for recovery or recycling of refrigerant of Groups A2, A2L, and A3 shall be *listed* and *labeled* in accordance with UL 1963 and be marked as suitable for use with the refrigerant being recovered or recycled.

**2311.5 Refrigerant recovery and recycling equipment.** Electrically operated equipment used for recovery or recycling of refrigerant of Groups A2, <del>A2L,</del> and A3 shall be *listed* and *labeled* in accordance with UL 1963 and be marked as suitable for use with the refrigerant

being recovered or recycled.

**Committee Reason:** This appropriately requires listing of equipment for higher flammability refrigerants. The modification removes A2L refrigerants from this requirement as they pose lower flammability hazards. There was some concern that a standard should be developed to address A2L recovery and recycling but the hazard is much lower. (Vote 13-0)

F84-24

## F85-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved based upon the proponents reason statement and because it provides clarification that the requirements of NFPA 99 apply regardless of where these chambers are located. (Vote 14-0)

F85-24

## F86-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

611.3 Fire Extinguishers.

Approved portable fire extinguishers complying with Section 906 with a minimum rating of 2 A:20 B:C shall be provided and located such that an extinguisher is not more than 75 feet (23 860 mm) from electric vehicle charging stations.

**Committee Reason:** This proposal provides the basic requirements for emergency shutoff for electric vehicle charging stations similar to that provided for other types of fuels. The modification removes a requirement for fire extinguishers as there are currently no extinguishers available for lithium ion battery fires. Fire extinguishers will be generally be addressed by Section 906. There was some concern with the use of the term "accessible" as it may be confused with accessibility requirements for those with disabilities. (Vote 10-4)

F86-24

# F87-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were based on the request and testimony of the proponent. This will give some time to come back with a better approach, particularly looking at the right terminology in the right chapter or section. (Vote: 13-0)

F87-24

#### F88-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: Based upon the proponent's recommendation and testimony. There are many times doors have to operate in more than just a 90° opening in order to meet the egress requirements and therefore they should be tested in any position. (Vote: 14-4)

F88-24

# F89-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was based on the proponent's reason statement and for consistency with the IBC. (Vote: 14-0)

F89-24

## F90-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: This completes the coverage of requirements from installation to repairs. This is really well written and it is a needed proposal that addresses the gap. When it says replaced or restored in accordance with this listing, it will cover everything else that you are doing. (Vote:14-0)

F90-24

# F91-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was based upon the proponent's testimony and reason statement. (Vote: 13-1)

F91-24

# F92-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was based upon the proponent's reason statement and testimony. (Vote: 14-0)

F92-24

### F93-24

Committee Action: As Modified by Committee

Committee Modification: 2024 International Fire Code Revise as follows:

807.4.1 Flammability.

The flammability of artificial decorative vegetation shall be assessed in accordance with one of the following:

- 1. Where tested in accordance with NFPA 701 using Test Method 1 or Test Method 2, as appropriate, the artificial decorative vegetation shall meet the flame propagation performance criteria.
- 2. Where tested in accordance with NFPA 289 using the 20 kW ignition source, the artificial decorative vegetation shall have a maximum heat release rate of 100 kW.

**Committee Reason:** The committee stated that the reason for the approval of the modification was that it deletes an unnecessary word. The stated reasons for the approval of the proposal with the modification were: It arranges it in a legible and appropriate way, and it separates the two different areas of criteria. It is editorial and does not make any modifications. The section on documentation is helpful for the code official so that they can verify code compliance. (Vote: 14-0)

F93-24

# F94-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was based on the action taken on F93. (Vote: 14-0)

F94-24

# F95-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was based on the proponent's reason statement. (Vote: 14-0)

### F96-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: This belongs in NFPA 25 as inspection, testing and maintenance requirements, not in this section. These old sprinkler systems are pipe schedule systems and new sprinkler systems are now hydraulically calculated. These sprinkler systems have different K-factors, different orifice sizes, different densities and different commodity classes compared to those from 80 years ago. Therefore, you really need to do a hydraulic calculation and a hazard assessment to see what kind of sprinkler system and densities you need for the right protection. Exception number 2 that is proposed pivots the responsibility for determining testing versus replacement of sprinklers onto the fire code official which is inappropriate. There is no real time in item 2 to the testing. This is all dealing with replacement only, and it basically saying the fire code official can extend that. There ought to be some reference to the testing piece. (Vote: 14-0)

F96-24

## F97-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was based on the action taken on G17. (Vote: 13-1)

F97-24

# F98-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it simplifies the format of the section and makes it consistent with other the sections in the code. (Vote: 13-0)

F98-24

# F99-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: As Submitted

Committee Reason: The reason for the approval of the proposal was based on the proponent's reason statement. (Vote: 13-0)

# F100-24

Committee Action: As Modified by Committee

Committee Modification: 2024 International Fire Code

#### 903.3.1.3 NFPA 13D sprinkler systems.

Automatic sprinkler systems installed in one- and two-family dwellings and townhouses; Group R-3; and Group R-4, Gondition 1 shall be permitted to be installed throughout in accordance with NFPA 13D.

#### 2024 International Building Code

#### [F] 903.3.1.3 NFPA 13D sprinkler systems.

Automatic sprinkler systems installed in one- and two-family dwellings and townhouses; Group R-3; and Group R-4, Condition 1 shall be permitted to be installed throughout in accordance with NFPA 13D.

**Committee Reason:** The committee stated that the reason for the approval of the modification was based on the recommendation from the floor testimony. The stated reason for the proposal with the modification was based on the proponent's reason statement and testimony. (Vote: 11-0)

F100-24

### F101-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was based on the testimony and the action taken on F100. (Vote: 11-0)

F101-24

# F102-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: A Group R-3 occupancy may be a one- and two-family dwelling and be outside the scope of NFPA13D. There was also concern that the not exceeding 60 feet might be too low or a bad limitation. (Vote: 14-0)

F102-24

### F103-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was based on the previous action on F102. (Vote: 13-1)

F103-24

## F104-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was based on the proponent's reason statement. (Vote: 14-0)

F104-24

# F105-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was based on the previous action on F104. (Vote: 14-0)

F105-24

# F106-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The opposition to exempting all self-storage facilities from the requirement. The exception maintains the improved ability for fire departments to fight fires in self-storage facilities. It is a known fact that these facilities are being utilized for storage and sales out of these facilities even though there are self-storage type facilities. (Vote 12-2)

F106-24

# F107-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: There is another group that has studied this in dealing with a standard specifically for open-air parking structures and they realize the hazard that exists and have required all those to have an automatic sprinkler system regardless of size. The I-Codes currently allow a 48,000 square foot exception. Automobiles have changed. There have been several significant fires in England. One was at a festival, and it was surface parking down on the grass. It burned up in excess of 60 vehicles from the gas tanks rupturing and flying from vehicle to vehicle. And this was on the ground. (Vote:14-0)

F107-24

## F108-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it provides consistency in the sprinkler requirements for parking garages. (Vote: 8-5)

F108-24

### F109-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it provides the correct term that is to be used when measuring ductwork. (Vote: 11-2)

F109-24

# F110-24

Committee Action: Disapproved

#### Committee Reason:

The committee stated that the reason for the disapproval of the proposal was that it was identified by the proponent and others in testimony that it needed additional revisions. It was expected to be followed up with further revisions for the second committee action hearing. (Vote: 13-0)

F110-24

# F111-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: It provides a good reminder because of the lack of guidance out there for the sprinkler protection criteria and typically for the storage of lithium-ion batteries alternate methods are used with jurisdictions. While there is no testing data there are also not really good methods to extend the module level test out, so that is almost as inaccurate as the testing data, but there is nothing better right now. (Vote: 14-0)

F111-24

### F112-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that making the pointers for the direct sections of the automatic sprinkler system provisions that apply makes sense. (Vote: 14-0)

F112-24

### F113-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it uses correct terms in the code to match the reference standards. (Vote: 14-0)

F113-24

## F114-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The proponent made a statement that this was intended to be in conjunction with and work with automatic sprinkler systems. However, it is utilizing water mist as an exception to the use of an automatic sprinkler system. The additional concern that you are allowed to go from one hour to a zero hour corridor with an automatic sprinkler system in many occupancies and the design of these types of systems is not supported by that reduction. (Vote: 14-0)

F114-24

### F115-24

Errata: This proposal includes unpublished errata Add new standard(s) as follows:

2024 International Fire Code

UL 2162-2014 Commercial Wood-Fired Baking Ovens--Refractory Type--with Revisions through August 2019

Add new standard(s) as follows:

2024 International Building Code

UL 2162-2014 Commercial Wood-Fired Baking Ovens--Refractory Type--with Revisions through August 2019

Committee Action: As Modified by Committee

Committee Modification: 2024 International Fire Code Revise as follows:

#### 904.2.2 Commercial hood and duct systems.

An approved automatic fire-extinguishing system shall be installed to protect grease ducts and Type I commercial kitchen exhaust hoods required by Section 606, cooking appliances equipped with integral down-draft exhaust systems, smoker ovens with integral exhaust systems, and wood-fired ovens *listed* in accordance with UL 2162. The automatic fire-extinguishing system shall be installed in accordance with Sections 904.14 through 904.14.4.1.

#### **Exceptions:**

- 1. Factory-built commercial cooking recirculating systems listed and labeled in accordance with UL 710B, and installed in accordance with Section 304.1 of the *International Mechanical Code*.
- 2. Electric cooking appliances where an approved testing agency provides documentation that the appliance effluent contains 5 mg/m<sup>3</sup> or less of grease when tested at an exhaust flow rate of 500 cfm (0.236 m<sup>3</sup>/s) in accordance with UL 710B.

#### 2024 International Building Code

#### Revise as follows:

#### [F] 904.2.2 Commercial hood and duct systems.

An approved automatic fire-extinguishing system shall be installed to protect grease ducts and Type I commercial kitchen exhaust hoods required by Section 606, cooking appliances equipped with integral down-draft exhaust systems, smoker ovens with integral exhaust systems, and wood-fired ovens *listed* in accordance with UL 2162. The automatic fire-extinguishing system shall be installed in accordance with Sections 904.14 through 904.14.4.1.

#### **Exceptions:**

- 1. Factory-built commercial cooking recirculating systems listed and labeled in accordance with UL 710B, and installed in accordance with Section 304.1 of the *International Mechanical Code*.
- 2. Electric cooking appliances where an approved testing agency provides documentation that the appliance effluent contains 5 mg/m<sup>3</sup> or less of grease when tested at an exhaust flow rate of 500 cfm (0.236 m<sup>3</sup>/s) in accordance with UL 710B.

**Committee Reason:** The committee stated the reason for the approval of the modification is that it adds the words grease ducts which were missing and need to be included in the text. The stated reason for the approval of the proposal with the modification was that it

F115-24

## F116-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

**Committee Reason:** The committee stated the reasons for the disapproval of the proposal were: It gives a bad option. If you do have a building fire alarm and a dedicated functional fire alarm you are actually permitted to monitor them separately, and that is not the intent. NFPA 72 covers dedicated function fire alarm systems, and it is referenced there, and also it is not a defined term in the IFC. (Vote: 14-0)

F116-24

# F117-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: This is a big concern, but it should be handled on the state or EPA level. It is not the position of the fire code to regulate environmental substances. The time frame is problematic. It is being adjusted on the local level, and there are probably a lot more things that need to be done when you replace these systems. There is no foam for big tank fires now. (Vote: 13-0)

F117-24

# F118-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: It updates the appropriate information to the current standard and intent. There is no ignition prevention for gas right now. This would only apply to electric, which is exactly what is intended. (Vote: 13-0)

F118-24

# F119-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: There are control towers that are

extremely high, and most fire departments are not designed and equipped to pump these high-rise story structures with manual standpipes and that you require additional equipment, piping, and hose. There is not an upper terminus to where this allowance would be allowed like high rises, and it should stay manual wet, so it does not get confused with dry type systems. (Vote: 11-3)

F119-24

# F120-24

Committee Action: As Submitted

#### Committee Modification: 2024 International Fire Code

**905.3.8 High-piled storage.** High-piled <u>combustible</u> storage occupancies shall be equipped with Class I standpipes <del>when</del> <u>where</u> required by Section 3206.9.

#### 2024 International Building Code

**High-piled storage.** High-piled <u>combustible</u> storage occupancies shall be equipped with Class I standpipes <u>when</u> <u>where</u> required by Section 3206.9 of the *International Fire Code*.

Committee Reason: The committee stated that the reason for the approval of the modifications were that they added that the high-piled storage was "combustible" to match the defined term and the section reference specifies "where" instead of "when" the standpipes are required. The stated reason for the approval of the proposal with the modification was that it provides clarity in the use of the code. Although it was not stated, the proposal provides clarity that the high piled combustible storage requirements may trigger the need for a Class I standpipe. (Vote: 13-0)

F120-24

#### F121-24

Committee Action: As Submitted

Committee Modification: 2024 International Fire Code

#### 905.4 Location of Class I standpipe hose connections.

Class I standpipe hose connections shall be provided in all of the following locations:

1. In every required *interior exit stairway* or *exterior exit stairway*, a hose connection shall be provided for each story above and below *grade plane*. Hose connections shall be located at the main floor landing unless otherwise *approved* by the *fire code official*.

**Exception:** A single hose connection shall be permitted to be installed in the open *corridor* or open breezeway between open *stairs* that are not greater than 75 feet (22 860 mm) apart.

2. On each side of the wall adjacent to the exit opening of a horizontal exit. The hose connections shall be visible from and provided within 20 feet (6096 mm) of each side of the horizontal exit.

**Exception:** Where all floor areas are reachable from an *interior exit stairway* or *exterior exit stairway* hose connection on the same side of a horizontal exit within 130 feet travel distance, the hose connection on the other side of the horizontal exit shall be permitted to be omitted. Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, this travel distance may shall be permitted to be increased to 200 feet.

3. In every exit passageway, at the entrance from the exit passageway to other areas of a building.

**Exception:** Where all floor areas adjacent to an *exit passageway* are reachable from an *interior exit stairway* or *exterior exit stairway* hose connection

within 130 feet travel distance, the hose connection at the exit passageway shall be permitted to be omitted. Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, this travel distance may shall be permitted to be increased to 200 feet.

- 4. In covered mall buildings, adjacent to each exterior public entrance to the mall and adjacent to each entrance from an *exit passageway* or *exit corridor* to the mall. In open mall buildings, adjacent to each public entrance to the mall at the perimeter line and adjacent to each entrance from an *exit passageway* or *exit corridor* to the mall.
- 5. Where the roof has a slope less than 4 units vertical in 12 units horizontal (33.3-percent slope), a hose connection shall be located to serve the roof or at the highest landing of an *interior exit stairway* with access to the roof provided in accordance with Section 1011.12.
- 6. Where the most remote portion of a nonsprinklered floor or story is more than 150 feet (45 720 mm) from a hose connection or the most remote portion of a sprinklered floor or story is more than 200 feet (60 960 mm) from a hose connection, the *fire code official* is authorized to require that additional hose connections be provided in *approved* locations.

#### 2024 International Building Code

#### [F] 905.4 Location of Class I standpipe hose connections.

Class I standpipe hose connections shall be provided in all of the following locations:

1. In every required *interior exit stairway* or *exterior exit stairway*, a hose connection shall be provided for each *story* above and below *grade plane*. Hose connections shall be located at the main floor landing unless otherwise *approved* by the fire code official.

**Exception:** A single hose connection shall be permitted to be installed in the open corridor or open breezeway between open *stairs* that are not greater than 75 feet (22 860 mm) apart.

2. On each side of the wall adjacent to the exit opening of a *horizontal exit*. The hose connections shall be visible from and provided within 20 feet (6096 mm) of each side of the horizontal exit.

**Exception:** Where all floor areas are reachable from an *interior exit stairway* or *exterior exit stairway* hose connection on the same side of a horizontal exit within 130 feet travel distance, the hose connection on the other side of the horizontal exit shall be permitted to be omitted. Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, this travel distance may shall be permitted to be increased to 200 feet.

3. In every exit passageway, at the entrance from the exit passageway to other areas of a building.

**Exception:** Where all floor areas adjacent to an *exit passageway* are reachable from an *interior exit stairway* or *exterior exit stairway* hose connection

within 130 feet travel distance, the hose connection at the exit passageway shall be permitted to be omitted. Where a building is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2, this travel distance may shall be permitted to be increased to 200 feet.

4. In *covered mall buildings*, adjacent to each exterior public entrance to the *mall* and adjacent to each entrance from an exit *passageway* or exit *corridor* to the *mall*. In *open mall buildings*, adjacent to each public entrance to the *mall* at the perimeter line and adjacent to each entrance from an exit *passageway* or *exit* corridor to the *mall*.

- 5. Where the roof has a slope less than 4 units vertical in 12 units horizontal (33.3-percent slope), a hose connection shall be located to serve the roof or at the highest landing of an *interior exit stairway* with access to the roof provided in accordance with Section 1011.12.
- 6. Where the most remote portion of a nonsprinklered floor or *story* is more than 150 feet (45 720 mm) from a hose connection or the most remote portion of a sprinklered floor or *story* is more than 200 feet (60 960 mm) from a hose connection, the fire code official is authorized to require that additional hose connections be provided in *approved* locations.

Committee Reason: The committee stated that the reason for the approval of the modification was that it removes the word "may", which would be inappropriate. Although it was not stated, the I-Codes style typically uses the phrase "shall be permitted." The stated reason for the approval of the proposal with the modification was that it properly aligns the requirements in the IFC with NFPA 14. (Vote: 12-0)

F121-24

## F122-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: The preference to adding the text of "provided" because if there is a standpipe system that is being installed, the fire department wants to know if the standpipe is being installed in accordance with Section 905. Also, in the rare cases where standpipes may be voluntarily installed, this would also apply. (Vote: 13-1)

F122-24

# F123-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was the fact that NFPA 14 establishes this criteria and also the One Meridian Plaza fire, if these can be taken out of the system, it is far better off for firefighter safety. (Vote: 8-5)

F123-24

# F124-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was concern with the designation for the Class A rating only on the fire extinguishers based on information from the next edition NFPA 10 first draft meeting. (Vote: 13-0)

F124-24

### F125-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: Based on the reason and action taken on F124, and the mixed hazard fire extinguisher classifications. There was opposition to the idea of trying to designate an approved extinguishing agent. The code currently addresses where you are required to have fire extinguishers, in specific hazard areas, and the type of classification needs to be a decision by those that are handling those specific hazards. (Vote: 14-0)

F125-24

# F126-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was agreement with using inches instead of feet and the addition of the reference to the means of egress requirement. (Vote: 13-1)

F126-24

### F127-24

Committee Action: As Submitted

Committee Reason: The committee stated that the reasons for the approval of the proposal were: Remote access is already occurring and NFPA 72 has provisions for it as well, this is just the next logical step. For items such as maintenance and diagnostics, the fire alarm industry is not immune from some of the labor and staffing shortages that are out there. Personal experience with several fire alarm systems that have the ability to dial in remotely for diagnostics to figure out what is wrong with them. This is a great way and tool to get fire alarms that are having problems back in line faster, which aways improves Fire Protection. It is not only in NFPA 72, but it is also now part of the listing for fire alarm control units, and it is in UL 864. There is a remote inspection document that's being developed by NFPA. Also, when the pandemic occurred, there was not the ability for people to go in and do the maintenance and inspections that needed to be done so this is a a great mechanism to allow them to recognize this remote access. (Vote: 13-1)

F127-24

# F128-24

Committee Action: Withdrawn

F128-24

#### F129-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was that it should be left up to the university and the local responding fire department as a portion of the fire protection plan and evacuation plan to determine whether it is appropriate to have a supervisory alarm or a fire alarm signal. (Vote: 14-0)

F129-24

### F130-24

Committee Action: As Submitted

**Committee Reason:** The committee stated the reason for the approval of the proposal was based on the proponent's reason statement. (Vote: 13-0)

F130-24

## F131-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: Uncertainty with the language of "inhibit the conduct of the aircraft traffic control operations" and if it includes noise or lights. This could result in individuals being completely unaware of a fire situation in a control tower which would be unacceptable. This can already be done with the alternative methods of compliance. (Vote: 11-2)

F131-24

# F132-24

Committee Action: Disapproved

**Committee Reason:** The new language will result in uncertainty in how to enforce the proposed language such as the phrase "utility spaces, storage and shafts where permitted by other applicable standards." Smoke detectors in shafts are always a bad idea. It needs a complete rewrite. (Vote: 13-0)

F132-24

# F133-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: This is a good clarification and exception for a Group H-5 occupancy. It includes the opportunity for a manual shut down capability. The expectation that the emergency action plan or safety plan includes information on how to do this. (Vote: 13-0)

F133-24

# F134-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: As Submitted

**Committee Reason:** The committee stated the reason for the approval of the proposal was that it clarifies the ambiguity of when an alarm is required, especially if you have an occupied roof area. (Vote: 13-0)

F134-24

## F135-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: If there is some occupancy identified with this, it does not give that information in the proposal. It is very open-ended and unenforceable. It seems more like this should be in NFPA 72 as a different mode of notification instead of it being added to the IFC. Regarding the typical occupants, there is no threshold or definition. So, it would be compared to ambulatory care facilities. It also needs to tie into the fire safety and evacuation planning and address it there through either additional requirements in Chapter 4 or tie this to a plan that includes it. (Vote: 13-0)

F135-24

F136-24

Committee Action: Withdrawn

F136-24

F137-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The existing code language and the definition of public use and common areas do not need a list. Generally it was felt that lists should be avoided. It could be addressed in NFPA 72 and be in an annex with guidance about where these should be if there is really a gap in understanding the requirements. (Vote: 12-1)

F137-24

F138-24

Committee Action: As Submitted

Committee Reason: The reason for the approval of the proposal was based on the proponent's reason statement. (Vote: 13-0)

F138-24

F139-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: This has been a big hole in the code for a long time. Smoke control wiring is not fire alarm wiring in some cases. It can be BMS wiring, or it is power wiring that is outside what is called the fire alarm system. This level of protection is consistent with the fire alarm passive protection requirements and the controls that are currently in other sections. This provides additional options for the survivability of the wiring. This mirrors language that is in other sections where it is important to protect things like electric fire pumps. (Vote: 13-0)

F139-24

F140-24

Committee Action: As Submitted

**Committee Reason:** The reason for the approval of the proposal was based on the proponent's reason statement and it was stated by the committee that it is a good cleanup. (Vote: 12-2)

F140-24

F141-24

Committee Action: As Submitted

Committee Reason: The committee stated that the reason for the approval of the proposal was that it clarifies the intent of the

F141-24

### F142-24

Committee Action: As Submitted

Committee Modification: 2024 International Fire Code

#### 910.4.3 System design criteria.

The mechanical smoke removal system shall be sized to exhaust the building at a minimum rate of two air changes per hour based on the volume of the building or portion thereof without contents. The capacity of each exhaust fan shall not exceed 30,000 cubic feet per minute (14.2 m<sup>3</sup>/s). Exhaust fans performance shall be *listed* and *labeled* for performance in accordance with ANSI/AMCA 210-ANSI/ASHBAE 51.

#### 2024 International Building Code

#### [F] 910.4.3 System design criteria.

The mechanical smoke removal system shall be sized to exhaust the *building* at a minimum rate of two air changes per hour based on the volume of the *building* or portion thereof without contents. The capacity of each exhaust fan shall not exceed 30,000 cubic feet per minute (14.2 m<sup>3</sup>/s). Exhaust fans performance shall be *listed* and *labeled* for performance in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51.

Committee Reason: The committee stated that the reason for the approval of the modification was that it provides some important clarification. This was that it is the exhaust fans that are being listed and labelled. The stated reason for the approval of the proposal with the modification was that it provides performance requirements with a listing standard for the exhaust fans so that there is consistency that they will be performing safely and removing the amount of exhaust necessary. (Vote: 14-0)

F142-24

## F143-24

Committee Action: As Modified by Committee

**Committee Modification: 911.2 Explosion prevention systems.** Explosion prevention systems shall be of an approved type and <u>designed</u>, installed and maintained in accordance with the provisions of this code and NFPA 69.

**911.3 Deflagration venting.** Deflagration venting shall be of an approved type and <u>designed.</u> installed and maintained in accordance with the provisions of this code and NFPA 68.

Committee Reason: The committee approved based upon the limitation of the current language on explosion control within the IFC and IBC. A reference to simply to NFPA standards for explosion prevention and deflagration venting is more appropriate. The modification addresses the fact that such systems and venting need to not only be "installed and maintained" but also correctly "designed." (Vote 13-0)

## F144-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it clarifies the criteria of when it is provided or when it is provided then the requirements are applicable. (Vote: 14-0)

F144-24

### F145-24

Committee Action: As Submitted

Committee Reason: The addition of emergency power for explosion prevention systems were seen as necessary. (Vote 13-0)

F145-24

## F146-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was the section should be with the signage section and not with the FDC section. In addition, it is consistent with the update to the section made in the previous cycle. (Vote: 12-1)

F146-24

## F147-24

Committee Action: As Modified by Committee

# Committee Modification:

2024 International Fire Code

**912.2.3 Connection height.** Fire department connections shall be located not less than 18 inches (457 mm) and not more than 4 feet (1.2 m) above the level of the adjacent grade or access level.

#### 2024 International Building Code

**[F] 912.2.3 Connection height.** Newly installed fire <u>Fire</u> department connections shall be located not less than 18 inches (457 mm) and not more than 4 feet (1.2 m) above the level of the adjacent grade or access level.

Committee Reason: The committee stated that the reason for the approval of the modification was based upon the recommendation of the floor testimony that it matches the IFC section text. The stated reason for the approval of the proposal with the modification was that it provides the requirement for the plan reviewer that will be looking at this part of the architectural plans without having to go to a referenced standard. (Vote: 13-0)

F147-24

### F148-24

Committee Action: As Submitted

#### **Committee Modification:**

#### 2024 International Fire Code

**CARBON MONOXIDE SOURCE**. A combustion process that has the potential to: 1. P produce carbon monoxide as a product of combustion under normal or abnormal conditions, and 2. Expose building occupants to carbon monoxide. Carbon monoxide sources include, but are not limited to solid-, liquid-, or gas-fueled appliances, equipment, devices, or systems, such as fireplaces, furnaces, heaters, boilers, cooking equipment, and vehicles with internal combustion engines.

Carbon Monoxide Source, Direct. A permanently installed *carbon monoxide source*, other than a *direct vent appliance*, that is located in an interior space

Carbon Monoxide Source, Forced-indirect. A carbon monoxide source connected to an interior space by a forced air supply duct.

#### 915.4.1.1 Power source.

In buildings with a wired power source, *carbon monoxide alarms* shall receive their primary power from a permanent connection to building wiring, with no disconnecting means other than for overcurrent protection, and shall be provided with a battery backup. In buildings without a wired power source, *carbon monoxide alarms* shall be battery powered.

#### Exception:

For existing buildings not previously required to have carbon monoxide alarms permanently connected to a wired power source, existing battery-powered and plug-in with battery backup carbon monoxide alarms shall be permitted to remain in service. When replaced, replacement with battery-powered and plug-in with battery backup carbon monoxide alarms shall be permitted.

Carbon monoxide alarms shall be permitted to be battery powered or plug in with a battery backup where such alarms are being retrofitted into an existing building that was not previously required to have carbon monoxide detection permanently connected to a wired power source.

#### 2024 International Building Code

Delete and substitute as follows:

#### [F] CARBON MONOXIDE SOURCE.

A piece of commonly used equipment or permanently installed appliance, fireplace or process that produces or emits carbon monoxide gas.

#### [F] CARBON MONOXIDE SOURCE.

A combustion process that has the potential to produce carbon monoxide as a product of combustion under normal or abnormal conditions. Carbon monoxide sources include, but are not limited to solid-, liquid-, or gas-fueled appliances, equipment, devices, or systems, such as fireplaces, furnaces, heaters, boilers, cooking equipment, and vehicles with internal combustion engines.

<u>Carbon Monoxide Source</u>, <u>Direct</u>. A permanently installed <u>carbon monoxide source</u> that is located in an interior space.

<u>Carbon Monoxide Source</u>, <u>Forced-indirect</u>. A <u>carbon monoxide source</u> connected to an interior space by a forced air supply duct.

[F] 915.4.1.1 Power source.

In buildings with a wired power source, *carbon monoxide alarms* shall receive their primary power from a permanent connection to building wiring, with no disconnecting means other than for overcurrent protection, and shall be provided with a battery backup. In buildings without a wired power source, *carbon monoxide alarms* shall be battery powered.

#### Exception:

For existing buildings not previously required to have carbon monoxide alarms permanently connected to a wired power source, existing battery-powered and plug-in with battery backup carbon monoxide alarms shall be permitted to remain in service. When replaced, replacement with battery-powered and plug-in with battery backup carbon monoxide alarms shall be permitted.

Carbon monoxide alarms shall be permitted to be battery powered or plug in with a battery backup where such alarms are being retrofitted into an existing building that was not previously required to have carbon monoxide detection permanently connected to a wired power source.

Committee Reason: The committee stated that the reasons for the approval of the modifications were: 1. It is a needed cleanup for the definition that was needed to make it all work. 2. There is no good definition out there, and this is an improvement. 3. It is important to maintain its usability for existing buildings that have already taken steps to monitor for carbon monoxide. 4. It maintains consistency with modification 2. The stated reasons for the approval of the proposal with the modifications were: The technical changes make the requirements far superior by the differentiation of occupancy types between direct and indirect carbon monoxide sources. Based on personal experiences with carbon monoxide emergencies due to direct fuel fire rooftop units versus indirect fuel fire rooftop units there is a difference. The proposal better differentiates between direct and forced-indirect systems and how the protection strategy will vary particularity sleeping areas. (Vote: 13-0)

F148-24

## F149-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was based on the action taken on F148. (Vote: 14-0)

F149-24

# F150-24

Committee Action: As Submitted

Committee Modification: 2024 International Fire Code

#### 916.6 Sensor locations.

Sensors shall be installed in approved locations pursuant to an engineering evaluation analysis in accordance with NFPA 72.

#### 6004.2.2.7 Treatment systems.

The exhaust ventilation from gas cabinets, exhausted enclosures and gas rooms, and local exhaust systems required in Sections 6004.2.2.4 and 6004.2.2.5 shall be directed to a treatment system. The treatment system shall be utilized to handle the accidental release of gas and to process exhaust ventilation. The treatment system shall be designed in accordance with Sections 6004.2.2.7.1 through 6004.2.2.7.5 and Section 509 of the International Mechanical Code.

#### **Exceptions:**

- 1. Highly toxic and toxic gases—storage. A treatment system is not required for cylinders, containers and tanks in storage where all of the following controls are provided:
  - 1.1. Valve outlets are equipped with gastight outlet plugs or caps.
  - 1.2. Handwheel-operated valves have handles secured to prevent movement.
  - 1.3. Approved containment vessels or containment systems are provided in accordance with Section 6004.2.2.3.
- 2. Toxic gases—use. Treatment systems are not required for toxic gases supplied by cylinders or portable tanks not exceeding 1,700 pounds (772 kg) water capacity where a gas detection system complying with Section 6004.2.2.10 and listed or approved automatic-closing fail-safe valves are provided. The gas detection system shall have a sensing interval not exceeding 5 minutes. Automatic-closing fail-safe valves shall be located immediately adjacent to cylinder valves and shall close when gas is detected at the permissible exposure limit (PEL) by a gas sensor monitoring the exhaust system at the point of discharge from the gas cabinet, exhausted enclosure, ventilated enclosure or gas room.

#### 2024 International Building Code

#### [F] 916.6 Sensor locations.

Sensors shall be installed in approved locations pursuant to an engineering evaluation analysis in accordance with NFPA 72...

Committee Reason: The committee stated that the reason for the approval of the modification was that it clarifies the intent by replacing evaluation with the proper term analysis. The stated reasons for the approval of the proposal with the modification were: It outlines what needs to be done, what the requirements are and when to use NFPA 72. It has all the requirements for when you need to do a complete study evaluation, shop drawings, construction drawings, inspection, testing, maintenance and everything else. This proposal addresses the importance of an engineering analysis to establish the bounds of what the gas detection system is designed for. Construction documents include everything that you do to analyze and improve the project and provide a record moving forward of what was done. (Vote: 14-0)

F150-24

# F151-24

Committee Action: As Submitted

Committee Reason: The committee stated that the reasons for the approval of the proposal were: It does a great job, especially for lock down plans, which are happening more and more. Having a mass notification system tells people what is happening and what they should be doing during a lock down plan. It was suggested to look at the college or high school campuses that have multiple buildings and maybe use a cumulative number versus each building of 500 or more. Another suggestion was that since it has consolidated, it might need to be moved to Section 907 so that it is not missed in the fire alarm design. It is good that it requires a risk analysis, so it does not necessarily require a mass notification system, but you at least have to go through the steps to determine if it is necessary. (Vote: 14-0)

F151-24

### F152-24

Committee Action: Disapproved

#### Committee Reason:

The committee stated that the reasons for the disapproval of the proposal were: The cost justification is not there to require these throughout all Group R occupancies. It is not ready to be demanded at that level. While there is going to be a potential for such protection, especially as systems age, the approach should be incremental for existing buildings. Instead of a blanket requirement to retroactively require there should be some sort of program such as when it is being sold or as rentals occur where protection is required.

The justification of cost versus the number of incidents. The words gas alarm and gas detector are used interchangeably but they are very different. The terminology needs to be clarified and additional justification for these requirements is needed. There is confusion about interconnection and then connection to an alarm and annunciate the alarm. There is going to be a lot that goes with this to educate people regarding the different signal of the gas detection versus from their carbon monoxide alarm or smoke alarm. What do you do when it goes off if it is just interconnected within the home?

There are a lot of unresolved issues. The reference to NFPA 715 may be appropriate. This is not something that is new. This has been around for a long time. There is data about incidents, but NFPA 715 is not complete yet. This is not an instance where we want to have the codes getting ahead of the standard, instead let the standard be finished first. It can be evaluated where they are and then decide if it is appropriate. This should be in the IFGC and not in the IFC and IBC. The proposal is lumping LP gas with natural gas and there are some inherent differences between those two gases. There are inherent safety benefits to natural gas. In the future, there may be a benefit if they are separated out in the statistics and look at these as two separate hazards. (Vote: 13-0)

F152-24

## F153-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: Concern about the charging language of 1032.2 where it says for temporary events. This is for any temporary event, not just one that is connected with the pandemic, and many building owners will be using this for just about anything they want to do in their building which is dangerous. Disagreement with the wording. For the reduced occupant load, there is a dependence on a declared public emergency in order to enforce that section, which might be an issue. Also, the text of provided health, life and safety requirements are maintained, is a little vague and can be interpreted in a number of different ways. There should be some language that the plan has to be approved, not just submitted. (Vote: 11-1)

F153-24

## F154-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

**1032.10 Emergency lighting equipment inspection and testing.** Emergency lighting shall be maintained in accordance with Section 110 and shall be inspected and tested in accordance with Sections 1032.10.1 and through 1032.10.3

1032.10.2. Records of inspections, Power testing, Activation Testing, and maintenance shall be maintained in accordance with Section 110.3.

**1032.10.1** Activation test. Emergency lighting equipment shall be tested monthly for a duration of not less than 30 seconds. The test shall be performed manually or by an automated self-testing and self-diagnostic routine. Where testing is performed by self-testing and self-diagnostics, a visual inspection of the emergency lighting equipment shall be conducted monthly to identify any equipment displaying a trouble indicator or that has become damaged or otherwise impaired.

**1032.10.2 Power test.** Battery-powered emergency lighting equipment shall be tested annually by operating the equipment on battery power for not less than 90 minutes.

#### 1032.10.3 Records.

Records of inspections, power testing, activation testing, and maintenance shall be maintained in accordance with Section 110.3.

**Committee Reason:** The committee stated that the reason for the approval of the modification was that moving the sentence to another section is consistent with the Chapter 9 requirements for inspections. The stated reason for the approval of the proposal with the modification was that adding the requirements in this section is valid and something that is needed for fire marshals to review upon inspections and this will provide the direction. (Vote: 13-0)

F154-24

### F155-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that this will align the emergency escape windows required by the IFC with the requirements for fall protection in the IBC and IRC. (Vote: 13-0)

F155-24

## F156-24

Errata: This proposal includes unpublished errata

Further revise to add existing omitted language and show language as deleted.

**1101.2** Intent. The intent of this chapter is to provide a minimum degree of fire and life safety to persons occupying existing buildings by providing minimum construction requirements where <u>such existing buildings do not comply with the minimum requirements</u> of Sections 1103 through 1106 of the International Building Code. Noncompliance with this chapter shall not, in itself, be a basis for causing a building to be deemed as an unsafe building.

Remove from proposal - addressed later in proposal.

1101.3 Permits. Permits shall be required as set forth in Sections 105.5 and 105.6 and the International Building Code.

Committee Action: As Submitted

**Committee Reason:** This proposal appropriately allows a realistic time fore compliance and will make Chapter 11 more practical to apply. (Vote 13-0)

F156-24

# F157-24

**Errata:** This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

Committee Reason: This was disapproved as it conflicts with F231-24 which was Approved as Modified. (Vote 14-0)

F157-24

### F158-24

Committee Action: As Modified by Committee

#### Committee Modification: Revise the footnotes to Table 1104.18 as follows:

e.	In smoke compartments containing care recipient sleeping rooms and treatment rooms, dead-end corridors shall comply with Section 4105.6.7-1105.6.6.
f.	In Group I-2, Condition 2, care recipient sleeping rooms or any suite that includes care recipient sleeping rooms shall comply with Section 4105.6.6-1105.6.7.

**Committee Reason:** The proposal was approved as it was felt that the section references needed to updated along with the footnotes specific to Group H occupancy sprinkler requirements. The modification provides the correct section numbers. (Vote 14-0)

F158-24

# F159-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved as the change in terminology would remove correlation with NFPA. The intent is specific to "paint rooms." (Vote14-0)

F159-24

# F160-24

Committee Action: As Submitted

**Committee Reason:** The proposal was approved based upon the reason statement. Additionally, the location of these requirements was felt to be appropriate as they are focused upon existing buildings. (Vote 13-0)

## F161-24

Committee Action: As Modified by Committee

**Committee Modification: 1207.12.1 Early detection.** In addition to identifying potential failure events, the report shall include an assessment of the ability of the installed protection systems to provide for early detection and notification to effect on the installed protection of the ability of the installed protection systems to provide for early detection and notification to effect of the installed protection of the ability of the ability of the installed protection of the ability of the abilit

**Committee Reason:** This was approved as it is more appropriately located within Chapter 12 versus Chapter 11 which is focused on construction retrofit requirements. This is operational and maintenance in nature. The modification is simply using the correct wording to make it clear that detection and notification is "to" the emergency responders. (Vote 13-0)

F161-24

### F162-24

**Errata:** This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: As Submitted

Committee Reason: This proposal was approved as submitted as it was felt a reasonable trigger for the installation of an automatic sprinkler system after a fire based upon the type of occupancy and the extent of damage. It was noted that many jurisdictions in California already require this. There was concern that this will often trigger an entire infrastructure that did not exist previously and questions remain as to what the 60 days will include. Some also felt a better understanding how this will work with tax credits and the insurance industry is needed. (Vote 11-3)

F162-24

### F163-24

Committee Action: As Modified by Committee

Committee Modification: 2024 International Fire Code

#### 1203.1.3 Installation.

Microgrids Energy storage systems (ESS), Emergency power systems and standby power systems shall be installed in accordance with the *International Building Code*, NFPA 70, and where applicable, NFPA 99, NFPA 110 and NFPA 111.

#### 1203.4.1 Group I-2 and ambulatory care facilities.

In Group I-2 occupancies and ambulatory care facilities, microgrids energy storage systems (ESS), emergency and standby power systems shall be maintained in accordance with NFPA 99.

#### 1203.5.1 Group I-2 and ambulatory care facilities.

In Group I-2 occupancies and ambulatory care facilities, microgrids energy storage systems (ESS), emergency and standby power systems shall be inspected and tested under load in accordance with NFPA 99.

#### 2024 International Building Code

**[F] 2702.1.3 Installation.** Microgrids-Energy storage systems (ESS), Emergency power systems and standby power systems required by this code or the International Fire Code shall be installed in accordance with the International Fire Code, NFPA 70, and where applicable, NFPA 99, NFPA 110 and NFPA 111.

**Committee Reason:** This proposal was approved based upon the reason statement. Modifications remove unnecessary additional references to the IBC and IFC and simply pull in a more general term of ESS. Microgrids are considered a subset of ESS. (Vote 13-0)

F163-24

## F164-24

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the reason statement. (Vote 14-0)

F164-24

# F165-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved as more work was needed. Specifically there were concerns that more stakeholders needed input. Addition it was unclear what "small obstructions" and statements like "impede actions" intend. (Vote 14-0)

F165-24

## F166-24

Committee Action: As Submitted

Committee Reason: The proposal clarifies what the exceptions were intended to apply to. (Vote 14-0)

F166-24

# F167-24

Committee Action: Disapproved

**Committee Reason:** These provisions need to remain for fire fighter safety. NFPA 70 only addresses new installations and is more focused on contractor and worker safety. (Vote 14-0)

F167-24

### F168-24 Part I

Committee Action: Disapproved

**Committee Reason:** This was not seen as necessary and does not align with the IRC. There is no evidence that this will assist with fire fighter safety. (Vote 14-0)

F168-24 Part I

### F168-24 Part II

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of this proposal. The committee's reasoning is that this proposal would require a solar PV system, which is not necessary for buildings built to IBC and is a concern from the IRC perspective.

F168-24 Part II

## F169-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

**1207.1 General.** The provisions in this section are applicable to stationary, portable, and mobile electrical energy storage systems (ESS).

**Exception**: ESS in Group R-3 and R-4 occupancies *listed* and *labeled* for use in *habitable spaces* in accordance with UL 9540 and where installed in accordance with the *listing*, the manufacturer's installation instructions and NFPA 70.

**1207.3 Installation.** Stationary, mobile and portable electrical energy storage systems (ESS). shall be designed, constructed, installed, commissioned, operated, maintained, and decommissioned in accordance with NFPA 855, the required listings and the manufacturer's installation instructions, and the applicable requirements in this section.

Energy storage systems (ESS) shall also comply with NFPA 99 where applicable.

#### 1207.8 Explosion control.

Where explosion control is required by NFPA 855, an NFPA 69 explosion control system complying with Section 911 shall be provided for rooms, areas, ESS cabinets or ESS walk-in units containing the electrochemical ESS technologies. Where an ESS cabinet or ESS walk-in unit is installed within a room or building the design of the explosion control system shall include the cabinet, walk-in unit and the room it is installed within.

Exception: Where approved by the fire code official, engineered explosion control systems for ESS cabinets designed, validated, and evaluated in accordance with NFPA 855, shall be permitted in lieu of providing explosion control complying with Section 911.

Committee Reason: This proposal was approved as it will reduce conflicts with NFPA 855 and keep the code technically up to date. There are three modifications. The first being the exception for Group R-3 and R-4 occupancies from the application of these requirements where appropriately listed and labeled and complying with both the manufacturers instructions and NFPA 70. The broad application of NFPA 855 ESS provisions for more commercial installations is not practical for those occupancies. The second modification provides correlation with the requirements for healthcare occupancies with the reference to NFPA 99. The third modification simply recognizes the use of explosion control systems in lieu of general compliance with Section 911 of the IFC. (Vote 14-0)

F169-24

#### F170-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

**1207.1 General.** The provisions in this section are applicable to stationary and mobile electrical energy storage systems (ESS). **Exceptions:** 

- 1. These requirements shall not apply to ESS in <u>buildings and</u> structures designed and constructed in accordance with the *International Residential Code*.
- 2. ESS in Group R-3 and R-4 occupancies shall only be required to comply with Section 1207.11 except where Section 1207.11.4 requires compliance with Sections 1207.1 through 1207.9.

**Committee Reason:** This provides the necessary link for one and two family dwellings regulated by the IRC. The modification simply recognizes that the phrase should include "buildings" along with "structures" to be clear on applicability. In addition exception 2 was deleted to correlate with F169-24. Further correlation will be needed to integrate this exception with F169-24. (Vote 14-0).

F170-24

## F171-24

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the proponents reason statement. (Vote 13-0)

F171-24

F172-24

Committee Action: Disapproved

Committee Reason: This proposal needs to address EV to Mobile ESS and there was concern with allowing compliance with this

F172-24

## F173-24

Committee Action: Disapproved

**Committee Reason:** The issues being addressed by this proposal were felt better addressed as a modification to F169-24 in Section 1207.1. (Vote 11-3)

F173-24

## F174-24

Committee Action: Disapproved

Committee Reason: Disapproved based upon the action on F169-24. (Vote 14-0)

F174-24

# F175-24

**Errata:** This proposal includes unpublished errata The standard analysis for UL 9741-2023 has been updated and can be found here. https://www.iccsafe.org/wp-content/uploads/2024-Proposed-Standards\_Group-A.pdf

Committee Action: Disapproved

**Committee Reason:** This proposal would create an unsafe situation and negate the safety that is required by UL 9540. There was some concern that this needs to be acknowledged and addressed with the need for additional approval requirements. (Vote 13-0)

F175-24

## F176-24

**Errata:** This proposal includes unpublished errata The standard analysis for UL 2743-2023 has been updated and can be found here. https://www.iccsafe.org/wp-content/uploads/2024-Proposed-Standards\_Group-A.pdf

Committee Action: Disapproved

Committee Reason: More information is needed as to what kind of equipment this proposal is intending to to address. (Vote 10-3)

# F177-24

Committee Action: As Submitted

Committee Reason: Correlates the seaplane requirements with Chapter 20 and closes an important regulatory gap. (Vote 14-0)

F177-24

## F178-24

**Errata:** This proposal includes unpublished errata The standard analysis for CAN/UL 5840-2022 has been updated and can be found here. https://www.iccsafe.org/wp-content/uploads/2024-Proposed-Standards\_Group-A.pdf

Committee Action: As Submitted

Committee Reason: This proposal was approved as it is the appropriate standard for this particular application (Vote 13-0)

F178-24

## F179-24

Committee Action: As Submitted

**Committee Reason:** This proposal aligns the requirements for fuel spill requirements with federal regulations and general safe practices for fueling. (Vote 14-0)

F179-24

## F180-24

Committee Action: As Submitted

**Committee Reason:** The committee appreciated the intent of this proposal to provide more detail on how to address these emerging technologies but felt it needed further refinement. In particular, there were concerns with how fire fighting foam should be addressed as the agents are changing. Also, as written foam systems are being applied beyond that required by NFPA 318. Associated loss history does not seem to justify. (Vote 9-5)

F180-24

#### F181-24

Committee Action: As Modified by Committee

Committee Modification: 2203.1 Combustible dust hazard identification. Where the smallest dimension of the material is less than or equal to 500 µm, the owner/operator shall be responsible for determining whether the material is combustible or explosible. Where the combustibility of a dust or particulate solid is not determined by an approved source, the <u>owner owner/operator</u> shall test representative samples in accordance with NFPA 652. A copy of the test results shall be provided to the *fire code official* upon request.

**2203.3.2 Management systems, training, and operation procedures.** The <u>owner owner/operator</u> shall maintain management systems in accordance with Chapter 8 of NFPA 652 to ensure the facility and equipment is safely maintained and operated.

**2205.1 Specific hazards standards.** The <u>owner owner/operator</u> of a facility with a combustible dust hazard shall be responsible for following the additional industry- or material-specific provisions of the codes and standards listed in Table 2205.1 to prevent and control dust explosions, as applicable. Mission continuity requirements found in NFPA standards are not required by this code.

**Committee Reason:** This proposal was approved as this rewrite was seen as essential due to the complexity and hazards associated with combustible dusts. There was some concern with the expansion of the requirements with the reference more broadly to NFPA standards. The modification was simply to remove the term owner/operator and replace with simply owner. The term "operator" is found in the definition for "owner." (Vote 14-0)

F181-24

## F182-24

Committee Action: As Submitted

**Committee Reason:** This proposal which pulls together all fueling operations into a single chapter was felt to be a necessary clean up to clarify the consistent application of requirements. (Vote 13-0)

F182-24

# F183-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved based upon the action on F182-24. This is particularly necessary as all the fueling requirements are now found in Chapter 23 based upon F182-24 and a distinction needs to be made for repair garages with the introduction of this new chapter. There was some concerns raised as to how industrial trucks would be regulated in this chapter in terms of what is considered an "approved" location. (Vote 13-0)

F183-24

### F184-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved as the committee was not in favor of such a wholesale reference to NFPA 33 and 34. Such revisions need to be incremental. (Vote 14-0)

F184-24

### F185-24

Committee Action: As Submitted

Committee Reason: This proposal was approved as it uses the correct terminology. (Vote 13-0)

F185-24

## F186-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved as it addresses a ignition hazard not explicitly covered by the term "smoking." There was concern with the need to replace signage. In addition, some felt that more justification was needed related to the specific hazards of vaping. (Vote 7-6)

F186-24

## F187-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved as it provides the appropriate specific requirements for inflatable finishing workstations with the direct reference to NFPA 33. There was concern that NFPA 33 references NFPA 5000. There needs to be addressed to reference the IBC instead. It was noted that NFPA 5000 also states "or referenced building code." (Vote 7-6)

F187-24

## F188-24

Errata: This proposal includes unpublished errata The phrase "spray operations shall automatically shut down should be underlined as follows:2024 International Fire Code2404.9.2 Recirculation. Air exhausted from spraying operations shall not be recirculated.

Exceptions:

- 1. Air exhausted from spraying operations is allowed to be recirculated as makeup air for unmanned spray operations, provided t
  - 1.1. The solid particulate has been removed.
  - 1.2. The vapor concentration is less than 25 percent of the LFL.
  - 1.3. Approved equipment is used to monitor the vapor concentration.
  - 1.4. When the vapor concentration exceeds 25 percent of the LFL, both of the following shall occur:
    - 1.4.1. An alarm shall sound.
    - 1.4.2. Spray operations shall automatically shut down.
  - 1.5. In the event of shutdown or failure of the vapor concentration monitor, 100 percent of the air volume specified in Section 5
- 2. Air exhausted from spraying operations is allowed to be recirculated as makeup air to manned spraying operations where all c the installation does not pose a life safety hazard to personnel inside the spray booth, spraying space or spray room.

Committee Action: As Submitted

**Committee Reason:** The addition "or failure" and the fact that the spray operation simply needs to be shut down gives more direction on what needs to happen. Failure needs to be addressed as that may occur without shutdown. (Vote 13-0)

F188-24

### F189-24

Committee Action: As Submitted

Committee Reason: The proposal was approved as it clarifies where the concentration should criteria should be measured. (Vote 14-0)

F189-24

# F190-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved as it does good job of keeping the certain portion of requirements in Chapter 27 while referencing NFPA 318. There were some reservations that the revisions may need to be reviewed in more detail such as for flammable and combustible liquid storage. (Vote 11-3)

F190-24

# F191-24

Committee Action: As Submitted

Committee Reason: This was seen a good clean up of terminology as the intent is that it is mechanical exhaust. (Vote 14-0)

F191-24

F192-24

Committee Action: Disapproved

Committee Reason: This was disapproved based upon the action on F190-24 which more broadly references NFPA 318. (Vote 14-0)

F192-24

F193-24

Committee Action: Disapproved

Committee Reason: This was disapproved based upon the action on F190-24 which more broadly references NFPA 318. (Vote 14-0)

F193-24

F194-24

Committee Action: Disapproved

Committee Reason: This was disapproved based upon the action on F190-24 which more broadly references NFPA 318. (Vote 14-0)

F194-24

F195-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved as it provides direction on how to address waste recovery, handling and treatment systems at semi-conductor facilities. (Vote 14-0)

F195-24

F196-24

Committee Action: As Submitted

**Committee Reason:** This is an appropriate deletion as NFPA 86 is already more broadly referenced in the chapter and is more comprehensive with regard to interlocks. There was a concern raised that the code should still acknowledge interlocks more specifically even if simply referencing NFPA 86 in that regard. (Vote 14-0)

F196-24

## F197-24

Committee Action: As Submitted

**Committee Reason:** This seemed to be a reasonable way to determine if sprinklers were required versus simply requiring protection. However it was suggested that this could be reversed to simply state that sprinklers are require but alternatively a study could be undertaken. (Vote 13-1)

F197-24

## F198-24

Committee Action: Disapproved

**Committee Reason:** The committee did not agree with removing the specific term "air supported" as it will make enforcement more difficult for larger inflated play structures. (Vote 11-2)

F198-24

# F199-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved as there was concern that the revisions will create a loop between the IBC and IFC for temporary structures with the references to the IBC. Also the references to the IBC will be more general versus referencing specific sections of Chapter 16 which may cause confusion. (Vote 13-0)

F199-24

# F200-24

Committee Action: As Submitted

**Committee Reason:** This proposal will provide the necessary authority to the building official to enforce the requirements related to structural requirements for temporary tents, temporary structures and temporary special event structures. This may also help provide more support to the fire code official that struggles with getting the assistance of the building official. (Vote 11-2)

F200-24

### F201-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

3104.2 Flame propagation performance testing and certification. Before a permit is granted, the *owner* or agent shall file with the *fire code official* a certificate an affidavit provided by the product manufacturer to verify that the materials have been tested and certified by an *approved* testing laboratory. The certificate affidavit shall indicate that the floor coverings, *tents*, *membrane structures* and their appurtenances, which include sidewalls, drops and tarpaulins, are composed of materials meeting the flame propagation performance of Test Method 2 of NFPA 701. Additionally, it shall indicate that the bunting and combustible decorative materials and effects are composed of material meeting the flame propagation performance criteria of Test Method 1 or Test Method 2 of NFPA 701, as applicable. Alternatively, the materials shall be treated with a flame retardant in an *approved* manner and meet the flame propagation performance criteria of the applicable test method of NFPA 701. The certificate affidavit shall indicate compliance with the testing requirements of NFPA 701, Chapter 16. The flame propagation performance criteria shall be effective for the period specified by the permit.

3104.4 -Affidavit Certificate. The certificate affidavit required by Section 3104.2 shall contain all of the information specified in Section 3104.3.

**3106.3 Combustible materials.** The materials used in the construction of the inflatable amusement device shall meet the flame propagation criteria of Test Method 2 of NFPA 701. Additionally, a label and <u>a certificate</u> <u>affidavit</u> containing the information required in Sections 3104.3 and 3104.4 of this code shall be permanently affixed to the device.

**Committee Reason:** This proposal was approved based upon the proponents reason statement. The modification simply revises the term "affidavit" to "certificate." An affidavit is a much more complex legal process that is not considered necessary in this application. (Vote 14-0)

F201-24

# F202-24

Committee Action: Disapproved

Committee Reason: This was disapproved based upon the previous action on F201-24. (Vote 14-0)

F202-24

F203-24

Committee Action: As Submitted

**Committee Reason:** This was approved as it provides consistency with the 2024 IBC. There was some concern with the jump from 42 days to 180 days. (Vote 10-4)

F203-24

### F204-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved as it references a standard that comprehensively addresses the testing needs of inflatable amusement devices. It was also appreciated that the testing standard excludes the internal gusset fabrics from testing. (Vote 14-0)

F204-24

## F205-24

Committee Action: Disapproved

**Committee Reason:** Proposal needs more review as the section is being reversed. I was suggested that the items in Section 3203.9 become exceptions (Vote 8-6)

F205-24

# F206-24

Committee Action: As Submitted

**Committee Reason:** This is a good clean up as now the pallet exception is dealt with in each of the equations and such exceptions are not simply for noncombustible pallets. (Vote 14-0)

F206-24

# F207-24

Committee Action: As Modified by Committee

Committee Modification: Portions of table not shown remain unchanged.

COMMODITY	SIZE OF HIGH-PILED STORAGE AREA <sup>a</sup> (square feet) (see Sections 3206.2 and 3206.3)	ALL STORAGE AREAS (see Sections 3206, 3207 and 3208) b				SOLID-PILED STORAGE, SHELF STORAGE AND PALLETIZED STORAGE (see Section 3207.3)		
		Automatic sprinkler system (see Section 3206.4)	Fire detection system (see Section 3206.5)	Fire department access doors (see Section 3206.7)	Smoke and heat removal (see Section 3206.8)	Maximum pile dimension <sup>C</sup> (feet)	Maximum permissible storage height <sup>d</sup> (feet)	Maximum pile volume (cubic feet)

a.	Where automatic sprinklers are required for reasons other than those in Chapter 32, the portion of the sprinkler system protecting the high-piled storage area shall be designed and installed in accordance with Sections 3207 and 3208.
b.	For aisles, see Section 3206.10.
C.	Piles shall be separated by aisles complying with Section 3206.10.
d.	For storage in excess of the height indicated, special fire protection shall be provided in accordance with Note f where required by the fire code official. See Chapters 51 and 57 for special limitations for aerosols and flammable and combustible liquids, respectively.
e.	For storage exceeding 30 feet in height, Option 1 shall be used.
f.	Special fire protection provisions including, but not limited to, fire protection of exposed steel columns; increased sprinkler density; additional in-rack sprinklers, without associated reductions in ceiling sprinkler density; or fire department hose connections shall be provided where required by the fire code official.
g.	Not required where an automatic fire extinguishing sprinkler system is designed and installed to protect the high-piled storage area in accordance with Sections 3207 and 3208.
h.	Not required where storage areas are protected by either early suppression fast response (ESFR) sprinkler systems or control mode special application sprinklers with a response time index of 50 (meters-seconds) <sup>1/2</sup> or less that are listed to control a fire in the stored commodities with 12 or fewer sprinklers, installed in accordance with NFPA 13.
i.	Not required in frozen food warehouses used solely for storage of Class I and II commodities where protected by an approved automatic sprinkler system.

**Committee Reason:** This proposal was approved to use the correct term within the table and associated footnotes. The modification simply places the reference to Section 3206.4 that was inadvertently deleted in the original proposal. (Vote 14-0)

F207-24

## F208-24

Committee Action: As Submitted

Committee Reason: This was a title revision so was seen as simply editorial. (Vote 14-0)

F208-24

# F209-24

Committee Action: As Submitted

**Committee Reason:** This addresses the section more appropriately as an exception. Need to start with the "where required." (Vote 14-0)

F209-24

### F210-24

Committee Action: Disapproved

**Committee Reason:** The overall intent of the proposal was supported however several concerns were raised such as the use of the phrase "incipient stage fire." Additionally, the language in 3303.6.2 may cause legal issues if the occupant is required to respond and they do not. The order in which fire watch personal are taking action appear reversed. It was unclear how this section would apply to alterations when the terms "new construction" are deleted from Section 3303.5.1. (Vote 9-5)

F210-24

# F211-24

Committee Action: Disapproved

**Committee Reason:** Their was concerns with how utilities were being placed into the site safety plans. Item 7 appeared beyond the scope of what was intended by that item which was focused on temporary heating. Addition it was felt that utilities are addressed by the planning department and the main issues is the connection itself. (Vote 11-3)

F211-24

# F212-24

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the proponents reason statement. (Vote 14-0)

F212-24

# F213-24

Committee Action: Disapproved

**Committee Reason:** Overall the term provided some clarification of intent of rubbish removal during a work shift there were several concerns raised on language that appeared inconsistent. One example pointed out was "combustible waste material containers" versus "rubbish containers." The word "a" was missing between "during" and "work." Generally, it was felt that more clean up is needed. (Vote 9-5)

#### F214-24

Committee Action: As Submitted

**Committee Reason:** This proposal provides the appropriate terminology of "welding and other hot work" and also the appropriate extinguisher that should be provided. (Vote 14-0)

F214-24

## F215-24

Errata: This proposal includes unpublished errata 3305.10.2 Open-flame roof torch devices. Roofing operations utilizing open-flame roof torch devices shall be conducted in accordance with approved open-flame torch device safety training and Section 105.5.25. There shall be notless than two multiple-purpose portable fire extinguishers with a minimum 3-A 40-B:C rating within 10 feet (3 m) of each lit torch

Committee Action: Disapproved

**Committee Reason:** Although this proposal raises the bar but this language may be better located in the hot work chapter. There was concern on the requirement for training within the code. There was also a request for more loss history to justify the need for this requirement. (Vote 12-2)

F215-24

# F216-24

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the proponents reason statement. (Vote 14-0)

F216-24

# F217-24 Part I

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the proponents reason statement. (Vote 14-0)

F217-24 Part I

### F217-24 Part II

Committee Action: Disapproved

**Committee Reason:** This change is not editorial as indicated in the reason statement. At this point in construction, typically only temporary stairs are provided, so permanent stairways should not be in this section. It is not clear on what an 'approved' temporary stairway is - who would be inspecting and certifying that. If the intent is to allow for some flexibility for temporary stairways, that should be clarified further. (Vote: 9-5)

F217-24 Part II

### F218-24

Committee Action: Disapproved

Committee Reason: Proposal F212-24 which was approved as submitted already addresses this issue. (Vote 11-3)

F218-24

### F219-24

Committee Action: As Submitted

**Committee Reason:** The proposal improves readability of the criteria for water supply by breaking down the provisions into a list. (Vote 14-0)

F219-24

# F220-24

Committee Action: As Modified by Committee

**Committee Modification: 3308.1 Conditions of use.** Internal-combustion-powered construction equipment shall be used in accordance with all of the following conditions:

- 1. Equipment shall be located so that exhausts do not discharge against combustible material.
- 2. Exhausts for stationary equipment shall be piped to the outside of the building.
- 3. Equipment shall not be refueled while in operation.
- 4. Fuel for equipment shall be stored in an approved area in accordance with Section 3309.1 3309.2 outside of the building.

Committee Reason: This proposal was approved to clarify that that exhaust is only required to be piped outside where the equipment is stationary. Also with regard to fuel for equipment there are specific provisions within CHapter 33 that already address such storage. The modification corrects the proposed section reference to Section 3309.1 for flammable liquid storage as Section 3309.2 is applicable to flammable gases. (Vote 13-1)

#### F221-24

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the proponents reason statement. (Vote 13-1)

F221-24

### F222-24

Committee Action: As Submitted

**Committee Reason:** This proposal approved based upon the reason statement and appropriately requires egress for construction workers. (Vote 14-0)

F222-24

### F223-24

Committee Action: As Submitted

Committee Reason: The proposal was approved based upon the proponents reason statement. (Vote 14-0)

F223-24

### F224-24

Errata: This proposal includes unpublished errata In item 3 the terms "At least one layer of" were inadvertently shown as struck out where they should be shown as new language as follows. 3312.1 Fire safety requirements for buildings of Types IV-A, IV-B and IV-C construction designed to be greater than six stories above grade plane shall comply with the following requirements during construction unless otherwise approved by the fire code official:

- 1. Standpipes shall be provided in accordance with Section 3307.2.
- 2. An approved water supply for fire department operations, as approved by the fire code official and the fire chief.
- 3. Where building construction exceeds six stories above *grade plane* and At least one layer of noncombustible protection <u>as</u> is re installed on all building elements on floor levels, including mezzanines, more than four levels below active mass timber construction.

#### **Exceptions:**

- 1. Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction.
- 2. Noncombustible material on the top of mass timber floor assemblies shall not be required before erecting additional flo

4. Where building construction exceeds six stories above *grade plane*, required Required exterior wall coverings shall be installed ( levels can be erected.

Exception: Shafts and vertical exit enclosures shall not be considered part of the active mass timber construction.

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the proponent's reason statement. (Vote 14-0)

F224-24

# F225-24

Committee Action: Disapproved

**Committee Reason:** Disapproval was based on general concerns with the technology and how it works. Additionally there was concern as to how it would work after hours. It as suggested that perhaps an appendix may be a better place to start. Also it was suggested that the devices obtain some sort of listings and for more details regarding these systems be mapped out and provided. (Vote 14-0)

F225-24

## F226-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved as it should be addressed more globally throughout teh code. It was suggested that perhaps instead of listing occupancies that are prohibited that it should be occupancies where such activities are permitted. (Vote 11-1)

F226-24

# F227-24

Committee Action: As Submitted

Committee Reason: This proposal was approved as it fixes nonmandatory language. (Vote 11-0)

F227-24

# F228-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved based upon inappropriately limiting the title of the chapter to mobile cooking versus all temporary cooking. Though only the title would be limited to mobile cooking it may affect application to fairs and carnivals. Generally the committee was supportive the addition of trailers though more thought may be needed on the concept of occupiable. (Vote 8-4)

F228-24

## F229-24

Committee Action: Disapproved

**Committee Reason:** The definitions make the application of these requirements too broad and encompassing. As written it would pull many applications not anticipated to be regulated such as small food carts. Focus should be more commercial operations. In addition the definitions are more like commentary and the terms are not used in the code. NFPA 96 covers all these operations already. (Vote 13-0)

F229-24

## F230-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved as it appropriately brings all the battery requirements into a single chapter. (Vote 14-0)

F230-24

## F231-24

Committee Action:

As Modified by Committee

Committee Modification: 1103.9 Carbon monoxide detection. Carbon monoxide detection shall be installed in existing buildings where any of the conditions identified in Section 915.1.1 exist and in *pet boarding* areas as specified in Section 4204.3. Carbon monoxide alarms shall be installed in the locations specified in Section 915.2 and the installation shall be in accordance with Section 915.4.

#### **Exceptions:**

- 1. Carbon monoxide alarms are permitted to be solely battery operated where the code that was in effect at the time of construction did not require carbon monoxide detectors to be provided.
- 2. Carbon monoxide alarms are permitted to be solely battery operated in <u>buildings</u> dwelling units that are not served from a commercial power source.

3. A carbon monoxide detection system in accordance with Section 915.5 shall be an acceptable alternative to carbon monoxide alarms.

4201.2 Operational Permit. A An operational permit shall be required for pet boarding as set forth in Section 105.5.

Committee Reason: Approval was based upon the need for these requirements. The provisions are reasonable and focus on risk. Providing these provisions will provide consistency that can be used more broadly then leaving such requirements up to local regulators and legislature. The committee felt that it is better placed within the code than within an appendix. There were two minor modifications. The first modification corrects the term from "dwelling unit" to "buildings." Dwelling unit would be too limiting for the types of occupancies this would be allowed to be applied. The second provides correlation with the permit related proposal F2-24 stating "operational permit" more specifically. (Vote 14-0)

F231-24

### F232-24

Committee Action: As Submitted

Committee Reason: Adds necessary exceptions to operational permits to allow in ABHR in various occupancies. (Vote 10-0)

F232-24

## F233-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

**5001.1 Scope.** Prevention, control and mitigation of dangerous conditions related to storage, dispensing, use and handling of hazardous materials shall be in accordance with this chapter.

This chapter shall apply to all hazardous materials, including those materials regulated elsewhere in this code, except that where specific requirements are provided in other chapters, those specific requirements shall apply in accordance with the applicable chapter. Where a material has multiple hazards, all hazards shall be addressed.

#### **Exceptions:**

- In retail or wholesale sales occupancies, medicines, foodstuff, cosmetics and commercial or institutional products containing not more than 50 percent by volume of water-miscible liquids and with the remainder of the solutions not being flammable, provided that such materials are packaged in individual containers not exceeding 1.3 gallons (5 L).
- 2. Alcoholic beverages in retail or wholesale sales occupancies, provided that the liquids are packaged in individual containers not exceeding 1.3 gallons (5 L).
- 3. Application and release of pesticide and agricultural products and materials intended for use in weed abatement, erosion control, soil amendment or similar applications where applied in accordance with the manufacturer's instructions and label directions.

- 4. The off-site transportation of hazardous materials where in accordance with Department of Transportation (DOTn) regulations.
- 5. Building materials not otherwise regulated by this code.
- 6. Refrigeration systems (see Section 608).
- 7. Stationary storage battery Energy storage systems regulated by Section 1207.
- 8. The display, storage, sale or use of fireworks and explosives in accordance with Chapter 56.
- Corrosives utilized in personal and household products in the manufacturer's original consumer packaging in Group M occupancies.
- 10. The storage of beer, distilled spirits and wines in barrels and casks.
- 11. The use, storage or both of dispensers containing alcohol-based hand rubs classified as Class I or II liquids where in accordance with Section 5705.5.
- 12. Specific provisions for flammable liquids in motor fuel-dispensing facilities, repair garages, airports and marinas in Chapter 23.
- 13. Storage and use of fuel oil in tanks and containers connected to oil-burning equipment. Such storage and use shall be in accordance with Section 605. For abandonment of fuel oil tanks, Chapter 57 applies.
- 14. Storage and display of aerosol products complying with Chapter 51.
- 15. Storage and use of *flammable* or *combustible liquids* that do not have a fire point when tested in accordance with ASTM D92, not otherwise regulated by this code.
- 16. Flammable or combustible liquids with a flash point greater than 95°F (35°C) in a water-miscible solution or dispersion with a water and inert (noncombustible) solids content of more than 80 percent by weight, which do not sustain combustion, not otherwise regulated by this code.
- 17. Commercial cooking oil storage tank systems located within a building and designed and installed in accordance with Section 607 and NFPA 30.
- 18. Storage of battery types defined in Section 202 complying with Chapter 42.

**Committee Reason:** This proposal provides the necessary exception from the application of Chapter 50 of the IFC. The provisions for batteries within Chapter 3 and ESS within Chapter 12 address the risks associated with batteries as defined in Chapter 2. The modifications are updating terminology and linking the provisions for batteries to the newly established Chapter created through proposal F230-24. (Vote 13-1)

F233-24

F234-24

Committee Action: As Modified by Committee

#### Committee Modification: 2024 International Fire Code

**5003.1.1.1 Physical states.** Where a hazard class includes solids, liquids, gases (gaseous) and gases (liquefied), the maximum allowable quantity for each <u>physical state</u> shall be permitted.

#### 2024 International Building Code

**307.1.1 Physical states.** Where a hazard class includes solids, liquids, gases (gaseous) and gases (liquefied), the maximum allowable quantity for each <u>physical state</u> shall be permitted.

**Committee Reason:** The proposal clarifies the intent of how the MAQs are to be determined. The modification simply makes it very clear that the "quantity of each" is associated with the "physical state." (Vote 14-0)

F234-24

### F235-24

Committee Action: As Submitted

**Committee Reason:** This builds on F234-24 and separates liquified and gaseous which meets the intent of how MAQs should be calculated. (Vote 14-0)

F235-24

# F236-24

Committee Action: As Submitted

**Committee Reason:** This proposal fixes the Group H-3 classification that lower flammability gases are classified as in the IBC. (Vote 14-0)

F236-24

# F237-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved as these increases are reasonable and in line with current practice. Additionally this proposal is consistent with the approval of F269-24.(Vote 13-0)

F237-24

### F238-24

Committee Action: As Submitted

**Committee Reason:** This proposal appropriately makes the requirements the same for the IFC and IBC consistent with on another. (Vote 13-0)

F238-24

## F239-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved based upon the proponent's reason statement which clarifies the application of the code for non-metallic cans. (Vote 13-0)

F239-24

## F240-24

Committee Action: As Submitted

Committee Reason: The proposal was approved as it simply clarifies what "BV" means. (Vote 13-0)

F240-24

## F241-24

Committee Action: As Submitted

Committee Reason: This proposal was approved as it clarifies that the table is only addressing a single control area. (Vote 13-0)

F241-24

# F242-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved as it removes an unnecessary reference to 5005 since that section addresses amounts exceeding maximum allowable quantities. (Vote 13-0)

### F243-24

Committee Action: As Submitted

**Committee Reason:** This proposal appropriately references NFPA 30B for certain portions of Chapter 51 as the requirements are more comprehensive. Without a more comprehensive reference critical requirements may be missed. This is also consistent with the requirements action taken on F3-24. It was suggested that perhaps flammable liquid storage amounts (Example 5104.5) may be worth retaining for the fire code official. (Vote 13-0)

F243-24

### F244-24

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the proponent's reason statement. (Vote 13-0)

F244-24

## F245-24

Committee Action: Disapproved

**Committee Reason:** Radioactive gases are currently not defined in the IFC. More detail radioactive gases is needed. Additionally, it was requested that the threshold be lowered before there is an exemption. (Vote 12-1)

F245-24

# F246-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved with concern for the removal of the tiered system and the reference to NFPA 55. There was also concern with the removal of "liquified carbon dioxide" as that is the same terminology used within the standard. (Vote 13-0)

F246-24

#### F247-24

Committee Action: As Submitted

**Committee Reason:** The provisions were seen as appropriate but would be better addressed as use and stored. The committee would like to see the proposal revised to reflect the need to address use as well. (Vote 11-2)

F247-24

## F248-24

Committee Action: Disapproved

**Committee Reason:** Generally the committee liked the intent but preferred F247-24 with revisions made during CAH#2. Additionally this proposal would need to be coordinated with healthcare occupancies needs. (Vote 11-1)

F248-24

## F249-24

Committee Action: As Submitted

Committee Reason: There is a gap in regulatory tools for retail firework sales. This proposal was approved as a potential way to address fire works with more updated provisions. However, as currently written the provisions only addresses outdoor retail sales. The committee encouraged comments during CAH#2 to address indoor sales without using the reference to the 2006 edition of NFPA 1124. It was suggested that the comments be broken down by topic for CAH#2. (Vote 7-6)

F249-24

# F250-24

Committee Action: As Submitted

**Committee Reason:** This proposal makes Chapter 57 more manageable to apply and is a good clean up. It was suggested that the spreadsheet that shows the revised section locations being included in commentary or significant changes. (Vote 12-0)

F250-24

# F251-24

Committee Action: Disapproved

**Committee Reason:** This was seen as too complex for smaller projects. Such a concept would be better located within Chapter 50. It should also be correlated with NFPA 30. (Vote 12-0)

F251-24

### F252-24

Committee Action: As Submitted

**Committee Reason:** This proposal provides another layer of protection to reduce possible deliveries where a tank is no longer present. There is currently no provisions requiring the removal of all piping. It was suggested that signage would also help. (Vote 12-0)

F252-24

## F253-24

Committee Action: Disapproved

**Committee Reason:** There was concern that it is unclear what an "approved inert solid materials" means. It was noted that term is currently used in item 3. It was also suggested that this may be better addressed with reference to environmental regulations. The new exception in Section 5704.2.14.1 was seen as useful as it requires approval of the piping which does not always occur. (Vote 11-2)

F253-24

# F254-24

Committee Action: As Submitted

**Committee Reason:** This proposal provides necessary section reference updates to NFPA 30 and adds additional appropriate references to NFPA 30 for flammable liquid storage rooms, flammable liquid storage warehouses and flammable liquids in retail. (Vote 13-0)

F254-24

# F255-24

Committee Action: As Submitted

**Committee Reason:** This proposal appropriately removes requirements related to AFFF foam from the code related to the concerns with PFAS. These materials can no longer be used. The new foams can not be addressed in the same way. This was a better approach than banning them within the code. It simply removes requirements related to AFFF. (Vote 13-0)

### F256-24

Committee Action: As Submitted

Committee Reason: This proposal was approved based upon the proponent's reason statement. (Vote 13-0)

F256-24

### F257-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

5706.3.9 5706.9 Heating Flammable and Combustible Liquids Indoors in Open Systems. Plants and portions of plants in which flammable and/or combustible liquids are heated indoors in open systems at or above their flash points shall be in accordance with Sections 5705.3.7.5 and 5706.9.1 through 5706.9.3.

#### 5705.3.9.1 Venting Vapors.

Process vessels used to heat flammable and combustible liquids shall be sealed from the room they are located in and the vapors vented to a safe location.

**5706.9.1 Equipment.** Process equipment, tanks, and vessels used to heat flammable or combustible liquids shall be sealed from the room they are located in.

#### 5705.3.9.2 Opening the Vessel.

If the vessel needs to be opened, the room ventilation shall meet the requirements of 5705.3.7.5.1 and the process heating controls shall be interlocked with the ventilation to shut down process heat if the ventilation fails or is turned off.

#### 5706.9.2 Venting Vapors.

<u>Vapors emitted from process equipment, tanks, and vessels heating flammable or combustible liquids shall be vented directly to the outside.</u>

5706.3.9.3 5706.9.3 Excess Temperature Control. Process equipment, tanks, and vessels shall be equipped with an excess temperature control. This control shall automatically shut down heating at a pre-determined limit and initiate cooling if necessary. Redundant controls shall be provided where processes are not supervised continuously.

5705.3.9.4 Explosion Control. Explosion control shall be provided in accordance with Section 911.

**Committee Reason:** The proposal was approved as it will increase safety for occupants and fire fighters. The modification more appropriately moves the provisions after the vapor recovery requirements and simplifies and clarifies the requirements focusing on one issue in each section and broadens the requirements beyond simply vessels. In addition, explosion control requirements were deleted as it is already sufficiently addressed by Section 911 when the MAQs have been exceeded. (Vote 11-0)

F257-24

### F258-24

Committee Action: As Submitted

**Committee Reason:** The proposal clarifies difference between free standing and wall mounted and when wall mounted are required. (Vote 10-1)

F258-24

### F259-24

Committee Action: As Submitted

Committee Reason: This proposal clarifies and provides reasonable amounts of ABHR allowed within control areas. (Vote 11-0)

F259-24

## F260-24

Committee Action: As Submitted

Committee Reason: This proposal sets reasonable storage amounts for ABHR with associated necessary protection. (Vote 11-0)

F260-24

### F261-24

Committee Action: As Modified by Committee

**Committee Modification: 5707.2.1 Mobile fueling vehicle requirements.** Each <u>on-demand mobile fueling vehicle shall comply with all local, state and federal requirements, as well as the following:</u>

- 1. The on-demand mobile fueling vehicle and its equipment shall be maintained in good repair.
- 2. Safety cans shall be secured to the mobile fueling vehicle except when in use.
- 3. Fueling a motor vehicle from tanks or containers mounted in a trailer connected to a mobile fueling vehicle shall be prohibited.

**Committee Reason:** Use of the on-demand mobile fueling requirements are appropriate for the applications addressed in Section 5706.5.4.5 for commercial, industrial, governmental or manufacturing establishments as well. Both are essentially considered ondemand mobile fueling. The modification simply adds the terms on-demand within the language in Section 5707.2.1 to be consistent with the rest of the section. (Vote 13-0)

F261-24

#### F262-24

Committee Action: As Submitted

Committee Reason: The proposed code change provides a needed exception for the maintenance of refrigeration systems and as products continue to evolve will require additional maintenance for these systems. This exception will provide more flexibility for the time needed to undertake the necessary maintenance. The Committee also suggested that the use of temporary storage be further defined for this application. In addition it should be clarified that the detection and ventilation system are being maintained to reduce concerns with temporary storage and guidance should be provided on the proper containers to be used for temporary storage. (Vote 13-0)

F262-24

## F263-24

Committee Action: As Submitted

**Committee Reason:** The proposed code change provides guidance for containers greater than 120,000 gallons and makes it consistent with other industry standards. (Vote 13-0)

F263-24

## F264-24

Committee Action: As Submitted

**Committee Reason:** Provides a specific pointer to existing requirements on flood hazard protection for LP-gas containers. Whether or not NFPA 58 addresses this would still be beneficial. The committee verified ASCE 24 is not referenced in NFPA 58.(Vote 10-3)

F264-24

## F265-24

Committee Action: As Submitted

**Committee Reason:** Aligns the IFC section reference with the proper section within NFPA 58. It was suggested that the proponent look at vaping as it relates to signage. (Vote 13-0)

F265-24

# F266-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved based upon previous actions taken on the WUIC. There was concern that the justification that states that combustible vegetation do not create a hazard is not correct and that the justification comes from the annex of NFPA 58. This revision would make the code language more vague compared to the current language which calls out specific combustibles. (Vote 13-0)

F266-24

F267-24

Committee Action: As Submitted

Committee Reason: Aligns the IFC section reference with the proper section within NFPA 58. (Vote 13-0)

F267-24

## F268-24

Committee Action: As Submitted

Committee Reason: Aligns the IFC section reference with the proper section within NFPA 58. (Vote 13-0)

F268-24

## F269-24

Committee Action: As Submitted

**Committee Reason:** This brings the chapter on organic peroxides in line with current industry recognized practice. There is a small concern with Section 903.2.5.6 requiring sprinklers throughout where organic peroxides are handled. In some healthcare facilities there may be non-sprinklered areas for sterilization and cleaning purposes that could no longer occur. It was encouraged that the coordinate with the healthcare committee. It was suggested to also reference NFPA 780 for lightening protection. (Vote 13-0)

F269-24

# F270-24

Committee Action: Disapproved

Committee Reason: This proposal was disapproved as it would not be consistent with the previous actions aligning the IFC definitions

F270-24

## F271-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved as the technology has proven efficity and it solves a significant safety problem. It was encouraged that this proponent work with the ICC Healthcare Committee. (Vote 12-0)

F271-24

## F272-24

Committee Action: As Submitted

**Committee Reason:** This proposal appropriately recognizes the different delivery methods of oxygen which includes concentrators. (Vote 11-0)

F272-24

## F273-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reason for the disapproval of the proposal was that while the reason statement describes items that are not directly considered by the code, it fails to demonstrate that the currently required fire flow requirements are inadequate. (Vote: 13-0)

F273-24

## F274-24

Committee Action: Disapproved

Committee Reason: This proposal was disapproved as this type of construction is a little bit different and does not warrant this allowance and generally seen as unnecessary. It was suggested perhaps a condition of approval would be the need for a minimum of 2 means of egress if there are changes within requirements for number of stairways in the future. It was pointed out that this is really only talking about a 45 feet increase in this allowance as arial ladder truck only reach to 75 feet. At that point the building becomes a high rise. Although fires are a rare occurrence and access roads are rarely needed they need to be available when a fire occurs. The fire code official always has the authority to allow this regardless. (Vote 13-0)

## F275-24

Committee Action: Withdrawn

F275-24

## F276-24

Committee Action: As Submitted

**Committee Reason:** The intent of this proposal is appropriate which is to update the Appendix Table dealing with the GHS hazard definition comparisons and was approved based upon the need to keep this proposal available for further revision. However, it was requested that the proponent update these definitions to match the actions taken on the GHS definition proposals. It was also suggested that the definition proposals include this table in each of the associated definitions proposals as a Comment to the committee at CAH#2. (Vote 9-4)

F276-24

## F277-24

Committee Action: As Submitted

Committee Reason: Changes the form to be in line with how phone numbers are typically used for emergency contact. (Vote 13-0)

F277-24

## F278-24

Committee Action: Disapproved

**Committee Reason:** These systems are expensive, not providing value to fire fighters. Additionally, these systems are proprietary in nature and maintenance is very expensive due to the specialized tests required. All of these concerns are enhanced by now triggering the systems as proposed. Also, there is very limited data on the use of such systems, may possibly create a hazard for fire fighters and the concept of a mobile air unit was not defined. There was a desire to delete this appendix entirely in the future. (Vote 13-0)

#### F279-24

Committee Action: Disapproved

**Committee Reason:** This proposal was disapproved as there are jurisdictions that utilized this appendix. It can be used as guide even if not adopted. It was suggested that it remain in the code for at least one more cycle. Several on the committee felt that this appendix is unnecessary and not justified by loss history. (Vote 9-4)

F279-24

## F280-24

Committee Action: As Modified by Committee

**Committee Modification: SLEEPING SPACE.** A bedroom or other location in a short-term rental designated in the permit application as a space that will be offered for overnight occupancy intended to provide sleeping accommodations.

**P102.5 Portable Fire extinguishers.** A minimum of one portable fire extinguisher with a minimum rating of <u>12-A:10-B:C</u> shall be provided on each story of a *short-term rental unit* and as required by Section P102.9, secured on a mounting bracket in a conspicuous and unobstructed location along a normal path of travel.

#### P102.9 Outdoor cooking.

A 1A:10BC fire extinguisher and appliance operating instructions shall be located within 10 feet of outdoor cooking appliances.

Outdoor cooking shall not be conducted on combustible balconies or decks or within 10 feet (3048 mm) of combustible construction.

#### P103.2 Prohibited sleeping spaces. Kitchens.

and rooms or areas not designated on the permit application and approved for use as a sleeping space, non-habitable spaces shall not be used as sleeping spaces.

**P104.4 Escape ladders.** Where a *sleeping space* is located more than one *story* above *grade plane*, an emergency escape ladder <del>complying with ASTM F2175</del> shall be provided at not less than one *emergency escape and rescue opening* on each such story.

**Exception:** An emergency escape ladder is not required for stories that have two or more means of egress.

P106.2 Official inspections. Where required by the fire code official, an annual inspection

by the *fire code official* or an approved third party inspector shall be conducted at the *responsible party's* expense to verify compliance with this appendix. The results of each inspection shall be documented and maintained at the *short-term rental property* in a conspicuous location for transient occupants to review.

#### **SECTION P108**

#### REFERENCED STANDARDS

P108.1 General. See Table P108.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, standard title, and the section or sections of this appendix that reference the standard.

TABLE P108.1 REFERENCED STANDARDS

STANDARD ACRONYM	STANDARD NAME	SECTIONS HEREIN REFERENCED
ASTM F2175-2015	Standard Specification for Portable and Permanent Emergency Escape Ladders for Residential Use	P104.4

**Committee Reason:** This proposal provides a concise set of requirements appropriately located within an Appendix. This will provide for more consistency for fire safety and enforcement. This will also avoid state legislatures taking on the issue and instead will leave control in the hands of the regulators.

The modifications are associated with providing clarification on intent.

- Sleeping Space and locations. The definition of sleeping space is revised to more specifically address the areas where overnight occupancy sleeping will be permitted. This may include a living or family room in addition to the traditional bedrooms, for example. Likewise, Section P103.2 it is clarified as to what areas are prohibited from allowing sleeping within the short-term rental unit.
- Fire extinguishers. The fire extinguisher requirements have been changed to require a smaller extinguisher. Additionally extinguishers are now required within 10 feet of outdoor cooking appliances. Many short term rental units have grills or similar appliance where the occupant may not be familiar with operation which increases the risk of fire.
- Emergency escape ladder. Section P104.4 simply requires that the escape ladder be provided without a specific reference to the standard. In addition, if there are at least 2 means of egress from a story such ladders are unnecessary. With the deletion of the reference to the ASTM F2175 standard Section P108 is no longer necessary and is deleted.
- **Inspections.** Section P106.2 is revised to remove the requirement for a third party inspection. An annual inspection would still be required.

(Vote 13/0)

F280-24

## International Fuel Gas

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

FG1-24

Committee Action: Disapproved

**Committee Reason:** The committee agrees 9-1 that the sleeping room is different than a bedroom and the way the current proposal is written may leave room for more unintended consequences.

FG1-24

## FG2-24

Committee Action: As Submitted

Committee Reason: The committee approved the proposal as submitted, 10-0. Committee members concur that the suggested code language gives consumers one more option for heating or cooling their homes. The homeowner or contractor has an extra alternative for obtaining combustion air for appliances in a space or room that is reachable from a bedroom. They can use IFGC 304.5 (interior combustion air) and 304.5.3 (indoor opening size and position) to safely provide combustion air to the appliance. Using combustion air inside the building envelope is more energy-efficient than moving heated or cooled combustion air from the exterior into a space. Installing grilles instead of combustion air ducts far from an external wall is more cost-effective.

FG2-24

## FG3-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved as submitted with a vote of 10-1. The committee provided reasoning that the 30" depth in the new code language provides consistency within the requirements of the IRC to service appliances.

FG3-24

## FG4-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 10-4 to disapprove of the proposed code language. The committee suggests that a modification is needed for the inconsistency of the code language as submitted. This proposal recommends including a requirement for

what materials shall be considered noncombustible materials, and that is that they need to comply with IBC Section 703.3.1. A second section states that a requirement for what is a noncombustible material does not mean that clearly noncombustible materials, such as steel, concrete, or masonry, need to be tested, for example, to ASTM E136.

FG4-24

## FG5-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 10-0 to approve the proposed code language as submitted. The justification put forth was the proponent's reasoning statement. The proposal includes the specified encasement methods currently permitted for installation beneath structures in 404.14. The listed encasement technologies have been successfully used below grade for a long time, both inside and outside the building footprint. Installing grilles far away from an external wall is more economical than using combustion air ducts.

FG5-24

## FG6-24

Committee Action: As Submitted

**Committee Reason:** The committee voted to approve this proposal as submitted, 10-0. The proponent's rationale, which stipulated that ANSI Z223 and NFPA 54 require metal support hardware, formed the basis for the committee's consensus. Notably, this proposal brings IFGC into compliance with those standards and undoes the actions of FG3-21.

FG6-24

## FG7-24

Committee Action: As Submitted

**Committee Reason:** The committee voted to approve the proposal as submitted with a vote of 10-0. The committee agrees that the proposal broadens the scope of acceptable pressure test ports beyond a basic tee fitting, which is less restrictive and cost-effective. The proposal acknowledges that manufacturers of regulators, appliance gas controls, and prefabricated manifolds frequently include integral test ports in their products that comply with code requirements. The proposal does away with the requirement that the test port be 10 pipe diameters downstream of the MP regulator, making it more accessible from an installation standpoint.

FG7-24

# FG8-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 10-0 to disapprove of the proposed code language. The reason given is that manufacturers currently specify materials for the installation of their products. This proposal overcomplicates installations that work perfectly fine.

FG8-24

FG9-24

Committee Action: As Submitted

Committee Reason: Voting 14-0, the committee approved the proposal as submitted. The proposal seeks to eliminate uncertainty and clarify that some IRC requirements in Chapter 24 on Fuel Gas and the IFGC only take effect once provisions are in place for the gas clothes dryer. A gas outlet in the laundry section would signify the presence of these amenities. The exception is unnecessary because the new construction's requirements for a gas outlet would not coincide with clothes dryers that use heat pumps and condensing models, which do not require exhaust ducts.

FG9-24

FG10-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 9-1 to approve the proposed code language as submitted. The reason given was based on the original reason statement. For hydrogen pipes, press-connect technology is a suitable joining method that offers a joint that is on par with or better than typical pipe joining methods, provided that the manufacturer approves it and complies with all necessary criteria. Including this connecting method in the list of permitted joints will make more alternatives accessible to the installer.

FG10-24

## FG11-24 Part I

Committee Action: Disapproved

**Committee Reason:** The committee voted 10-0 to disapprove of this proposal. The committee justified the suggested code language as not feasible in its current form. A modification would have supported the approval of this change; however, the proposed code language does not allow for the inference of safety for existing appliances in use.

FG11-24 Part I

## FG11-24 Part II

Committee Action: As Submitted

**Committee Reason:** This proposal appropriately references NFPA 2 more directly for hydrogen requirements. Much of what is currently referenced in the IFC is either incorrect or an indirect reference to the standard. (Vote 13-0)

FG11-24 Part II

## International Mechanical Code

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

M1-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove this proposal by a vote of 14-0. The proponent asked the committee to disapprove based on the committee's action on M48.

M1-24

M2-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove this proposal by a vote of 12-2. The committee's decision was based on proposed reductions that conflict with other provisions in the code that address exhaust air flows and values.

M2-24

M3-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove this proposal by a vote of 10-4. The committee's decision was based on the proposal's unclear expectations and the proponents suggestion that this proposal is editorial in nature. The consensus of the committee is that the proposed code language may belong in the IPMC. Another reason is that the cost impact statement is not correct. There is a concern that the cost impact will be substantial if there is a need to install a system with increased ventilation.

M3-24

M4-24

Committee Action: As Submitted

**Committee Reason:** A committee vote of 13-1 approved the proposal as submitted. According to the committee's reasoning, the end user requires a precise definition. The proposal revises definitions and aligns them with welding standards and ASHRAE 15.

#### M5-24

Committee Action: Disapproved

**Committee Reason:** A committee vote of 8–6 disapproved the proposal. The committee reasoning is that the proposal needs work. There is currently a technical requirement in the definition. The committee would like to see this proposal again at CAH2.

M5-24

### M6-24

Committee Action: As Submitted

Committee Reason: A committee vote of 14-0 approved the proposal as submitted. According to the committee's justification, the proposal clarifies and correlates IMC to IFC for regulatory enforcement in some states. As indoor plant growing facilities have become increasingly common across the nation, the use of compressed gases, carbon dioxide in particular, to enrich the air inside the growing area has increased significantly. In addition to providing a link to the International Fire Code for installing these systems, this proposal offers a clear route to compliance with a safe technique.

M6-24

#### M7-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 9-5 to disapprove this proposal. The committee's reasoning is that the proposal appears to conflict with the IBC in determining whether something is combustible or not.

M7-24

## M8-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

**403.3.2.1 Outdoor air for dwelling units.** Where a *dwelling unit* of new construction opens to a <u>corridor corridor</u>, outdoor air shall be mechanically supplied directly to the *dwelling unit*. For other *dwelling units*, <u>outdoor air outdoor air shall be provided using a mechanical exhaust system exhaust system</u>, mechanical supply system or combination thereof. Local exhaust or supply systems, including <u>outdoor air outdoor air</u> ducts connected to the return side of an air handler, are permitted to serve as components of such a system.

403.3.2.2 Outdoor air rate for dwelling units. The dwelling unit's outdoor air outdoor air ventilation system shall be designed to provide

the required rate of outdoor air outdoor air continuously during the period that the building is occupied. The minimum continuous outdoor air outdoor air rate shall be determined in accordance with Equation 4-9.

(Equation 4-9)

where:

QOA = outdoor air outdoor air rate, cfm

 $A_{floor}$  = conditioned floor area, ft<sup>2</sup>

 $N_{br}$  = number of bedrooms; not to be less than one

#### **Exceptions:**

- 1. The outdoor air outdoor air ventilation system is not required to operate continuously where the system has controls that enable operation for not less than 1 hour of each 4-hour period. The average outdoor air outdoor air rate over the 4-hour period shall be not less than that prescribed by Equation 4-9.
- 2. The minimum *outdoor air* rate determined in accordance with Equation 4-9 shall be reduced by 30 percent provided that both of the following conditions apply:
  - 2.1. A ducted system supplies outdoor air directly to each bedroom and to one or more of the following rooms:
    - 2.1.1. Living room.
    - 2.1.2. Dining room.
    - 2.1.3. Kitchen.
  - 2.2. The outdoor air ventilation system is a balanced ventilation system.

Committee Reason: By a vote of 14-0, the committee voted to approve the proposal with modifications. The committee justifies the proposal and modification with the reasoning that the proposal aligns the code language among the I codes. With the approval of this proposal as modified, the ventilation standards for dwelling units facing a corridor will align with ASHRAE 62.2. To provide clarity, this suggestion correlates the IBC definition of a corridor to the IMC. Since the enclosed aspect is included in the suggested corridor definition, there is no need to reference an "enclosed corridor."

M8-24

## M9-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 7–6 against the proposal, with one member abstaining. The committee argues that the idea is improper since it does not clarify how to parcel out sections of the code. The committee is especially concerned about flammability and dangerous areas.

M9-24

## M10-24

Committee Action: As Submitted

Committee Reason: The committee voted 13-1 in favor of the proposal as submitted. The minimum distance between external air

intakes and environmental exhaust air terminations is required, and this proposal seeks to align with standards found in Chapters 4 and 5. The regulations are focused on requiring a minimum of 3 feet of vertical space or a minimum of 10 feet of separation between the exhaust from the kitchen and bathroom of a housing unit and its external air intakes. Language from Chapter 4 is incorporated into the suggested edit in Chapter 5 to maintain consistency.

M10-24

## M11-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove this proposal with a vote of 8-6. The reasoning given is that addendum T has not been approved and that the proponent needs to develop a more suitable cost impact statement.

M11-24

## M12-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove the proposal by a vote of 14-0. The committee's reasoning for this disapproval is that this proposal is not only editorial. The committee believes that the proposal as submitted will have a cost impact that has not been presented.

M12-24

## M13-24

Committee Action: As Submitted

**Committee Reason:** The committee voted to approve this proposal by a vote of 13-1. The reasoning is that multilayer composite pipes are permitted; nevertheless, the definition of the pipe does not cover these kinds of acceptable piping materials. This proposed code language improves the definition of "pipe" and clarifies that acceptable pipe materials made using multilayer composite are included.

M13-24

## M14-24

Committee Action: As Submitted

Committee Reason: The committed voted to approve this proposal as submitted with a vote of 14-0. Users of the code have frequently

encountered situations in which they were unable to comprehend the current language. Exhaust is not necessary in a private garage that services a single unit, but it is necessary in cases where a private garage serves several units. To improve the clarity of the word utilized in Table 403.3.1.1, the Private Garage definition—which is derived from the IBC—is being added to the IMC. The goal of the definition is to have BG scoping.

M14-24

### M15-24

Committee Action: As Submitted

**Committee Reason:** The committee voted to approve the proposal as submitted with a vote of 9–5. The code language must include the latest technologies to regulate appliances. Commercial robotic kitchen appliances are a new development in technology. The proposed standard for robotic commercial kitchen equipment certification by a third party (listed and labeled) is UL 3320.

M15-24

## M16-24

Committee Action: As Submitted

**Committee Reason:** The committee voted to approve this approval as submitted with a vote of 11-3. This proposal clarifies the code language regarding the size of roof hatch holes. The proposed text replicates the IMC's 306.3 minimum size standards for attic access. These openings frequently impact access to HVAC installations and services. This proposal is an overview to help mechanical/building designers and installers determine the requirements if a roof hatch is utilized for accessing equipment and appliances.

M16-24

## M17-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove of this proposal 14-0. The reasoning was that the proposal introduced new code language that the committee unanimously agreed was unenforceable code language.

M17-24

M18-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove of this proposal with a vote of 8-5. The reasoning given is that this drain type should be installed in accordance with the IPC. The adoption of the proposed code language would be an issue in multi-unit dwellings where tailpieces are regularly used for purposes such as condensation.

M18-24

### M19-24

Committee Action: As Submitted

**Committee Reason:** The committee approved this proposal as submitted by a vote of 14-0. The 2024 edition of the International Mechanical Code, Section 307.2.2, lists approved materials for condensate drains but needs to list stainless steel, even though many applications involving food and pharmaceutical processing call for it. This proposal would add "stainless steel" after the term "galvanized steel" in Section 307.2.2 to ensure that using stainless steel is allowed.

M19-24

### M20-24

Committee Action: As Modified by Committee

**Committee Modification:** The modified section a is to be read as follows: Reduction of clearances from combustible materials shall not interfere with combustion air, draft hood clearance and relief, and accessibility of servicing access for servicing.

Committee Reason: By a vote of 12-2, the committee voted to approve this proposal with modifications made by the committee. This proposed code language now aligns IMC with IRC and IFGC. The reduction of clearance tables in the IFGC (Table 308.2) and in the IRC (Tables M1306.2 and G2409.2) contain the footnote that the reduction of clearances shall not interfere with combustion air, draft hood clearance and relief, and accessibility of servicing.

M20-24

## M21-24

Committee Action: Disapproved

**Committee Reason:** The committee voted for disapproval 14-0. The proponent recommended this proposal for disapproval with a goal to correct the proposal and bring it back to be heard during CAH2.

M21-24

## M22-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 in disapproval of this proposal. The committee argues that, contrary to the proponent's suggestions, this proposal does not make clear the current ventilation requirements.

M22-24

### M23-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove of this proposal 14-0. The proponent asked the committee to vote for disapproval.

M23-24

#### M24-24

Committee Action: As Submitted

Committee Reason: The committee voted 14-0 to approve this proposal as submitted. By including Group I-1, the code now complies with ASHRAE/ASHE and NFPA 99 criteria, which has been necessary for these healthcare institutions' licensure for several years. ASHRAE 170 and NFPA 99 list various ventilation techniques, including a modified approach that combines mechanical and natural ventilation. ASHE and ASHRAE 170 are co-published. The types of ventilation required for multiple facilities and occupancies are made clear by creating a separate section at the beginning of Chapter 4. Healthcare personnel and visitors can all contract infections from airborne particles through normal breathing if medical facilities lack adequate ventilation. This standard provides ventilation parameters.

M24-24

## M25-24 Part I

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve the proposal as submitted. These requirements are based on best practices and ensure basic fire and life safety measures. This section provides requirements for hazardous facilities and has been established in collaboration with the PMGCAC and FCAC. These requirements provide an understandable path for compliance.

M25-24 Part I

# M25-24 Part II

Committee Action: As Submitted

**Committee Reason:** This proposal was approved based upon the reason statement. In addition, the revisions remove a loophole where mechanical ventilation will be required anyway due to energy and environmental requirements. (Vote 13-0)

M25-24 Part II

M26-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

**401.5 Intake opening protection.** Air intake openings that terminate outdoors shall be protected with corrosion-resistant screens, louvers or grilles. Openings in louvers, grilles and screens shall be sized in accordance with Table 401.5, and shall be protected against local weather conditions. Louvers that protect air intake openings in structures located in hurricane-prone regions, as defined in the *International Building Code*, shall be *listed to indicate compliance* in accordance with AMCA 550. Outdoor air intake openings located in exterior walls shall meet the provisions for exterior wall opening protectives in accordance with the *International Building Code*.

**501.3.2 Exhaust opening protection.** Exhaust openings that terminate outdoors shall be protected with corrosion-resistant screens, louvers or grilles. Openings in screens, louvers and grilles shall be sized not less than  $^{1}/_{4}$  inch (6.4 mm) and not larger than  $^{1}/_{2}$  inch (12.7 mm). Openings shall be protected against local weather conditions. Louvers that protect exhaust openings in structures located in hurricane-prone regions, as defined in the *International Building Code*, shall be *listed* to indicate compliance in accordance with AMCA 550. Outdoor openings located in exterior walls shall meet the provisions for exterior wall opening protectives in accordance with the *International Building Code*.

**Committee Reason:** The committee voted to approve this proposal as modified by 14-0. The reasoning given was the proponent's statement that IMC already requires compliance with AMCA 550. This proposed revised code language to require a *listing* ensures code officials are able to enforce this provision. Additionally, including a *listing* requirement will ensure that products will perform as designed and meet the performance requirements for the specified application.

M26-24

M27-24

Committee Action: As Modified by Committee

Committee Modification: 2024 International Mechanical Code

**403.2 Outdoor air required.** The minimum outdoor airflow rate shall be determined in accordance with Section 403.3 or , for spaces other than *dwelling units* in Group R-2, R-3, and R-4 occupancies, with the Section 6.3 Indoor Air Quality Procedure of ASHRAE 62.1.

**Exception:** For dwelling units in Group R-2, R-3, and R-4 occupancies, where the registered design professional demonstrates that an engineered ventilation system design will prevent the maximum concentration of contaminants from exceeding that obtainable by the rate of outdoor air ventilation determined in accordance with Section 403.3, the minimum required rate of outdoor air shall be

reduced in accordance with such engineered system design.

Committee Reason: The proposal was voted for as modified by the committee, and approved 13-1. Toto MP1 aids in the code language's clarification, while Marshall MP1 improves the modified code language. It gives users a choice of options to comply with ASHRAE. The first pathway uses Section 403.3, which calculates the minimal airflow outside by using the prescribed ventilation rates listed in Table 403.3.1.1. Currently classified as an exception, the second pathway computes the minimum amount of outside airflow based on an "engineered ventilation system design." The code language contains no definitions for "engineered ventilation system design." On the other hand, the code's commentary defines it.

M27-24

### M28-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of the proposal. The committee reasoning is that the proponent does not explicitly make it clear in the charging language in R403.3 and R403.3.1 what the ventilation requirements are if the building exceeds 3 stories. The committee suggests that the proponent work on the proposal and resubmit it to be heard at the CAH2.

M28-24

## M29-24

Committee Action: As Submitted

Committee Reason: The committee voted to approve the proposal as submitted by 12-2. The requirement / row has been removed from ASHRAE 62.1 since the 2013 addition. The values currently required in the current code do not make sense. The ventilation rate for the ice surface on an area basis is 0.30 cfm/sf, which is higher than the gym play area, which is at 0.18 cfm/sf. My understanding of the ventilation rate for an area is to account for off-gassing of materials and ice off-gassing water vapor, where a gym floor would be much worse and yet the ventilation rate is higher for ice.

M29-24

## M30-24

Committee Action: As Submitted

Committee Reason: The committee voted to approve this proposal as submitted 11-3. This proposal is intended to align the residential ventilation requirements in the mechanical code with the energy efficiency requirements in the 2024 IECC. Public draft #2 of the 2024 IECC requires the use of an energy recovery ventilator or heat recovery ventilator in Climate Zones 6 through 8, which are both balanced ventilation systems. Section 403.3.2.1 of the 2024 IMC explicitly allows the use of supply-only, exhaust-only, or balanced ventilation systems in low-rise multifamily buildings. This proposal is intended to clarify that supply-only and exhaust-only ventilation systems are only allowed in Climate Zones 0 through 5, and balanced ventilation systems are required in Climate Zones 6 through 8.

### M31-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 13-1 to disapprove of this proposal. The reasoning was to maintain consistency with ASHRAE 61.2 from previous code cycles.

M31-24

### M32-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove this proposal 10-4. The committee's reasoning is that there are too many differences in the bibliography that do not align with the proposal.

M32-24

## M33-24

Committee Action: As Submitted

**Committee Reason:** The committee voted to approve the proposal as submitted 14-0. The proposal correlates with ASHRAE 61.2. and seeks to update the existing ventilation rate table in the IMC. Standard 62.1 is the source material for this table, and this updates Table 403.3.1.1 to match the appropriate ventilation rates in 62.1-2022.

M33-24

## M34-24

Committee Action: As Modified by Committee

**Committee Modification: 403.3.2.5 Ventilating equipment.** Fans that supply *outdoor air* to or <u>that convey</u> *exhaust air* from a space shall be *listed* and *labeled* in accordance with ANSI/AMCA 210-ANSI/ASHRAE 51. Minimum required airflow rates shall be determined in accordance with Chapter 4 of this code.

Committee Reason: The committee approved the proposal with modifications by a vote of 14-0. The proposal was supported by the modification and the proponent's reasoning. This suggestion offers editing changes to explain better how fans in ventilation equipment work and to bring the terminology in line with the standard mentioned in this section. The phrases "outdoor air," "exhaust air," and "supply air," as defined by the IMC, are harmonized by this proposal. This section's phrasing could be improved by starting with the balanced ventilation system.

## M35-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 8-6 to disapprove of the proposal. The committee did not approve the move of the clean air delivery capability language from Appendix D to Chapter 4, Ventilation, of the IMC.

M35-24

### M36-24

Committee Action: Disapproved

Committee Reason: The committee voted to disapprove of the proposal 14-0 based on the approval of proposal M10.

M36-24

## M37-24

Committee Action: Disapproved

Committee Reason: This proposal was disapproved based upon the action on F4-24. (Vote 14-0)

M37-24

## M38-24 Part I

Committee Action: As Submitted

Committee Reason: The committee approved the proposal as submitted 14-0. The argument presented is the proponent's justification. This proposal acknowledges the advancements in heat pump clothes dryer technology. These dryers heat the air inside and remove moisture using a refrigerant system. These dryers require a drain line to remove the water, just like condensing dryers do. They are listed and labeled in compliance with UL 2158, cited in IMC 913.1, and are electric. Additionally, this proposal standardizes the structure of exception language and modifies the description for condensing-type dryers to use terminology that is industry standard.

M38-24 Part I

# M38-24 Part II

Committee Action: As Submitted

Committee Reason: The committee voted to approve this proposal as submitted by 9-0. The committee determined that heat pumps did not require an exhaust fan and that there was no need to drill additional holes if not needed. These dryers use refrigerant systems to heat the interior air and eliminate moisture. These dryers require a drain line connection to drain the water, just like condensing-type dryers. Along with standardizing the structure of exception language, this proposal also clarifies the description for condensing-type dryers with use of the terminology used in the industry.

M38-24 Part II

M39-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove of this proposal 12-2. The committee's reasoning was that the proponent only referenced the nationally recognized standards without being specific.

M39-24

M40-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove of the proposal 12-2. The committee's reasoning is that this proposal does not establish procedures to inspect products and systems, including methods for field verification and inspection.

M40-24

M41-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of this proposal. A light test is usually more effective, and this proposal removes a methodology commonly approved.

M41-24

M42-24

Committee Action: As Submitted

Committee Reason: The committee voted 14-0 to approve the proposal as submitted. This proposal is an editorial cleanup of the code change proposals M40-21 through M46-21 that were approved as submitted for the 2024 codes and correlate standards to the IFC. This clean-up is necessary to address one of the primary reasons for these proposals, which was to clarify all the exceptions to Type 1 and Type 2 hoods. For the IMC, exception 1 was always intended to remain an exception for exhaust hoods listed and labeled to UL 710 (not recirculating systems listed and labeled to UL 710B). This proposal reverts exception 1 back to what was originally in the 2021 code. Also, the current exceptions 3, 4, 5, and 6 were intended to be sub-items of Exception 2. In addition, the exceptions added to Section 507.1 in the IMC that applied to the requirement for Type 1 hoods were also intended to be done in Section 606.2 of the IFC. This proposal aligns the IFC exceptions with the IMC exceptions.

M42-24

## M43-24

Committee Action: As Submitted

Committee Reason: The committee voted to approve this proposal as submitted 14-0. The proposal correlates IFC and IMC in relation to Type I hoods. One path is to construct in accordance with the prescriptive code requirements, and the other in accordance with requirements found within UL 710. As noted in the scope of UL 710, "These requirements cover Type I commercial kitchen exhaust hoods intended for placement over commercial cooking equipment." UL 710 is not an exception for exhaust hoods but is the standard used to test and certify factory-built exhaust hoods.

M43-24

## M44-24 Part I

Committee Action: As Modified by Committee

#### **Committee Modification:**

513.1 General.

Energy <u>recovery ventilators (ERVs)</u> and heat recovery <u>ventilation systems</u> <u>ventilators (HRVs)</u> shall be installed in accordance with this section. Where required for purposes of energy conservation, <u>energy and heat recovery ventilation systems</u> <u>ERVS and HRVs</u> shall also comply with the <u>International Energy Conservation Code</u>. Ducted <u>energy and heat recovery ventilators</u> <u>ERVs and HRVs</u> shall be <u>listed</u> and <u>Iabeled</u> in accordance with UL 1812. Nonducted <u>energy and heat recovery ventilators</u> <u>ERVs and HRVs</u> shall be <u>listed</u> and <u>Iabeled</u> in accordance with UL 1815.

**Committee Reason:** The committee voted to approve this proposal as modified by 14-0. The proposal further clarifies the relationship between energy and heat recovery ventilation systems. The IRC approved this proposal previously.

M44-24 Part I

## M44-24 Part II

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove this proposal with a vote of 6-3. The committee argued that the 1st sentence of the proposal failed to meet the code requirements and does not properly list the specific area of the section.

M44-24 Part II

### M45-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

601.5 Return air openings.

Return air openings for heating, ventilation and air-conditioning systems shall comply with all of the following:

- 1. Openings shall not be located less than 10 feet (3048 mm) measured in any direction from an open combustion chamber or draft hood of another *appliance* located in the same room or space.
- 2. Return air for heating or air-conditioning systems shall not be taken from a hazardous or insanitary location or a refrigeration room as defined in this code.
- 3. The amount of return air taken from any room or space shall be not greater than the flow rate of supply air delivered to such room or space.
- 4. Return and transfer openings shall be sized in accordance with the *appliance* or *equipment* manufacturer's installation instructions, ACCA Manual D or the design of the *registered design professional*.
- 5. Return air taken from one dwelling unit shall not be discharged into another dwelling unit.
- 6. Taking return air from a crawl space shall not be accomplished through a direct connection to the return side of a forced air furnace. Transfer openings in the crawl space enclosure shall not be prohibited.
- 7. Return air for heating or air-conditioning systems shall not be taken from a bathroom, toilet room, kitchen, garage, boiler room, furnace room or unconditioned attic.
- 8. Where return air <u>is</u> taken from a closet smaller than 30 square feet (2.8 m<sup>2</sup>) in area, the closet door shall be undercut not less than 1<sup>1</sup>/<sub>2</sub> inches (38 mm), shall have a louvered door or shall include an air transfer grille, each with a net free area of not less than 30 square inches (19 355 mm<sup>2</sup>.) Where return air is taken from a closet 30 ft<sup>2</sup> or larger in area, the closet shall comply with Item 4. Return air taken from closets shall serve only the closet space.
- 9. Return air taken from a closet smaller than 30 square feet (2.8 m<sup>2</sup>) shall require the closet door be undercut not less than 1<sup>1</sup>/<sub>2</sub> inches (38 mm) or have either a louvered door or an air transfer grille, each with a net free area of not less than 30 square inches (19 355 mm<sup>2</sup>).
- 10. 9. Return air for heating or air-conditioning systems shall not be taken from indoor swimming pool enclosures and associated deck areas.

#### **Exceptions:**

- 1. Where the air from such spaces is dehumidified in accordance with Section 403.2.1, Item 2.
- 2. Dedicated HVAC systems serving only such spaces.

#### **Exceptions:**

1. Taking return air for heating or air-conditioning systems from a kitchen is not prohibited where such return air openings serve the kitchen and are located not less than 10 feet (3048 mm) from the cooking *appliances*.

- 2. Taking return air for heating or air-conditioning systems from a kitchen is not prohibited in a *dwelling unit* where the kitchen and living spaces are in a single room and the cooking *appliance* is electric and located not less than 5 feet (1524 mm) in any direction from the return air intake opening.
- 3. Dedicated forced air systems serving only the garage shall not be prohibited from obtaining return air from the garage.

**Committee Reason:** The committee voted 14-0 to approve this proposal as modified. The reasoning is clarification for requirements consistent with the proponent's reason statement, which fixes the poorly written code language of M53-21. This proposed code language gives the reader a better idea of what is required by the language.

M45-24

### M46-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 12-2 to disapprove of this proposal. The reasoning is that the exception creates a problem with drains and a life safety issue in mechanical rooms.

M46-24

## M47-24 Part I

Committee Action: As Modified by Committee

#### Committee Modification:

603.9.1 Collars and sleeves.

Nonmetallic collars and sleeves used to join or attach flexible air ducts and air connectors shall be *listed* and *labeled* in accordance with UL 181C.

Exception: Collars that are a component of a listed appliance.

Committee Reason: The committee voted 14-0 to approve of this proposal as modified. The proposal recognizes that an installed collar has already been tested per the manufacturer's outline of investigation for specific fire tests on collars and sleeves supplied for fire ducts. The purpose of UL 181C, the Outline of Investigation for Non-Metal Joining Accessories for Flexible Air Ducts and Air Connectors, is to assess non-metal accessories, like sleeves and collars, used to join or attach flexible air ducts and air connectors that meet UL 181 specifications. As described in UL 181C, a collar is a non-metal accessory that connects flexible air ducts and air connections to other system parts at their termination. Any non-metal attachment used to link segments of flexible air ducts or air connectors is called a sleeve.

M47-24 Part I

# M47-24 Part II

Committee Action: As Modified by Committee

#### Committee Modification: 2024 International Residential Code

M1601.1.1 Above-ground duct systems. Above-ground duct systems shall conform to the following:

- 1. Equipment connected to duct systems shall be designed to limit discharge air temperature to not greater than 250 °F (121 °C).
- 2. Factory-made ducts shall be *listed* and *labeled* in accordance with UL 181 and installed in accordance with the manufacturer's instructions.
- 3. Where N-nonmetallic collars and sleeves are used to join or attach flexible air ducts, they shall be *listed* and *labeled* in accordance with UL 181C
- 4. Fibrous glass duct construction shall conform to the SMACNA Fibrous Glass Duct Construction Standards or NAIMA Fibrous Glass Duct Construction Standards.
- Field-fabricated and shop-fabricated metal and flexible duct constructions shall conform to the SMACNA HVAC Duct
   Construction Standards—Metal and Flexible except as allowed by Table M1601.1.1. Galvanized steel shall conform to ASTM
   A653.
- 6. The use of gypsum products to construct return air ducts or plenums is permitted, provided that the air temperature does not exceed 125°F (52°C) and exposed surfaces are not subject to condensation.
- 7. Duct systems shall be constructed of materials having a flame spread index of not greater than 200.
- 8. Stud wall cavities and the spaces between solid floor joists to be used as air plenums shall comply with the following conditions:
  - 8.1. These cavities or spaces shall not be used as a plenum for supply air.
  - 8.2. These cavities or spaces shall not be part of a required fire-resistance-rated assembly.
  - 8.3. Stud wall cavities shall not convey air from more than one floor level.
  - 8.4. Stud wall cavities and joist-space plenums shall be isolated from adjacent concealed spaces by tight-fitting *fireblocking* in accordance with Section R302.11. *Fireblocking* materials used for isolation shall comply with Section R302.11.1.
  - 8.5. Stud wall cavities in the outside walls of building envelope assemblies shall not be utilized as air plenums.
  - 8.6. Building cavities used as plenums shall be sealed.
- 9. Volume dampers, equipment and other means of supply, return and exhaust air adjustment used in system balancing shall be provided with access.

**Committee Reason:** The committee approved this proposal as modified with a vote of 8-1. The committee reasons that this proposal adds another option for installers to use. The modification clarifies when it is mandatory or not.

M47-24 Part II

## M48-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 9-5 to disapprove of this proposal. Problems will arise if this duct remains in a negative environment, and the proposal has no control over the long-term repercussions.

M49-24

Committee Action: As Submitted

**Committee Reason:** This proposal was approved based upon previous action in F133-24. This allows proper application of the modeling assumptions addressed in the IBC. It was suggested that the proponent come back with language for the emergency action plan to address this application. (Vote 14-0)

M49-24

M50-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 9-4 to disapprove of this proposal. The committee believes that more thought needs to go into the arrangement of the proposed code language.

M50-24

M51-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 9-5 to disapprove of this code proposal. The installation per UL 1738 is being proposed. The committee argues that this provision is between the manufacturer of the pipe and the manufacturer of the appliances.

M51-24

## M52-24 Part I

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve this proposal as submitted. The reasoning is that UL Standards & Engagement withdrew UL 17 on February 28, 2019. UL 378 contains appropriate listing requirements for the products referenced by these requirements. At least seven manufacturers currently have products listed to meet these requirements.

M52-24 Part I

#### M52-24 Part II

Committee Action: As Submitted

**Committee Reason:** By a vote of 9 to 0, the committee approved the proposal as submitted. On February 28, 2019, UL Standards & Engagement withdrew UL 17. The relevant listing standards for the items these criteria apply to are found in UL 378.

M52-24 Part II

M53-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve this proposal as submitted. This proposal creates a table from the information previously found in paragraph form. Furthermore, as fireplace inserts fall outside the purview of UL 1482, this proposal adds two additional UL standards that serve as accurate references for the specifications pertaining to fireplace inserts.

M53-24

## M54-24 Part I

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve this proposal as submitted. This proposal updates the standards used for various factory-built equipment and appliances. UL 412, UL 427, UL 471, UL 474, UL 484, and UL 1995 will sunset in 2024. The applicable requirements from these standards are now in the harmonized standards UL 60335-2-40 and UL 60335-2-89.

M54-24 Part I

## M54-24 Part II

Committee Action: As Submitted

**Committee Reason:** The committee approved this proposal as submitted 9-0. The decision to approve this proposal is based on the proponent's original reason statement in the proposal to update the specifications for various heat pumps, furnaces, and evaporative cooling equipment. The proposal eliminates the reference to UL 1995 in this section since the UL 1995 Standard will sunset in 2024. Approval of this proposal as submitted allows for the necessary requirements from these standards to align with UL 60335-2-40.

M54-24 Part II

# M54-24 Part III

Committee Action: Disapproved

Committee Reason: The action on SP18 makes this proposal unnecessary. (11-0)

M54-24 Part III

M55-24

Committee Action: As Modified by Committee

**Committee Modification:** 

Revise as follows:

913.1 General.

Clothes dryers shall be installed in accordance with the manufacturer's instructions. Electric residential clothes dryers, including heat pump and condensing-type dryers, for residential use or commercial use by the general public shall be tested listed and labeled in accordance with UL 2158. Electric industrial and institutional coin operated clothes dryers for use only by trained personnel shall be listed and labeled tested in accordance with UL 2158. Electric commercial clothes dryers shall be tested in accordance with UL 1240.

Committee Reason: The committee voted 14-0 to approve of this proposal as modified. The committee voted to add the words listed and labeled by 301.7's specifications, which more briefly outline the code officials' compliance procedure. This proposal makes the specifications for heat pump clothes dryers clearer. Clothes dryers are covered under UL 2158 for installations in homes and businesses when the operator doesn't need extra training. For industrial clothes dryers not meant for public usage, UL 1240 is applicable. ASHRAE 34 standards for low-GWP refrigerants result from the EPA's Significant New Alternative Policy Program (SNAP): using refrigerants with higher flammability safety categories. Unlike the ones that were previously in use, these refrigerants present new risks.

M55-24

M56-24

Committee Action: As Submitted

Committee Reason: The committee voted 14-0 to approve of this proposal as submitted. This proposal harmonizes the requirement for listing consistent with both standards that are already referenced in this section. Additionally, the *listing* requirement will make it easier for code officials to enforce this provision. Other benefits include making it more likely that products will perform as rated, specified products will meet U.S. Department of Energy efficiency regulations for ceiling fans, and engineers will have standardized performance data they need to design and specify products for life-safety applications.

M56-24

M57-24 Part I

Committee Action: As Submitted

Committee Reason: The committee voted 14-0 to approve this proposal as submitted. The proposal was also approved in IRC-M-24. Section 931 should be 932 (editorial). The use of germicidal UV systems and equipment for equipment protection and indoor air quality is growing in popularity. Particular guidelines are included in the listing standard to safeguard employees against unintentional exposure when performing maintenance and servicing. Several of these capabilities require installation; thus, instructions are necessary to guarantee protection. Further standards apply when the systems are factory or field installed within specified heating and cooling equipment or via ducts or plenums.

M57-24 Part I

## M57-24 Part II

Committee Action: As Submitted

**Committee Reason:** The committee voted to approve this proposal as submitted 9-0. The committee agrees with the guidelines in the listing standard to safeguard employees against unintentional exposure when performing maintenance and servicing. The committee concurs that adequate installation is necessary for germicidal capabilities, whether installed in designated heating and cooling equipment, in the field, or through ducts or plenums. The proposed code language ensures the proper use of germicidal capabilities for UV irradiation systems and equipment.

M57-24 Part II

## M58-24

Committee Action: Withdrawn

M58-24

## M59-24 Part I

Committee Action: As Submitted

Committee Reason: The committee voted 14-0 to approve of this proposal as submitted. This proposal adds clarification for field installation instructions for auxiliary electric heaters. The end product standard's reach extends to field-installed electric heaters inside the enclosure of listed heat pumps and air conditioning equipment (UL 60335-2-40). The heaters are required to be evaluated and tested as part of the equipment. The product standard requires that the equipment be marked to identify which field installed accessories are approved as part of the equipment listing. Third-party electric heaters are installed more frequently in the HVAC sector. The equipment maker has not certified these heaters, and the equipment listing still needs to evaluate them. Consequently, these installations have led to multiple reports of fire occurrences being reported to manufacturers.

M59-24 Part I

#### M59-24 Part II

Committee Action: As Submitted

Committee Reason: The committee voted to approve this proposal as submitted 9-0. The committee's consensus indicates that mechanisms are currently in place to guarantee that the equipment is matched for safe field use. The end product standard's reach extends to field-installed electric heaters inside the enclosure of listed heat pumps and air conditioning equipment (UL 60335-2-40). It is necessary to assess and test the heaters as apparatus components. The product specification shall include the equipment description and list of approved field-installed accessories according to the product standard.

M59-24 Part II

#### M60-24 Part I

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve of the proposal as submitted. For clarity, this proposal restructures the current requirements into a table format, which includes specifications for commercial electric booster water heaters, electric tankless water heaters, and heat pump water heaters. The regulations for installing water heaters are dispersed among multiple codes. The new wording aims to make the concepts more understandable and straightforward. This proposed language provides direction in a single location to aid in navigating the different criteria.

M60-24 Part I

## M60-24 Part II

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (12-2)

M60-24 Part II

## M60-24 Part III

Committee Action: As Submitted

**Committee Reason:** The committee voted 10-0 to approve the proposal as submitted. This proposal creates a table outlining the current requirements. It adds specifications to the products for commercial electric booster water heaters, electric tankless water heaters, and heat pump water heaters. Clarity and simplicity are the goals of this new language, which assist in navigating the many criteria in one convenient location. Since the IMC has unique information that cannot be accessed anywhere else, it is appropriate to refer to it for all water heater installations.

M60-24 Part III

#### M61-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve of this proposal as submitted. This proposal provides guidance for supplemental heaters. The concerns associated with A2L and other flammable refrigerants increase the need to provide standard requirements and third-party certification. This is consistent with the requirements of IMC 1101.2 for factory-built equipment. The title has been clarified to reflect the content of this section.

M61-24

## M62-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 13-1 to approve the proposal as submitted. This code change proposal adds a reference to ASHRAE 15.2, the installation standard for residential air conditioning systems used for a single dwelling or sleeping unit. This addition addresses a gap created in the code when ASHRAE 15 split its scope between standards 15 and 15.2. Its inclusion in the IMC is required because the IMC also covers some systems covered by ASHRAE 15.2.

With the separation between ASHRAE 15 and ASHRAE 15.2, there were certain changes that impacted the refrigerant piping requirements. For residential systems, the piping material is limited to aluminum, copper, and copper alloy pipe or tube.

Including steel and stainless steel, the fitting requirements are comparable to the material requirements. For piping systems covered by ASHRAE 15.2, pipe identification is not necessary. This is because it is optional to identify each refrigerant pipe. After all, it is readily visible. On the other hand, commercial buildings frequently have several piping systems, and it sometimes needs to be clarified which kind they are. In residential systems, the shaft's ventilation may be eliminated if the piping system is continuous and there are no connectors in the shaft. The end of the section now includes this provision.

M62-24

## M63-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 13-1 to disapprove of this proposal. The committee's reasoning is that there is no need to add this proposed code language to this section of the IMC.

M63-24

# M64-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

International Mechanical Code

TABLE 1103.1 REFRIGERANT CLASSIFICATION, AMOUNT AND OEL

CHEMICAL REFRIGERANT			REFRIGERANT SAFETY GROUP	AMOU	(F) DEGREES						
	FORMULA	CHEMICAL NAME OF BLEND	CLASSIFICATION	RCL			SPACE LFL <sup>f</sup>			OEL	4 ' '
				lb/1000		,	lb/1000		2		
=C	001.5			ft <sup>3</sup>		g/m <sup>3</sup>	ft <sup>o</sup>	ppm	g/m <sup>3</sup>		b
R-11 <sup>C</sup> R-12 <sup>C</sup>	CCI <sub>3</sub> F	trichlorofluoromethane dichlorodifluoromethane	A1 A1	0.39 5.6	1,100	6.1 90	_	_		1,000	2-0-0 <sup>D</sup> 2-0-0 <sup>D</sup>
R-12	CCI <sub>2</sub> F <sub>2</sub> CCIF <sub>3</sub>	chlorotrifluoromethane	A1	5.6	18,000	90			=	1,000	2-0-0 2-0-0 <sup>b</sup>
R-13B1 <sup>C</sup>	CBrF <sub>3</sub>	bromotrifluoromethane	A1	+ =		_	_		$\vdash \equiv$	1,000	2-0-0 2-0-0 <sup>b</sup>
R-13I1	CF <sub>3</sub> I	trifluoroiodomethane	A1	1.0	2,000	16	_	_	<del> </del>	500	_
R-14	CF <sub>4</sub>	tetrafluoromethane (carbon tetrafluoride)	A1	25	110,000	400	_	_	-	1,000	2-0-0 <sup>b</sup>
R-22	CHCIF <sub>2</sub>	chlorodifluoromethane	A1	13	59,000	210	_	_	_	1,000	2-0-0 <sup>b</sup>
R-23	CHF <sub>3</sub>	trifluoromethane (fluoroform)	A1	7.3	41,000	120	_	_	_	1,000	2-0-0 <sup>b</sup>
R-30	CH <sub>2</sub> Cl <sub>2</sub>	dichloromethane (methylene chloride)	B1	_	_		_	_	_	_	_
R-31	CH <sub>2</sub> CIF	chlorofluoromethane	_	_	_	_	_	_	_	_	_
R-32	CH <sub>2</sub> F <sub>2</sub>	difluoromethane (methylene fluoride)	A2L	4.8	36,000	77	19.1	144,000	306	1,000	1-4-0
R-40	CH <sub>3</sub> CI	chloromethane (methyl chloride)	B2	<u> </u>		_	_	_	_	_	_
R-41	CH <sub>3</sub> F	fluoromethane (methyl fluoride)		_	_	_	_	-	_	_	_
R-50 R-113 <sup>C</sup>	CH <sub>4</sub>	methane 1.1,2-trichloro-1,2,2-trifluoroethane	A3 A1	1.2	2,600	20	_	50,000	_	1,000	2-0-0 <sup>b</sup>
R-114 <sup>C</sup>	CCI <sub>2</sub> FCCIF <sub>2</sub> CCIF <sub>2</sub> CCIF <sub>2</sub>	1,2-tirchioro-1,2,2-tirmuoroethane	A1	8.7	20,000	140			H	1,000	2-0-0 2-0-0 <sup>b</sup>
R-115	CCIF <sub>2</sub> CF <sub>3</sub>	chloropentafluoroethane	A1	47	120,000	760			H	1,000	_
R-116	CF <sub>3</sub> CF <sub>3</sub>	hexafluoroethane	A1	34	97,000	550	<del>  _ </del>	<del> </del>	_	1,000	1-0-0
R-123	CHCl <sub>2</sub> CF <sub>3</sub>	2,2-dichloro-1,1,1-trifluoroethane	B1	3.5	9,100	57	_	_	_	50	2-0-0 <sup>D</sup>
R-124	CHCIFCF3	2-chloro-1,1,1,2-tetrafluoroethane	A1	3.5	10,000	56	_	_	-	1,000	2-0-0 <sup>b</sup>
R-125	CHF <sub>2</sub> CF <sub>3</sub>	pentafluoroethane	A1	23	75,000	370	_	_	_	1,000	2-0-0 <sup>b</sup>
R-134a	CH <sub>2</sub> FCF <sub>3</sub>	1,1,1,2-tetrafluoroethane	A1	13	50,000	210	_	_		1,000	2-0-0 <sup>b</sup>
R-141b	CH <sub>3</sub> CCl <sub>2</sub> F	1,1-dichloro-1-fluoroethane	_	0.78	2,600	12	17.8	60,000	287	500	2-1-0
R-142b	CH <sub>3</sub> CCIF <sub>2</sub>	1-chloro-1, 1-difluoroethane	A2	5.1	20,000	82	20.4	80,000	329	1,000	2-4-0
R-143a	CH <sub>3</sub> CF <sub>3</sub>	1,1,1-trifluoroethane	A2L	4.4	21,000	70	17.5	82,000	282	1,000	2-0-0 <sup>D</sup>
R-152a	CH <sub>3</sub> CHF <sub>2</sub>	1,1-difluoroethane	A2	2.0	12,000	32	8.1	48,000	130	1,000	1-4-0
R-170 R-E170	CH <sub>3</sub> CH <sub>3</sub>	ethane	A3 A3	0.54 1.0	7,000 8,500	8.6	2.4 4.0	31,000	38 64	1,000	2-4-0
R-218	CH <sub>3</sub> OCH <sub>3</sub> CF <sub>3</sub> CF <sub>2</sub> CF <sub>3</sub>	Methoxymethane (dimethyl ether) octafluoropropane	A3	43	90,000	690	4.0	34,000	64	1,000	2-0-0 <sup>b</sup>
R-227ea	CF <sub>3</sub> CHFCF <sub>3</sub>	1,1,1,2,3,3,3-heptafluoropropane	A1	36	84,000	580	_		$\vdash \equiv$	1,000	
R-236fa	CF <sub>3</sub> CH <sub>2</sub> CF <sub>3</sub>	1,1,1,3,3,3-hexafluoropropane	A1	21	55,000	340	_	_	<del> </del>	1,000	2-0-0 <sup>b</sup>
R-245fa	CHF <sub>2</sub> CH <sub>2</sub> CF <sub>3</sub>	1,1,1,3,3-pentafluoropropane	B1	12	34,000	190	_	_	<u> </u>	300	2-0-0 <sup>b</sup>
R-290	CH <sub>3</sub> CH <sub>2</sub> CH <sub>3</sub>	propane	А3	0.59	5,300	9.5	2.4	21,000	38	1,000	2-4-0
R-C318	-(CF <sub>2</sub> ) <sub>4</sub> -	octafluorocyclobutane	A1	41	80,000	650	_	_	_	1,000	<b>—</b> .
R-400 <sup>C</sup>	zeotrope	R-12/114 (50.0/50.0)	A1	10	28,000	160		_	_	1,000	2-0-0 <sup>D</sup>
R-400 <sup>C</sup>	zeotrope	R-12/114 (60.0/40.0)	A1	11	30,000	170	_	_	_	1,000	
R-401A	zeotrope	R-22/152a/124 (53.0/13.0/34.0)	A1	6.6	27,000	110	_	_	_	1,000	2-0-0 <sup>D</sup>
R-401B	zeotrope	R-22/152a/124 (61.0/11.0/28.0)	A1	7.2	30,000	120	_	_	_	1,000	2-0-0 <sup>D</sup>
R-401C	zeotrope	R-22/152a/124 (33.0/15.0/52.0)	A1	5.2	20,000	84	_		_	1,000	2-0-0 <sup>D</sup> 2-0-0 <sup>D</sup>
R-402A R-402B	zeotrope	R-125/290/22 (60.0/2.0/38.0)	A1 A1	17	66,000	270	_	_	_	1,000	2-0-0 <sup>b</sup>
R-403A	zeotrope zeotrope	R-125/290/22 (38.0/2.0/60.0) R-290/22/218 (5.0/75.0/20.0)	A2	15 7.6	63,000 33,000	120			$\vdash \equiv$	1,000	2-0-0 2-0-0 <sup>b</sup>
R-403B	zeotrope	R-290/22/218 (5.0/56.0/39.0)	A1	18	68,000	290	_	_	_	1,000	2-0-0 <sup>b</sup>
R-404A	zeotrope	R-125/143a/134a (44.0/52.0/4.0)	A1	31	130,000	500	_	<u> </u>	-	1,000	2-0-0 <sup>b</sup>
R-405A	zeotrope	R-22/152a/142b/C318 (45.0/7.0/5.5/42.5)	_	16	57,000	260	_	_	_	1,000	_
R-406A	zeotrope	R-22/600a/142b (55.0/4.0/41.0)	A2	4.7	21,000	75	18.8 <sup>9</sup>	82,000 <sup>C</sup>	301.9 <sup>0</sup>	1,000	_
R-407A	zeotrope	R-32/125/134a (20.0/40.0/40.0)	A1	19	83,000	300	_	_		1,000	2-0-0 <sup>b</sup>
R-407B	zeotrope	R-32/125/134a (10.0/70.0/20.0)	A1	21	79,000	330	_	_		1,000	2-0-0 <sup>b</sup>
R-407C	zeotrope	R-32/125/134a (23.0/25.0/52.0)	A1	18	81,000	290	_	_		1,000	2-0-0 <sup>b</sup>
R-407D	zeotrope	R-32/125/134a (15.0/15.0/70.0)	A1	16	68,000	250	_	_	_	1,000	2-0-0 <sup>b</sup>
R-407E	zeotrope	R-32/125/134a (25.0/15.0/60.0)	A1	17	80,000	280	_	_	_	1,000	2-0-0 <sup>D</sup>
R-407F	zeotrope	R-32/125/134a (30.0/30.0/40.0)	A1	20	95,000	320	_		_	1,000	_
R-407G R-407H	zeotrope	R-32/125/134a (2.5/2.5/95.0)	A1 A1	13 19	52,000 92,000	210 300		_		1,000	_
R-407H R-407I	zeotrope zeotrope	R-32/125/134a (32.5/15.0/52.5) R-32/125/124a (19.5/8.5/72.0)	A1	16	71,100	250	$\vdash$		H	1,000	_
R-408A	zeotrope	R-125/143a/22 (7.0/46.0/47.0)	A1	21	94,000	330			$\vdash$	1,000	2-0-0 <sup>b</sup>
R-409A	zeotrope	R-22/124/142b (60.0/25.0/15.0)	A1	7.1	29,000	110				1,000	2-0-0 2-0-0 <sup>b</sup>
R-409B	zeotrope	R-22/124/142b (65.0/25.0/10.0)	A1	7.3	30,000	120	_	<del>  _</del>	<del>  -</del>	1,000	2-0-0 <sup>b</sup>
R-410A	zeotrope	R-32/125 (50.0/50.0)	A1	26	140,000	420	_	_	_	1,000	2-0-0 <sup>b</sup>
R-410B	zeotrope	R-32/125 (45.0/55.0)	A1	27	140,000	430		<u> </u>	1-	1,000	2-0-0 <sup>b</sup>
R-411A	zeotrope	R-127/22/152a (1.5/87.5/11.0)	A2	2.9	14,000	46	11.6 <sup>f</sup>	55,000 <sup>f</sup>	185.6 <sup>1</sup>	970	_
R-411B	zeotrope	R-1270/22/152a (3.0/94.0/3.0)	A2	2.8	13,000	45	14.8 <sup>f</sup>	70,000 <sup>f</sup>	238.3 <sup>1</sup>		_
R-412A	zeotrope	R-22/218/142b (70.0/5.0/25.0)	A2	5.1	22,000	82	20.5 <sup>f</sup>	87,000 <sup>t</sup>	328.6 <sup>1</sup>		_
R-413A	zeotrope	R-218/134a/600a (9.0/88.0/3.0)	A2	5.8	22,000	93	23.4 <sup>T</sup>	88,000 <sup>T</sup>	374.9 <sup>1</sup>		_
R-414A	zeotrope	R-22/124/600a/142b (51.0/28.5/4.0/16.5)	A1	6.4	26,000	100	_		_	1,000	_
R-414B	zeotrope	R-22/124/600a/142b (50.0/39.0/1.5/9.5)	A1	6.0	23,000	96	<u> </u>	-	-	1,000	=
R-415A	zeotrope	R-22/152a (82.0/18.0)	A2	2.9	14,000	47	11.7 <sup>9</sup>	56,000 <sup>©</sup>	187.9 <sup>c</sup>	1,000	_

R-415B zeotrope R-22152a (25.075.0) R-416A zeotrope R-1344124600 (39.039.51.5) R-417A zeotrope R-1344124600 (39.039.51.5) R-417B zeotrope R-125134a600 (46.050.03.4) R-417C zeotrope R-125134a600 (19.078.81.7) R-417C zeotrope R-125134a600 (19.078.81.7) R-418A zeotrope R-125134a6170 (77.019.04.0) R-419B zeotrope R-125134a6170 (45.48.03.5) R-420A zeotrope R-125134a6170 (45.48.03.5) R-420A zeotrope R-125134a6170 (45.48.03.5) R-421B zeotrope R-125134a600 (39.078.6) R-421B zeotrope R-125134a600 (36.070.0) R-422B zeotrope R-125134a600 (36.070.0) R-422B zeotrope R-125134a600 (36.040.0) R-422B zeotrope R-125134a600 (36.040.0) R-422B zeotrope R-125134a600 (36.040.0) R-422C zeotrope R-125134a600 (36.040.0) R-422B zeotrope R-125134a600 (36.040.0) R-422C zeotrope R-125134a600 (36.093.027) R-422A zeotrope R-125134a600 (36.093.027) R-424A zeotrope R-125134a600 (36.093.027) R-424A zeotrope R-125134a600 (36.093.027) R-425A zeotrope R-125134a600 (36.093.027) R-426A zeotrope R-125134a600 (36.093.000) R-427A zeotrope R-125134a600 (36.093.000) R-428A zeotrope R-125134a600 (36.093.000) R-430A zeotrope R-125134a600 (36.0000) R-431A zeotrope R-125134a600 (36.0000) R-433A zeotrope R-1270490 (36.00000) R-433A zeotrope R-1270490 (36.00000) R-436A zeotrope R-1270490 (36.000000) R-444A zeotrope R-127144404 (36.000000000000000000000000000000000000	CLASSIFICATION		(F) DEGREES						
R-416A zeotrope R-134a/124600 (59.039.5/1.5) R-417A zeotrope R-125/134a600 (46.6/50.03.4) R-417C zeotrope R-125/134a600 (19.5/78.81.7) R-418A zeotrope R-125/134a600 (19.5/78.81.7) R-419A zeotrope R-125/134a600 (19.5/78.81.7) R-419A zeotrope R-125/134a600 (19.5/78.81.7) R-419B zeotrope R-125/134a600 (19.5/78.81.7) R-419B zeotrope R-125/134a600 (19.5/78.81.7) R-420A zeotrope R-125/134a600 (19.5/78.81.7) R-420A zeotrope R-125/134a600 (85.0/10.0) R-421A zeotrope R-125/134a600 (85.0/10.0) R-421B zeotrope R-125/134a600 (85.0/10.0) R-422B zeotrope R-125/134a600 (85.0/10.0) R-422B zeotrope R-125/134a600 (85.0/10.0) R-422B zeotrope R-125/134a600 (85.0/10.0) R-422C zeotrope R-125/134a600 (85.0/10.0) R-422A zeotrope R-125/134a600 (85.0/10.0) R-422A zeotrope R-125/134a600 (85.0/10.0) R-422A zeotrope R-125/134a600 (85.0/10.0) R-422A zeotrope R-125/134a600 (80.00000 (65.10.0) R-425A zeotrope R-125/134a600 (80.00000 (65.0/40.0) (10.0) R-425A zeotrope R-125/134a600 (80.000000 (75.5/47.0) (10.0) R-425A zeotrope R-125/134a600 (80.000000 (75.5/47.0) (10.0) R-425A zeotrope R-125/134a600 (80.000000 (75.5/20.0) (10.0) R-426A zeotrope R-125/134a600 (80.000000 (75.0) (10.0) R-426A zeotrope R-125/134a600 (80.000000 (75.0) (10.0) R-430A zeotrope R-1270/200 (80.00000 (75.0) (10.0) R-430A zeotrope R-1270/200 (80.00000 (75.0) (10.0) R-430A zeotrope R-1270/200 (80.00000 (75.0) (10.0) R-436A zeotrope R-1270/200 (80.00000 (75.0) (10.0) R-436A zeotrope R-1270/200 (80	CEASSII IOA IION	RCL			lb/1000	LFL	1	OEL	OF HAZARD
R-416A zeotrope R-134a/124/600 (59.0)39.5/1.5) R-417A zeotrope R-125/134a/600 (46.6/50.03.4) R-417B zeotrope R-125/134a/600 (46.6/50.03.4) R-417C zeotrope R-125/134a/600 (19.5/78.81.7) R-418A zeotrope R-25/134a/600 (19.5/78.81.7) R-419B zeotrope R-25/134a/600 (19.5/78.81.7) R-419B zeotrope R-125/134a/600 (19.5/78.81.7) R-420A zeotrope R-125/134a/600 (77.70/19.04.0) R-421A zeotrope R-125/134a/600 (80.012.0) R-421A zeotrope R-125/134a/600 (80.012.0) R-421B zeotrope R-125/134a/600 (85.015.0) R-422B zeotrope R-125/134a/600 (85.015.0) R-422B zeotrope R-125/134a/600 (85.015.0) R-422B zeotrope R-125/134a/600 (85.015.0) R-422C zeotrope R-125/134a/600 (85.015.0) R-422B zeotrope R-125/134a/600 (85.003.0) R-422C zeotrope R-125/134a/600 (85.003.0) R-422C zeotrope R-125/134a/600 (85.003.0) R-422C zeotrope R-125/134a/600 (85.003.0) R-422A zeotrope R-125/134a/600 (85.003.0) R-422A zeotrope R-125/134a/600 (85.003.0) R-422A zeotrope R-125/134a/600 (80.000000 (50.000000000000000000000000000		lb/1000 ft	ppm	g/m		ppm	g/m	ppm	
R-417A zeotrope R-125/134a/600 (46.6/50.03.4) R-417B zeotrope R-125/134a/600 (79.0/18.32.7) R-418A zeotrope R-26/136a/600 (79.0/18.32.7) R-418A zeotrope R-26/136a/60 (79.0/18.32.7) R-418A zeotrope R-26/136a/60 (79.0/18.32.7) R-418A zeotrope R-26/136a/61 (1.5/96.02.5) R-419B zeotrope R-125/134a/61 (77.0/19.0/4.0) R-421B zeotrope R-125/134a/61 (70.0/4.68.48.03.5) R-420A zeotrope R-125/134a/61 (88.0/12.0) R-421A zeotrope R-125/134a/600 (85.0/12.0) R-421B zeotrope R-125/134a/600 (85.0/12.0) R-422B zeotrope R-125/134a/600 (85.0/12.0) R-422B zeotrope R-125/134a/600 (85.0/13.0) R-422B zeotrope R-125/134a/600 (85.0/13.0) R-422C zeotrope R-125/134a/600 (85.0/13.0) R-422B zeotrope R-125/134a/600 (85.0/13.0) R-422C zeotrope R-125/134a/600 (85.0/33.9) R-422C zeotrope R-125/134a/600 (85.0/33.9) R-422C zeotrope R-125/134a/600 (85.0/33.9) R-422A zeotrope R-125/134a/600 (85.0/33.9) R-423A zeotrope R-125/134a/600a/60.69.0/33.9/2.7) R-423A zeotrope R-125/134a/600a/60.0/30.0/30.0 R-425A zeotrope R-125/134a/600a/60.0/30.0/30.0 R-425A zeotrope R-22/125/134a/3134a/15.0/25.0/10.0/50.0 R-425A zeotrope R-22/125/134a/3134a/15.0/25.0/10.0/50.0 R-426A zeotrope R-22/125/134a/3134a/15.0/25.0/10.0/50.0) R-426A zeotrope R-125/134a/600a/600a/60/10.0/50.0) R-426A zeotrope R-125/134a/600a/600a/60.0/10.0/30.0) R-433A zeotrope R-1270/230 (30.0/70.0) R-433A zeotrope R-1270/230 (30.0/70.0) R-433A zeotrope R-1270/230 (30.0/70.0) R-433B zeotrope R-1270/230 (30.0/70.0) R-433B zeotrope R-1270/230 (30.0/70.0) R-433A zeotrope R-22/125/134a/152a/2276 (31.0/31.0/30.0) R-444A zeotro	A2	2.1	12,000	34	_	_	_	1,000	_
R-417B zeotrope R-125/134a/600 (79.0/18.3/2.7) R-417C zeotrope R-125/134a/600 (19.5/78.8/1.7) R-419A zeotrope R-125/134a/600 (19.5/78.8/1.7) R-419A zeotrope R-125/134a/E170 (77.0/19.0/4.0) R-419B zeotrope R-125/134a/E170 (49.5/48.0/3.5) R-419B zeotrope R-125/134a/E170 (49.5/48.0/3.5) R-421A zeotrope R-125/134a/E170 (49.5/48.0/3.5) R-421B zeotrope R-125/134a/E00.4(20.0) R-421B zeotrope R-125/134a/E00.4(20.0) R-421B zeotrope R-125/134a/E00.4(20.0) R-422B zeotrope R-125/134a/E00.4(20.5/11.5/3.4) R-422B zeotrope R-125/134a/E00.4(20.5/11.5/3.4) R-422B zeotrope R-125/134a/E00.4(20.5/11.5/3.4) R-422C zeotrope R-125/134a/E00.4(20.5/13.5/3.4) R-422D zeotrope R-125/134a/E00.4(20.5/13.5/3.4) R-422C zeotrope R-125/134a/E00.4(20.5/13.5/3.4) R-422B zeotrope R-125/134a/E00.4(20.5/13.5/3.4) R-422A zeotrope R-125/134a/E00.4(20.5/13.5/3.4) R-422A zeotrope R-125/134a/E00.4(20.5/13.5/3.4) R-422A zeotrope R-125/134a/E00.4(20.5/13.5/3.4) R-422A zeotrope R-125/134a/E00.4(20.5/13.5/3.4) R-423A zeotrope R-125/134a/E00.4(20.5/13.5/3.4) R-426A zeotrope R-125/134a/E00.4(20.5/13.5/3.4) R-426A zeotrope R-125/134a/E00.4(20.5/13.5/3.4) R-426A zeotrope R-125/134a/E00.4(20.0) R-427A zeotrope R-125/134a/E00.4(20.0) R-429A zeotrope R-125/134a/E00.4(20.0) R-429A zeotrope R-125/134a/E00.4(20.0) R-430A zeotrope R-127/132a/E00.4(20.0) R-431A zeotrope R-127/261/26(20.0) R-332A zeotrope R-127/261/26(20.0) R-333A zeotrope R-127/261/26(20.0) R-333A zeotrope R-127/261/26(20.0) R-333A zeotrope R-127/261/26(20.0) R-335A zeotrope R-127/261/26(20.0) R-336A zeotrope R-127/261/26(20.0) R-336A zeotrope R-127/261/26(20.0) R-336A zeotrope R-127/261/26(20.0) R-336A zeotrope R-290/E00.4(20.0) R-336A zeotrope R-290/E00.4(20.0) R-3436A zeotrope R-291/25/134a/E00.26(1.0) R-3444A zeotrope R-321/	A1	3.9	14,000	62	_	_	_	1,000	2-0-0 <sup>b</sup>
R-417C zeotrope R-125/134a/600 (19.5/78.8/1.7) R-419A zeotrope R-290/22/152a (1.596.02.5) R-419A zeotrope R-290/22/152a (1.596.02.5) R-419A zeotrope R-125/134a/E170 (77.0/19.0/4.0) R-419B zeotrope R-125/134a/E170 (48.548.03.5) R-420A zeotrope R-125/134a/E170 (48.548.03.5) R-420A zeotrope R-125/134a/E170 (48.548.03.5) R-421A zeotrope R-125/134a/E00a (85.0/12.0) R-421A zeotrope R-125/134a/E00a (85.0/12.0) R-422A zeotrope R-125/134a/E00a (85.0/12.0) R-422B zeotrope R-125/134a/E00a (85.0/12.0) R-422B zeotrope R-125/134a/E00a (85.0/12.0) R-422B zeotrope R-125/134a/E00a (80.1/11.5/3.4) R-422C zeotrope R-125/134a/E00a (80.1/15.0/3.0) R-422D zeotrope R-125/134a/E00a (65.0/13.5/3.4) R-422C zeotrope R-125/134a/E00a (65.0/13.5/3.4) R-422C zeotrope R-125/134a/E00a (65.0/13.5/3.4) R-422A zeotrope R-125/134a/E00a (65.0/13.5/3.4) R-423A zeotrope R-125/134a/E00a/E00a (60.0/13.3).2/7 R-423A zeotrope R-125/134a/E00a/E00a (60.0/13.3).2/7 R-425A zeotrope R-22/125/134a/E00a/E00a (50.547.00.9/1.00.6) R-426A zeotrope R-22/125/134a/134a (15.0/25.0/10.0/50.0) R-426A zeotrope R-22/125/134a/134a (15.0/25.0/10.0/50.0) R-426A zeotrope R-22/125/134a/134a (15.0/25.0/10.0/50.0) R-426A zeotrope R-125/134a/E00a/E00a (60.0/10.0/30.0) R-426A zeotrope R-125/134a/E00a/E00a (60.0/10.0/30.0) R-426A zeotrope R-126/126/24 (00.0/20.0) R-431A zeotrope R-127/0290 (50.0/30.0) R-4330 zeotrope R-127/0290 (60.0/30.0) R-43440 zeotrope R-29/125/1244/24(E) (60.0/30.0) R-44440 zeotrope R-3	A1	3.5	13,000	55	_	_	_	1,000	2-0-0 <sup>D</sup>
R-418A	A1	4.3	15,000	69		_	<u> </u>	1,000	_
R-419A zeotrope R-125/134a/E170 (77.0/19.0/4.0) R-419B zeotrope R-125/134a/E170 (48.5/48.07.5) R-421A zeotrope R-125/134a (85.0/12.0) R-421A zeotrope R-125/134a (85.0/12.0) R-421B zeotrope R-125/134a (85.0/15.0) R-422B zeotrope R-125/134a (85.0/15.0) R-422B zeotrope R-125/134a (85.0/15.0) R-422C zeotrope R-125/134a (85.0/15.0) R-422C zeotrope R-125/134a (85.0/15.0) R-422D zeotrope R-125/134a (85.0/15.0) R-422D zeotrope R-125/134a (85.0/15.0) R-422D zeotrope R-125/134a (85.0/15.0) R-422D zeotrope R-125/134a (85.0/15.0) R-422A zeotrope R-125/134a (85.0/15.0) R-422A zeotrope R-125/134a (85.0/15.0) R-422B zeotrope R-125/134a (85.0/15.0) R-422A zeotrope R-125/134a (85.0/15.0) R-423A zeotrope R-125/134a (85.0/15.0) R-423A zeotrope R-125/134a (85.0/15.0) R-425A zeotrope R-125/134a (85.0/15.0/10.0/10.0) R-425A zeotrope R-125/134a (85.0/15.0/10.0/10.0) R-425A zeotrope R-125/134a (85.0/15.0/10.0/10.0) R-430A zeotrope R-125/134a (85.0/15.0/10.0/10.0) R-430A zeotrope R-125/134a (15.0/15.0/10.0/10.0) R-430A zeotrope R-125/10.0/10.0/10.00 R-430A zeot	A1	5.4	21,000	87		<u> </u>	I –	1,000	_
R-419B zeotrope R-125/134e/E170 (48.5/48.03.5) R-420A zeotrope R-134A/142b (88.0/12.0) R-421A zeotrope R-125/134a (88.0/12.0) R-421B zeotrope R-125/134a (58.0/42.0) R-421B zeotrope R-125/134a (58.0/42.0) R-422B zeotrope R-125/134a (600a (65.1/11.5/3.4) R-422B zeotrope R-125/134a (600a (65.1/11.5/3.4) R-422C zeotrope R-125/134a (600a (65.1/11.5/3.4) R-422D zeotrope R-125/134a (600a (65.1/3.1.5/3.4) R-422D zeotrope R-125/134a (600a (65.1/3.1.5/3.4) R-422E zeotrope R-125/134a (600a (65.1/3.1.5/3.4) R-422E zeotrope R-125/134a (600a (65.1/3.1.5/3.4) R-423A zeotrope R-125/134a (600a (65.0/3.3) R-425A zeotrope R-125/134a (600a (600.0/3.0) R-425A zeotrope R-321/134a (227ea (18.5/69.5/12.0) R-425A zeotrope R-321/134a (227ea (18.5/69.5/12.0) R-425A zeotrope R-321/134a (31.0/3.2) R-425A zeotrope R-125/134a (600a (600a (6.1/3.0).0) R-425A zeotrope R-125/134a (600a (600a (6.1/3.0).0) R-426A zeotrope R-125/134a (31.0/3.2) R-429A zeotrope R-125/134a (31.0/3.2) R-429A zeotrope R-125/134a (600a (600a (77.5/20.0).0)(1.9) R-430A zeotrope R-1270/152a (600a (60.0/10.0/30.0) R-430A zeotrope R-1270/290 (30.0/70.0) R-433A zeotrope R-1270/290 (30.0/70.0) R-433A zeotrope R-1270/290 (30.0/70.0) R-433A zeotrope R-1270/290 (50.0/5.0) R-433A zeotrope R-1270/290 (50.0/5.0) R-433A zeotrope R-1270/290 (50.0/5.0) R-433A zeotrope R-1270/290 (50.0/5.0) R-436A zeotrope R-290/600a (52.0/48.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436A zeotrope R-3291/53/4a (600a (60.0/47.0).0) R-436B zeotrope R-3291/53/4a (600a (60.0/47.0).0) R-436A zeotrope R-3291/53/4a (600a (60.0/47.0).0) R-444A zeotrope R-3291/53/4a (600a (60.0/47.0).0) R-444A zeotrope R-32/125/134a (60.0/600 (60.0/60.0).0) R-449A zeotrope R-32	A2	4.8	22,000	77	19.2 <sup>9</sup>	89,000 <sup>9</sup>	308.4	1,000	
R-420A zeotrope R-134a/142b (88.0/12.0) R-421B zeotrope R-125/134a (88.0/42.0) R-421B zeotrope R-125/134a (80.0/2.0) R-422B zeotrope R-125/134a(800a (85.0/15.03.0) R-422C zeotrope R-125/134a(800a (85.0/15.03.0) R-422C zeotrope R-125/134a(800a (85.0/15.03.0) R-422C zeotrope R-125/134a(800a (85.0/15.03.0) R-422C zeotrope R-125/134a(800a (85.0/15.03.0) R-422E zeotrope R-125/134a(800a (85.0/15.03.0) R-422E zeotrope R-125/134a(800a (85.0/15.03.0) R-422A zeotrope R-125/134a(800a (85.0/15.03.0) R-422A zeotrope R-125/134a(800a)(80.0/15.03.0) R-423A zeotrope R-125/134a(800a)(80.0/15.05.47.0/0.9/1.0/0.6) R-425A zeotrope R-125/134a(800a)(80.0/16.0)(5.0/47.0/0.9/1.0/0.6) R-425A zeotrope R-125/134a(800a)(80.0/16.0)(5.0/47.0/0.9/1.0/0.6) R-426A zeotrope R-125/134a(800a)(80.0/16.0)(5.0/10.0)(6) R-427A zeotrope R-125/134a(800a)(60.0/16.0)(6.0/10.0)(6) R-429A zeotrope R-125/134a(800a)(60.0/10.0)(6) R-430A zeotrope R-125/134a(800a)(76.0/24.0) R-431A zeotrope R-127/026/00(04.7/5.0/24.0) R-431A zeotrope R-127/026/00(04.0/5.0/24.0) R-433A zeotrope R-127/026/00(06.0/5.0/26.0) R-433A zeotrope R-127/026/00(06.0/5.0/26.0) R-433A zeotrope R-127/026/00(06.0/5.0/26.0) R-433A zeotrope R-127/026/00(06.0/5.0/26.0) R-433A zeotrope R-127/026/00(06.0/5.0/26.0/26.0) R-433A zeotrope R-127/026/00(06.0/5.0/26.0/26.0) R-433A zeotrope R-127/026/00(06.0/5.0/26.0/26.0) R-433A zeotrope R-127/026/00(06.0/6.0/26.0) R-433A zeotrope R-127/026/00(06.0/6.0/26.0) R-433A zeotrope R-127/026/00(06.0/6.0/26.0) R-433A zeotrope R-290/000a (56.0/46.0) R-436B zeotrope R-329/0600a (56.0/46.0) R-436B zeotrope R-329/0600a (56.0/46.0) R-436A zeotrope R-329/0600a (56.0/46.0) R-436A zeotrope R-329/0600a (56.0/46.0) R-444A zeotrope R-329/125/134a(0600601 (6.5/45.0/44.2)1.7/0.6) R-444A zeotrope R-32/125/134a(0600601 (6.5/45.0/44.2)1.7/0.6) R-444A zeotrope R-32	A2 A2	4.2	15,000	67 74	16.7 <sup>9</sup>	60,000 <sup>9</sup>	268.6 <sup>C</sup>	1,000	_
R-421A zeotrope R-125/134a (58.042.0) R-421B zeotrope R-125/134a (58.042.0) R-422A zeotrope R-125/134a (65.015.0) R-422A zeotrope R-125/134a (600a (65.042.03.0) R-422C zeotrope R-125/134a (600a (65.042.03.0) R-422D zeotrope R-125/134a (600a (65.043.0) R-422D zeotrope R-125/134a (600a (68.015.03.0) R-422D zeotrope R-125/134a (600a (68.039.3/2.7) R-423A zeotrope R-134a/227ea (52.5/47.5) R-423A zeotrope R-134a/227ea (52.5/47.5) R-423A zeotrope R-132/134a/227ea (18.5/69.5/12.0) R-425A zeotrope R-125/134a/200a (60.06016) (5.05/47.00.91.00.6) R-425A zeotrope R-125/134a/200a (60.06016) (5.05/47.00.91.00.6) R-425A zeotrope R-125/134a/200a (60.06016) (5.05/47.00.91.00.6) R-427A zeotrope R-125/134a/200a (60.07.5/20.00.6/1.9) R-428A zeotrope R-125/143a/290600a (77.5/20.00.6/1.9) R-429A zeotrope R-15/143a/290600a (77.5/20.00.6/1.9) R-431A zeotrope R-15/2a/600a (60.070.030.0) R-431A zeotrope R-1270/290 (30.070.0) R-431A zeotrope R-1270/290 (30.070.0) R-433A zeotrope R-1270/290 (30.070.0) R-433B zeotrope R-1270/290 (30.070.0) R-433C zeotrope R-1270/290 (30.070.0) R-433A zeotrope R-1270/290 (30.070.0) R-433A zeotrope R-1270/290 (30.070.0) R-436A zeotrope R-290/600a (50.044.0) R-436A zeotrope R-290/600a (50.047.03.0) R-436A zeotrope R-32/152/133a/600a (63.0/40.05.0) R-436A zeotrope R-32/152/133a/600a (60.0/40.05.0) R-444A zeotrope R-32/152/133a/600a (60.0/40.00.	A2 A1	4.6	17,000 44,000	180	18.59	69,000	297.3 <sup>©</sup>	1,000	2-0-0 <sup>b</sup>
R-421B zeotrope R-125/134a (85.0/15.0) R-422A zeotrope R-125/134a (80.0) (85.1/11.5/3.4) R-422B zeotrope R-125/134a (80.0) (85.1/11.5/3.4) R-422B zeotrope R-125/134a (80.0) (82.0/15.0).0) R-422C zeotrope R-125/134a (80.0) (82.0/15.0).0) R-422D zeotrope R-125/134a (80.0) (82.0/15.0).0) R-422D zeotrope R-125/134a (80.0) (82.0/15.0).0) R-422D zeotrope R-125/134a (80.0) (85.1/31.5/3.4) R-422A zeotrope R-125/134a (80.0) (85.1/31.5/3.4) R-422A zeotrope R-134a (272-86 (18.5/95.7) R-424A zeotrope R-125/134a (80.0) (80.0/30.2).7) R-425A zeotrope R-125/134a (80.0) (80.0/30.1/30.6) R-425A zeotrope R-125/134a (80.0) (80.16.1/93.0/1.30.6) R-425A zeotrope R-125/134a (80.0) (80.10.0/30.0) R-426A zeotrope R-125/143a (15.0/25.0/10.0/50.0) R-428A zeotrope R-125/143a (15.0/25.0/10.0/50.0) R-429A zeotrope R-125/143a (20.0) (80.0/10.0/30.0) R-429A zeotrope R-1526/143a (20.0) (80.0/10.0/30.0) R-430A zeotrope R-1526/143a (20.0) (80.0) (90.0) R-433A zeotrope R-1528/143a (15.0/25.0) R-433A zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (30.0/70.0) R-433C zeotrope R-1270/290 (50.0/50.0) R-433C zeotrope R-1270/290 (50.0/50.0) R-433A zeotrope R-1270/290 (50.0/50.0) R-433A zeotrope R-1270/290 (50.0/50.0) R-436B zeotrope R-290/600a (50.0/44.0) R-436B zeotrope R-290/600a (50.0/44.0) R-436B zeotrope R-290/600a (50.0/44.0) R-436B zeotrope R-290/600a (50.0/44.0) R-439A zeotrope R-290/600a (50.0/40.0) R-439A zeotrope R-329/600a (50.0/40.0) R-444A zeotrope R-32/125/134a/600601 (13.5/48.6/036.1) R-444A zeotrope R-32/125/134a/600601 (13.0/48.0) R-444A zeotrope R-32/125/134a/600601 (3.0/48.0) R-444A zeotrope R-32/125	A1	17	61,000	280	$\vdash \equiv$		=	1,000	2-0-0 2-0-0 <sup>b</sup>
R-422A zectrope R-125/134a/600a (65.1/11.53.4) R-422B zectrope R-125/134a/600a (65.0/42.03.0) R-422C zectrope R-125/134a/600a (65.0/42.03.0) R-422C zectrope R-125/134a/600a (65.0/45.03.0) R-422E zectrope R-125/134a/600a (65.1/15.03.4) R-422E zectrope R-125/134a/600a (65.1/15.03.4) R-422E zectrope R-125/134a/600a (65.1/15.03.4) R-422A zectrope R-125/134a/600a/600/601a (50.5/47.00.9/1.0/0.6) R-423A zectrope R-125/134a/600a/600/601a (50.5/47.00.9/1.0/0.6) R-425A zectrope R-125/134a/600a/601a (50.5/47.00.9/1.0/0.6) R-426A zectrope R-125/134a/600a/601a (5.1/33.0/1.30.6) R-427A zectrope R-125/134a/600a/601a (5.1/33.0/1.30.6) R-427A zectrope R-125/134a/600a/601a (5.1/33.0/1.30.6) R-428A zectrope R-125/13a/2600a (77.5/20.00.6/1.9) R-429A zectrope R-127/125/40a/20/6000a (77.5/20.00.6/1.9) R-430A zectrope R-15/15/26/600a (60.0/10.0/30.0) R-430A zectrope R-126/15/26/600a (76.0/24.0) R-431A zectrope R-127/126/600a (76.0/24.0) R-432A zectrope R-127/126/16/00.0/20.0) R-433B zectrope R-127/126/16/00.0/20.0) R-433B zectrope R-127/126/16/00.0/20.0) R-433B zectrope R-127/126/16/00.0/20.0) R-433A zectrope R-127/126/16/00.0/20.0) R-435A zectrope R-127/126/16/00.0/20.0) R-436A zectrope R-127/126/16/00.0/20.0) R-436A zectrope R-290/600a (65.0/44.0) R-436B zectrope R-290/600a (65.0/44.0) R-436A zectrope R-290/600a (65.0/44.0) R-436A zectrope R-290/600a (65.0/44.0) R-436A zectrope R-290/600a (65.0/44.0) R-437A zectrope R-290/600a (65.0/44.0) R-438A zectrope R-290/600a (65.0/44.0) R-439A zectrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-439A zectrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-444A zectrope R-32/125/134a/152a/22/6 (6.0/9.0/95.0) R-447A zectrope R-32/125/134a/152a/22/6 (6.0/9.0/95.0) R-448A zectrope R-32/125/134a/134a (2.0.0/20.0/10.0/90.0) R-449A zectrope R-3	A1	21	69,000	330	<del> </del>	_	_	1,000	2-0-0 <sup>b</sup>
R-422B zeotrope R-125/134a/600a (85.042.073.0) R-422C zeotrope R-125/134a/600a (85.0142.073.0) R-422D zeotrope R-125/134a/600a (85.015.053.0) R-422D zeotrope R-125/134a/600a (85.015.053.0) R-422A zeotrope R-125/134a/600a (85.003.92.7) R-423A zeotrope R-134a/227ea (82.547.5) R-424A zeotrope R-134a/227ea (82.547.5) R-424A zeotrope R-125/134a/227ea (18.569.5712.0) R-425A zeotrope R-32/134a/227ea (18.569.5712.0) R-425A zeotrope R-32/125/134a/200a/6006/01a (50.547.00.9/1.00.6) R-425A zeotrope R-125/134a/200a/6006/01a (51.930.07.30.0) R-426A zeotrope R-125/134a/200a/6006/01a (51.930.07.30.0) R-428A zeotrope R-125/134a/200a(60.07.520.00.6/1.9) R-428A zeotrope R-15/132a/200a(60.07.520.00.6/1.9) R-430A zeotrope R-15/2460a (76.024.0) R-431A zeotrope R-1270/2170 (80.020.0) R-432A zeotrope R-1270/2170 (80.020.0) R-433A zeotrope R-1270/290 (30.070.0) R-433B zeotrope R-1270/290 (30.070.0) R-433C zeotrope R-1270/290 (30.020.0) R-433A zeotrope R-1270/290 (50.95.0) R-433A zeotrope R-1270/290 (50.95.0) R-433A zeotrope R-1270/290 (50.070.0) R-435A zeotrope R-1270/290 (50.070.0) R-435A zeotrope R-1270/290 (50.070.0) R-436B zeotrope R-290/600a (56.044.0) R-436B zeotrope R-290/600a (56.044.0) R-436B zeotrope R-290/600a (56.044.0) R-436B zeotrope R-329/600a (50.047.03.0) R-439A zeotrope R-329/600a (50.047.03.0) R-444A zeotrope R-329/600a (60.047.03.0) R-444A zeotrope R-329/600a (60.047.03.0) R-444A zeotrope R-329/600a (60.040.05.0) R-444A zeotrope R-329/600a (60.040.05.0)	A1	18	63,000	290	-	_	<u> </u>	1,000	2-0-0 <sup>b</sup>
R-422D zeotrope R-125/134a/600a (65.1/31.5/3.4) R-422E zeotrope R-125/134a/600a (58.0/39.3/2.7) R-423A zeotrope R-125/134a/600a (58.0/39.3/2.7) R-423A zeotrope R-132/134a/600a/600/601a (50.5/47.0/0.9/1.0/0.6) R-425A zeotrope R-32/134a/227ea (18.5/69.5/12.0) R-426A zeotrope R-32/134a/227ea (18.5/69.5/12.0) R-426A zeotrope R-32/125/143a/134a (15.0/25.0/10.0/50.0) R-427A zeotrope R-125/134a/600a/601a (5.1/93.0/1.3/0.6) R-427A zeotrope R-125/134a/600a/601a (5.1/93.0/1.3/0.6) R-428A zeotrope R-125/134a/600a/601a (5.1/93.0/1.3/0.6) R-429A zeotrope R-125/134a/600a (60.0/10.0/30.0) R-430A zeotrope R-127/152a/600a (60.0/10.0/30.0) R-431A zeotrope R-1270/152a/600a (60.0/10.0/30.0) R-431A zeotrope R-1270/152a/600a (60.0/10.0/30.0) R-433A zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (50.0-5.0) R-433B zeotrope R-1270/290 (50.0-5.0) R-433C zeotrope R-1270/290 (50.0-5.0) R-433A zeotrope R-1270/152a (80.0/20.0) R-436A zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (56.0/43.0) R-439A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-439A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-439A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-443A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-443A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-443A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-444A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-444A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-444A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-444A zeotrope R-32/125/134a/152a (2.6/6.0/6.0/6.0) R-444A zeotrope R-32/125/134a/152a (2.6/6.0/6.0/6.0) R-444A zeotrope R-32/125/1234y/134a (8.0.0/24.0) R-444B zeotrope R-32/125/1234y/134a (2.6.0/6.0/6.0)	A1	16	56,000	250	_	_	l —	1,000	2-0-0 <sup>b</sup>
R-422E zeotrope R-125/134a/600a (58.0/39.3/2.7) R-423A zeotrope R-134a/227ea (52.5/47.5) R-424A zeotrope R-125/134a/600a/6000601a (50.5/47.00.9/1.00.6) R-425A zeotrope R-125/134a/600a/600a (50.5/47.00.9/1.00.6) R-425A zeotrope R-125/134a/600a/601a (5.1/30.0/1.30.6) R-426A zeotrope R-125/134a/600a/601a (5.1/30.0/1.30.6) R-427A zeotrope R-125/143a/290/600a (75.0/20.00.6/1.9) R-428A zeotrope R-125/143a/290/600a (77.5/20.00.6/1.9) R-429A zeotrope R-125/143a/290/600a (77.5/20.00.6/1.9) R-429A zeotrope R-125/143a/290/600a (77.5/20.00.6/1.9) R-431A zeotrope R-290/152a (71.0/23.0) R-431A zeotrope R-290/152a (71.0/23.0) R-432A zeotrope R-1270/290 (30.0/70.0) R-433A zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (30.0/70.0) R-434A zeotrope R-1270/290 (50.0/50.0) R-435A zeotrope R-1270/290 (50.0/50.0) R-436A zeotrope R-1270/290 (50.0/60.0) R-436A zeotrope R-290/600a (50.0/4.0) R-436A zeotrope R-320/125/134a/600/601 (19.5/78.5/1.4/0.6) R-437A zeotrope R-320/125/134a/600/601 (19.5/78.5/1.4/0.6) R-438A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-439A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-444A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-444A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/1234ze(E) (60.0/3.5/28.5) R-444B zeotrope R-32/125/1234ze(E) (60.0/3.5/28.5) R-444B zeotrope R-32/125/1234ze(E) (60.0/3.5/28.5) R-444B zeotrope R-32/125/1234ze(E) (60.0/3.5/28.5) R-449A zeotrope R-32/125/1234ze(E) (60.0/3.0/20.0) R-449A zeotrope R-32/125/1234y/1/34a (20.0/20.0/31.0/20.0) R-449B zeotrope R-32/125/1234y/1/34a (20.0/20.0/31.0/20.0)	A1	18	62,000	290	_	_	<u> </u>	1,000	2-0-0 <sup>b</sup>
R-423A zeotrope R-136/134a/600a/600a/601a (50.547.00.9/1.00.6) R-424A zeotrope R-32/134a/227ea (18.569.5/12.0) R-425A zeotrope R-32/134a/227ea (18.569.5/12.0) R-425A zeotrope R-32/134a/227ea (18.569.5/12.0) R-426A zeotrope R-32/134a/227ea (18.569.5/12.0) R-426A zeotrope R-32/135/134a/34a (15.0/25.0/10.0/50.0) R-428A zeotrope R-125/143a/290/600a (77.5/20.0/0.6/1.9) R-428A zeotrope R-127/152a/600a (60.0/10.0/30.0) R-428A zeotrope R-127/152a/600a (60.0/10.0/30.0) R-429A zeotrope R-127/0152a/600a (60.0/10.0/30.0) R-430A zeotrope R-290/152a (71.0/29.0) R-431A zeotrope R-127/0152a/600a (60.0/10.0/30.0) R-432A zeotrope R-127/01570 (80.0/20.0) R-433A zeotrope R-127/01570 (80.0/20.0) R-433B zeotrope R-127/01570 (80.0/20.0) R-433B zeotrope R-127/01590 (50.0/50.0) R-4344A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-435A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-436A zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (56.0/44.0) R-437A zeotrope R-290/600a (56.0/44.0) R-438A zeotrope R-391/25/134a/600/601 (19.5/78.5/1.4/0.6) R-439A zeotrope R-391/25/134a/600/601 (19.5/78.5/1.4/0.6) R-439A zeotrope R-391/25/134a/600/601 (3.5/48.0/6.0) R-444A zeotrope R-391/25/134a/152a/27/26 (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-391/25/134a/152a/27/26 (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-391/25/134a/152a/27/26 (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/152a/27/26 (30.0/20.0) R-444A zeotrope R-32/125/134a/152a/27/26 (30.0/20.0) R-445A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-446A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-446A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-446B zeotrope R-32/125/1234y/1/34a (89.8/10.2)	A1	16	58,000	260	_	_	_	1,000	2-0-0 <sup>b</sup>
R-424A zeotrope R-125/134a/600a/600/601a (50.547.0/0.9/1.0/0.6) R-425A zoetrope R-32/134a/227ea (18.5/69.5/12.0) R-426A zeotrope R-125/134a/600a/601a (5.1/93.0/1.3/0.6) R-427A zeotrope R-125/143a/134a (15.0/25.0/10.0/50.0) R-428A zeotrope R-125/143a/134a (15.0/25.0/10.0/50.0) R-429A zeotrope R-15/143a/134a (15.0/25.0/10.0/50.0) R-430A zeotrope R-15/143a/134a (15.0/25.0/10.0/50.0) R-430A zeotrope R-15/143a/134a (15.0/25.0/10.0/50.0) R-431A zeotrope R-290/152a (71.0/29.0) R-431A zeotrope R-1270/152a/600a (60.0/10.0/30.0) R-431A zeotrope R-1270/170.0/20.0) R-433A zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (50.0/50.0) R-433B zeotrope R-1270/290 (50.0/50.0) R-433A zeotrope R-1270/290 (50.0/50.0) R-433A zeotrope R-1270/290 (50.0/50.0) R-434A zeotrope R-1270/290 (50.0/50.0) R-435A zeotrope R-1270/290 (50.0/60.0) R-436A zeotrope R-1270/290 (50.0/60.0) R-436B zeotrope R-290/600a (50.0/40.0) R-436B zeotrope R-290/600a (50.0/40.0) R-436B zeotrope R-290/600a (50.0/40.0) R-436C zeotrope R-290/600a (50.0/40.0) R-436A zeotrope R-320/15/134a/600/601 (19.5/78.5/1.4/0.6) R-439A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-440A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-440A zeotrope R-32/125/134a/152a (0.6/1.6/97.8) R-441A zeotrope R-32/125/134a/152a (0.6/1.6/97.8) R-444A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-445A zeotrope R-32/125/134a/1234ze(E) (60.0/9.0/85.0) R-446A zeotrope R-32/125/134a/1234ze(E) (60.0/9.0/85.0) R-446A zeotrope R-32/125/1234y//134a/1234ze(E) (60.0/9.0/85.0) R-446A zeotrope R-32/125/1234y//134a/1234ze(E) (60.0/9.0/95.0) R-446A zeotrope R-32/125/1234y//134a/234ze(E) (60.0/9.0/95.0) R-446A zeotrope R-32/125/1234y//134a/234ze(E) (60.0/9.0/95.0) R-446A zeotrope R-32/125/1234y//134a/234ze(E) (60.0/9.0/95.0) R-446B zeotrope R-32/125/1234y//134a/234ze(E) (60.0/9.0/95.0) R-446A zeotrope R-32/125/1234y//134a/20.0/20.0/91.0) R-449B	A1	16	57,000	260	_	_	_	1,000	<b>—</b> .
R-425A zoetrope R-32/134a/227ea (18.5/69.5/12.0) R-426A zeotrope R-125/134a/600a/601a (5.1/93.0/1.3/0.6) R-427A zeotrope R-32/125/143a/134a (15.0/25.0/10.0/50.0) R-428A zeotrope R-125/143a/290/600a (77.5/20.0/0.6/1.9) R-428A zeotrope R-125/143a/290/600a (77.5/20.0/0.6/1.9) R-429A zeotrope R-15/10/152a/600a (60.0/10.0/30.0) R-430A zeotrope R-15/21/20/200 (60.0/10.0/30.0) R-431A zeotrope R-15/20/152a/600a (60.0/10.0/30.0) R-431A zeotrope R-1270/E170 (80.0/20.0) R-433A zeotrope R-1270/E170 (80.0/20.0) R-433B zeotrope R-1270/E170 (80.0/20.0) R-433B zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (50.95.0) R-433C zeotrope R-1270/290 (25.0-75.0) R-434A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-435A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-436B zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (56.0/44.0) R-436C zeotrope R-125/134a/600/601 (19.5/78.5/1.4/0.6) R-437A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-438A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-440A zeotrope R-32/125/134a/152a/2276a (31.0/31.0/30.0/3.0/5.0) R-441A zeotrope R-32/125/134a/152a/2276a (31.0/31.0/30.0/3.0/5.0) R-443A zeotrope R-32/125/134a/152a/2276a (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/152a/2276a (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/152a/2276a (31.0/31.0/30.0/3.0/5.0) R-445A zeotrope R-32/125/134a/152a/2276a (31.0/31.0/30.0/3.0/5.0) R-445A zeotrope R-32/125/134a/152a/2276a (31.0/31.0/30.0/3.0/5.0) R-445A zeotrope R-32/125/134a/152a/2276a (31.0/31.0/30.0/3.0/5.0) R-445A zeotrope R-32/125/134a/152a/2276a (31.0/31.0/30.0/3.0/5.0) R-446A zeotrope R-32/125/134a/152a/2276a (31.0/31.0/30.0/3.0/5.0) R-447B zeotrope R-32/125/1234y/1/34a (23.24.7/25.3/25.7) R-449A zeotrope R-32/125/1234y/1/34a (23.24.7/25.3/25.7) R-449B zeotrope R-32/125/1234y/1/34a (20.0/20.0/31.0/29.0) R-4450 Zeotrope R-32/125/1234y/1/34a (20.0/20.0/31.0/29.0) R-450A Zeotrope R-32/125/1234y/1/34a (20.0/20.0/31.0/29.0)	A1	19	59,000	300	_	_	_	1,000	2-0-0 <sup>D</sup>
R-426A zeotrope R-125/134a/600a/601a (5.1/93.01.3/0.6) R-427A zeotrope R-32/125/143a/134a (15.0/25.0/10.0/50.0) R-428A zeotrope R-126/143a/290/600a (77.5/20.0/0.6/1.9) R-429A zeotrope R-126/143a/290/600a (76.0/20.0) R-429A zeotrope R-1270/25a/600a (60.0/10.0/30.0) R-430A zeotrope R-1270/25a/600a (76.0/24.0) R-431A zeotrope R-290/152a (71.0/29.0) R-432A zeotrope R-1270/2170 (80.0/20.0) R-433B zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (50.0-95.0) R-433C zeotrope R-1270/290 (25.0-95.0) R-433C zeotrope R-1270/290 (25.0-75.0) R-434A zeotrope R-1270/290 (65.0-95.0) R-436A zeotrope R-1270/290 (65.0-96.0) R-436B zeotrope R-290/600a (56.0/44.0) R-36B zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (55.0/48.0) R-439A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-439A zeotrope R-32/125/34a/600/601 (19.5/78.5/1.4/0.6) R-439A zeotrope R-32/125/34a/600/601 (8.5/45.0/44.2/1.7/0.6) R-444A zeotrope R-32/125/34a/600/601 (19.5/78.5/1.4/0.6) R-444A zeotrope R-32/125/34a/600/601 (19.5/78.5/1.4/0.6) R-444A zeotrope R-32/125/34a/600/601 (19.5/78.5/1.4/0.6) R-444A zeotrope R-32/125/34a/150a/2/272a (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/600/601 (8.5/45.0/44.2/1.7/0.6) R-444A zeotrope R-32/125/124a/e(E) (6.0/9.0/85.0) R-444A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-444A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-445A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-447B zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-447B zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-449A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0)	A1	6.2	23,000	100	_	_	_	990	2-0-0 <sup>b</sup>
R-427A zeotrope R-32/125/143a/134a (15.0/25.0/10.0/50.0) R-428A zeotrope R-125/143a/290/600a (60.0/10.0/30.0) R-428A zeotrope R-126/143a/290/600a (60.0/10.0/30.0) R-429A zeotrope R-152a/600a (60.0/10.0/30.0) R-430A zeotrope R-152a/600a (60.0/10.0/30.0) R-431A zeotrope R-152a/600a (76.0/24.0) R-431A zeotrope R-152a/600a (76.0/24.0) R-431A zeotrope R-152a/15a (71.0/29.0) R-433A zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (5.0-95.0) R-433C zeotrope R-1270/290 (5.0-95.0) R-433C zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-435A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-436A zeotrope R-126/143a/600a (63.2/18.0/16.0/2.8) R-436B zeotrope R-290/600a (52.0/48.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436C zeotrope R-290/600a (52.0/48.0) R-436A zeotrope R-320/600a (50.0/47.0/3.0) R-438A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-439A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-440A zeotrope R-32/125/134a/152a (66/1.6/97.8) R-441A zeotrope R-32/125/134a/152a (66/1.6/97.8) R-444A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-445A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/125/1234ze(E) (6.0/9.0/95.0) R-446A zeotrope R-32/125/1234ze(E) (6.0/9.0/95.0) R-447A zeotrope R-32/125/1234ze(E) (6.0/9.0/95.0) R-446A zeotrope R-32/125/1234ze(E) (6.0/9.0/95.0) R-446A zeotrope R-32/125/1234ze(E) (6.0/9.0/95.0) R-446A zeotrope R-32/125/1234ze(E) (6.0/9.0/95.0)	A1	16	72,000	260	_		_	1,000	2-0-0 <sup>D</sup>
R-428A zeotrope R-125/143a/290/600a (77.5/20.0/0.6/1.9) R-429A zeotrope R-E170/152a/600a (60.0/10.0/30.0) R-430A zeotrope R-152a/600a (76.0/24.0) R-431A zeotrope R-290/152a (71.0/29.0) R-432A zeotrope R-1270/E170 (80.0/20.0) R-433A zeotrope R-1270/E170 (80.0/20.0) R-433B zeotrope R-1270/E90 (30.0/70.0) R-433B zeotrope R-1270/290 (50.95.0) R-433C zeotrope R-1270/290 (50.95.0) R-433A zeotrope R-1270/290 (50.070.0) R-433A zeotrope R-1270/290 (60.040.0) R-435A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-435A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-436B zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (56.0/44.0) R-436C zeotrope R-290/600a (56.0/44.0) R-437A zeotrope R-320/125/134a/600/601a (16.5/45.0/44.2/1.7/0.6) R-437A zeotrope R-32/125/134a/600/601a (16.5/45.0/44.2/1.7/0.6) R-439A zeotrope R-32/125/600a (50.0/47.0/3.0) R-440A zeotrope R-32/125/600a (50.0/47.0/3.0) R-441A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-442A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/152/134a/e(6) (60.0/5.0) R-444A zeotrope R-32/152/134a/e(6) (60.0/5.0) R-445A zeotrope R-32/152/134a/e(6) (60.0/5.0) R-446A zeotrope R-32/152/134a/e(6) (60.0/5.0) R-447A zeotrope R-32/152/1234ze(E) (60.0/6.0/5.0) R-448A zeotrope R-32/152/1234ze(E) (60.0/6.0/5.0) R-449A zeotrope R-32/125/1234ze(E) (60.0/6.0/5.0) R-449A zeotrope R-32/125/1234ze(E) (60.0/6.0/5.0)	A1	5.2	20,000	83	_	_		990	_
R-429A zeotrope R-E170/152a/600a (60.0/10.0/30.0) R-430A zeotrope R-152a/600a (76.0/24.0) R-431A zeotrope R-290/152a (71.0/29.0) R-433A zeotrope R-1270/E170 (80.0/20.0) R-433A zeotrope R-1270/E170 (80.0/20.0) R-433B zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (50.95.0) R-433C zeotrope R-1270/290 (50.95.0) R-433C zeotrope R-1270/290 (25.0-75.0) R-434A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-435A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-436B zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (56.0/44.0) R-436C zeotrope R-290/600a (50.0/5.0) R-437A zeotrope R-290/600a (50.0/5.0) R-438A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-439A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-4439A zeotrope R-32/125/600a (50.0/47.0/3.0) R-440A zeotrope R-290/34a/152a (0.6/1.6/97.8) R-441A zeotrope R-32/125/600a (50.0/47.0/3.0) R-442A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0) R-444A zeotrope R-32/152a/1234ze(E) (6.0/9.0/85.0) R-445A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-447A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-447A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-447A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-447A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-447B zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-449B zeotrope R-32/125/1234ze(E) (6.0/9.0/3.0) R-449C zeotrope R-32/125/1234ze(E) (42.0/58.0) R-451A zeotrope R-12125/134a/1234ze(E) (42.0/58.0)	A1	18	79,000	290		_	_	1,000	2-1-0
R-430A zeotrope R-152a/600a (76.0/24.0) R-431A zeotrope R-290/152a (71.0/29.0) R-432A zeotrope R-1270/E170 (80.0/20.0) R-433A zeotrope R-1270/E170 (80.0/20.0) R-433B zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (50.0-95.0) R-433B zeotrope R-1270/290 (55.0-75.0) R-433C zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-433A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-434A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-435A zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436B zeotrope R-290/600a (50.0/48.0) R-436C zeotrope R-290/600a (95.0/5.0) R-437A zeotrope R-125/134a/600/601 (19.5/78.5/1.4/0.6) R-438A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-439A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-440A zeotrope R-290/134a/152a (0.6/1.697.8) R-441A zeotrope R-170/290/600a (50.0/47.0/3.0) R-442A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-443A zeotrope R-32/125/134a/2/22/22 (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/125/134ze(E) (41.5/10.0/48.5) R-444B zeotrope R-32/125/1234ze(E) (60.09.0/83.0) R-445A zeotrope R-32/125/1234ze(E) (60.09.0/85.0) R-446A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-448A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-449B zeotrope R-32/125/1234yl/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yl/134a (24.3/24.7/25.3/25.7) R-449C zeotrope R-12/24yl/134a (20.0/20.0/31.0/29.0) R-451A zeotrope R-12/25/1234yl/134a (20.0/20.0/31.0/29.0) R-451A zeotrope R-32/125/1234yl/134a (20.0/20.0/31.0/29.0)	A1	23	84,000	370	_	<u> </u>	<u> </u>	1,000	_
R-431A zeotrope R-290/152a (71.0/29.0) R-432A zeotrope R-1270/E170 (80.0/20.0) R-433A zeotrope R-1270/E170 (80.0/20.0) R-433B zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (5.0-95.0) R-433C zeotrope R-1270/290 (5.0-95.0) R-433A zeotrope R-1270/290 (5.0-95.0) R-433C zeotrope R-1270/290 (25.0-75.0) R-434A zeotrope R-1270/152a (80.0/20.0) R-436A zeotrope R-1290/600a (56.0/44.0) R-436B zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (56.0/44.0) R-436C zeotrope R-290/600a (52.0/48.0) R-437A zeotrope R-125/134a/600/6011 (19.5/78.5/1.4/0.6) R-438A zeotrope R-32/125/1600a (50.0/47.0/3.0) R-438A zeotrope R-32/125/600a (50.0/47.0/3.0) R-443A zeotrope R-32/125/600a (50.0/47.0/3.0) R-441A zeotrope R-32/125/34a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-442A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-443A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0) R-444B zeotrope R-32/152a/1234ze(E) (6.0/9.0/85.0) R-444B zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-447A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-447B zeotrope R-32/125/1234ze(E) (6.0/9.0/35.0) R-448A zeotrope R-32/125/1234ze(E) (6.0/9.0/35.0) R-449B zeotrope R-32/125/1234yt/134a (25.2/24.3/23.2/27.3) R-449G zeotrope R-32/125/1234yt/134a (25.0/24.3/23.2/27.3) R-449C zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-451A zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-450A zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-449B zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-450A zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-450A zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-449B zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-450A zeotrope R-134yt/134a (20.0/20.0/31.0/29.0) R-451A zeotrope R-134yt/134a (20.0/20.0/31.0/29.0) R-451A zeotrope R-134yt/134a (20.0/20.0/31.0/29.0)	A3	0.81	6,300	13	3.2	25,000	83.8	1,000	_
R-432A zeotrope R-1270/E170 (80.0/20.0) R-433A zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (50.95.0) R-433C zeotrope R-1270/290 (25.0-75.0) R-433A zeotrope R-1270/290 (25.0-75.0) R-433A zeotrope R-1250/43a/600a (63.2/18.0/16.0/2.8) R-435A zeotrope R-1261/43a/600a (63.2/18.0/16.0/2.8) R-436A zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436C zeotrope R-290/600a (52.0/48.0) R-437A zeotrope R-1251/134a/600/6011 (19.5/78.5/1.4/0.6) R-438A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-439A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-440A zeotrope R-32/125/600a (50.0/47.0/3.0) R-441A zeotrope R-170/290/600a/600 (3.1/54.8/6.0/36.1) R-442A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-443A zeotrope R-1270/290/600a (55.0/40.0/5.0) R-444A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0) R-444B zeotrope R-32/152a/1234ze(E) (6.0/9.0/85.0) R-445A zeotrope R-32/152a/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/1234ze(E) (6.0/9.0/85.0) R-447B zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-448A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-449A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-449B zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449C zeotrope R-32/125/1234yt/134a (89.8/10.2)	A3	1.3	8,000	21	5.2	32,000	44.0	1,000	_
R-433A zeotrope R-1270/290 (30.0/70.0) R-433B zeotrope R-1270/290 (5.0-95.0) R-433C zeotrope R-1270/290 (25.0-75.0) R-433A zeotrope R-126/143a/600a (63.2/18.0/16.0/2.8) R-435A zeotrope R-126/143a/600a (63.2/18.0/16.0/2.8) R-436A zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436C zeotrope R-290/600a (52.0/48.0) R-437A zeotrope R-125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-438A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-439A zeotrope R-32/125/600a (50.0/47.0/3.0) R-440A zeotrope R-32/125/600a (50.0/47.0/3.0) R-441A zeotrope R-32/125/134a/152a (0.6/1.6/97.8) R-441A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-443A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0) R-444B zeotrope R-32/152a/1234ze(E) (6.0/9.0/85.0) R-445A zeotrope R-32/152a/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/1234ze(E) (6.0/9.0/85.0) R-447B zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447B zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-449A zeotrope R-32/125/1234yt/134a/1234ze(E) (68.0/3.5/28.5) R-449A zeotrope R-32/125/1234yt/134a/234ze(E) (68.0/3.5/28.5) R-449B zeotrope R-32/125/1234yt/134a (24.3/4.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (24.3/4.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (24.3/4.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (24.3/4.7/25.3/25.7) R-449B Zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-450A zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-450A zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-450A zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0)	A3 A3	0.68	5,500	11	2.7	22,000	38.6	1,000	_
R-433B zeotrope R-1270/290 (5.0-95.0) R-433C zeotrope R-1270/290 (25.0-75.0) R-434A zeotrope R-1250/143a/600a (63.2/18.0/16.0/2.8) R-435A zeotrope R-1250/143a/600a (63.2/18.0/16.0/2.8) R-436A zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436C zeotrope R-290/600a (52.0/48.0) R-437A zeotrope R-125/134a/600/601 (19.5/78.5/1.4/0.6) R-438A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-439A zeotrope R-32/125/600a (50.0/47.0/3.0) R-441A zeotrope R-170/290/600a/600 (3.1/54.8/6.0/36.1) R-442A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-443A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/1234ze(E) (41.5/10.0/48.5) R-444B zeotrope R-32/1234ze(E) (6.0/9.0/83.0) R-444B zeotrope R-32/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447B zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-449A zeotrope R-32/125/1234yf/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yf/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yf/134a (24.3/24.7/25.3/25.7) R-449C zeotrope R-32/125/1234yf/134a (29.0/20.0/31.0/29.0) R-450A zeotrope R-32/125/1234yf/134a (29.0/20.0/31.0/29.0) R-450A zeotrope R-32/125/1234yf/134a (20.0/20.0/31.0/29.0)	A3 A3	0.13	1,200	2.1 5.5	2.4	22,000	39.2 32.4	550 750	_
R-433C zeotrope R-1270/290 (25.0-75.0) R-434A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-435A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-436A zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436C zeotrope R-290/600a (52.0/48.0) R-437A zeotrope R-125/134a/600/601 (19.5/78.5/1.4/0.6) R-438A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-439A zeotrope R-32/125/600a (50.0/47.0/3.0) R-440A zeotrope R-290/134a/152a (0.6/1.6/97.8) R-441A zeotrope R-32/125/600a (50.0/47.0/3.0) R-440A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-443A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0) R-444A zeotrope R-32/152a/1234ze(E) (41.5/10.0/48.5) R-444B zeotrope R-32/152a/1234ze(E) (66.0/9.0/85.0) R-446A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447B zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449A zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449A zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (26.0/20.0/31.0/29.0) R-4450A zeotrope R-32/125/1234yt/134a (26.0/20.0/31.0/29.0) R-450A zeotrope R-32/125/1234yt/134a (26.0/20.0/31.0/29.0) R-450A zeotrope R-134a/1234ze(E) (42.0/58.0)	A3	0.34	3,100	6.3	2.4	18,000	32.4	950	
R-434A zeotrope R-125/143a/600a (63.2/18.0/16.0/2.8) R-435A zeotrope R-E170/152a (80.0/20.0) R-436A zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436C zeotrope R-290/600a (95.0/5.0) R-437A zeotrope R-290/600a (95.0/5.0) R-437A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-438A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-439A zeotrope R-32/125/600a (50.0/47.0/3.0) R-440A zeotrope R-290/134a/152a (0.6/1.697.8) R-441A zeotrope R-170/290/600a/600 (3.1/54.8/6.0/36.1) R-442A zeotrope R-32/125/134a/600/601 (3.1/54.8/6.0/36.1) R-443A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0) R-444B zeotrope R-32/152a/1234ze(E) (41.5/10.0/48.5) R-445A zeotrope R-32/152a/1234ze(E) (60.0/9.0/85.0) R-446A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447B zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449A zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (25.2/24.3/23.2/27.3) R-449C zeotrope R-134a/1234ze(E) (42.0/58.0) R-450A zeotrope R-134a/1234ze(E) (42.0/58.0)	A3	0.41	3,700	6.5	2.0	18,000	83.8	790	_
R-435A zeotrope R-E170/152a (80.0/20.0) R-436A zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436C zeotrope R-290/600a (52.0/48.0) R-437A zeotrope R-290/600a (95.0/5.0) R-437A zeotrope R-125/134a/600/601 (19.5/78.5/1.4/0.6) R-438A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-439A zeotrope R-32/125/600a (50.0/47.0/3.0) R-440A zeotrope R-320/134a/152a (0.6/1.697.8) R-441A zeotrope R-170/290/600a/600 (3.1/54.8/6.0/36.1) R-442A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-444A zeotrope R-1270/290/600a (55.0/40.0/5.0) R-444A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0) R-444B zeotrope R-32/152a/1234ze(E) (41.5/10.0/48.5) R-446A zeotrope R-32/125/1234ze(E) (60.0/9.0/85.0) R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-448A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-449B zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (26.3/24.7/25.3/25.7) R-449C zeotrope R-32/125/1234yt/134a (26.0/20.0/31.0/29.0) R-450A zeotrope R-134a/1234ze(E) (42.0/58.0)	A1	20	73,000	320			-	1,000	_
R-436A zeotrope R-290/600a (56.0/44.0) R-436B zeotrope R-290/600a (52.0/48.0) R-436C zeotrope R-290/600a (52.0/48.0) R-437A zeotrope R-125/134a/600/601 (19.5/78.5/1.4/0.6) R-437A zeotrope R-32/125/134a/600/601 (19.5/78.5/1.4/0.6) R-438A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-439A zeotrope R-32/125/600a (50.0/47.0/3.0) R-440A zeotrope R-290/134a/152a (0.6/1.6/97.8) R-441A zeotrope R-170/290/600a/600 (3.1/54.8/6.0/36.1) R-442A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-443A zeotrope R-1270/290/600a (55.0/40.0/5.0) R-444A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0) R-444B zeotrope R-32/152a/1234ze(E) (41.5/10.0/48.5) R-445A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447B zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-449A zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449C zeotrope R-32/125/1234yt/134a (26.0/20.0/31.0/29.0) R-450A zeotrope R-134a/1234ze(E) (42.0/58.0)	A3	1.1	8,500	17	4.3	34,000	68.2	1,000	_
R-436C         zeotrope         R-290/600a (95.0/5.0)           R-437A         zeotrope         R-125/134a/600/601 (19.5/78.5/1.4/0.6)           R-438A         zeotrope         R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6)           R-439A         zeotrope         R-32/125/600a (50.0/47.0/3.0)           R-440A         zeotrope         R-290/134a/152a (0.6/1.6/97.8)           R-441A         zeotrope         R-170/290/600a/600 (3.1/54.8/6.0/36.1)           R-442A         zeotrope         R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0)           R-443A         zeotrope         R-1270/290/600a (55.0/40.0/5.0)           R-444A         zeotrope         R-32/152a/1234ze(E) (12.0/5.0/83.0)           R-444B         zeotrope         R-32/152a/1234ze(E) (41.5/10.0/48.5)           R-445A         zeotrope         R-744/134a/1234ze(E) (6.0/9.0/85.0)           R-446A         zeotrope         R-32/125/1234ze(E) (60.0/9.0/30.0)           R-447A         zeotrope         R-32/125/1234ze(E) (68.0/3.5/28.5)           R-447B         zeotrope         R-32/125/1234yt/134a/1234ze(E) (68.0/8.0/24.0)           R-448A         zeotrope         R-32/125/1234yt/134a/1234ze(E) (68.0/8.0/24.0)           R-449B         zeotrope         R-32/125/1234yt/134a (24.3/24.7/25.3/23.2/27.3)           R-449C         zeotrope <td>A3</td> <td>0.50</td> <td>4,000</td> <td>8.1</td> <td>2.0</td> <td>16,000</td> <td>32.3</td> <td>1,000</td> <td>_</td>	A3	0.50	4,000	8.1	2.0	16,000	32.3	1,000	_
R-437A zeotrope R-125/134a/600/601 (19.5/78.5/1.4/0.6) R-438A zeotrope R-32/125/134a/600/601a (8.5/45.0/44.2/1.7/0.6) R-439A zeotrope R-32/125/600a (50.0/47.0/3.0) R-440A zeotrope R-290/134a/152a (0.6/1.6/97.8) R-441A zeotrope R-170/290/600a/600 (3.1/54.8/6.0/36.1) R-442A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-443A zeotrope R-1270/290/600a (55.0/40.0/5.0) R-443A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0) R-444A zeotrope R-32/152a/1234ze(E) (41.5/10.0/48.5) R-444B zeotrope R-32/152a/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/125/1234ze(E) (6.0/9.0/85.0) R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447B zeotrope R-32/125/1234ze(E) (68.0/8.0/24.0) R-448A zeotrope R-32/125/1234yt/134a/1234ze(E) (68.0/8.0/24.0) R-449A zeotrope R-32/125/1234yt/134a/(23/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449C zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-451A zeotrope R-134a/1234ze(E) (42.0/58.0)	A3	0.51	4,000	8.2	2.0	16,000	32.7	1,000	_
R-438A         zeotrope         R-32/125/134a/600601a (8.5/45.0/44.2/1.7/0.6)           R-439A         zeotrope         R-32/125/600a (50.0/47.0/3.0)           R-440A         zeotrope         R-290/134a/152a (0.6/1.6/97.8)           R-441A         zeotrope         R-170/290/600a/600 (3.1/54.8/6.0/36.1)           R-442A         zeotrope         R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0)           R-443A         zeotrope         R-1270/290/600a (55.0/40.0/5.0)           R-444A         zeotrope         R-32/152a/1234ze(E) (12.0/5.0/83.0)           R-444B         zeotrope         R-32/152a/1234ze(E) (6.0/9.0/85.0)           R-445A         zeotrope         R-744/134a/1234ze(E) (6.0/9.0/85.0)           R-446A         zeotrope         R-32/125/1234ze(E) (68.0/3.5/28.5)           R-447A         zeotrope         R-32/125/1234ze(E) (68.0/3.5/28.5)           R-447B         zeotrope         R-32/125/1234ze(E) (68.0/8.0/24.0)           R-448A         zeotrope         R-32/125/1234ze(E) (68.0/8.0/24.0)           R-449A         zeotrope         R-32/125/1234yt/134a (24.3/24.7/25.3/25.7)           R-449B         zeotrope         R-32/125/1234yt/134a (26.0/26.0/26.0/26.0/26.0/26.0/26.0/26.0/	A3	0.57	5,000	9.1	2.3	20,000	36.5	1,000	_
R-439A zeotrope R-32/125/600a (50.0/47.0/3.0) R-440A zeotrope R-290/134a/152a (0.6/1.6/97.8) R-441A zeotrope R-170/290/600a/600 (3.1/54.8/6.0/36.1) R-442A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-443A zeotrope R-1270/290/600a (55.0/40.0/5.0) R-444A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0) R-444A zeotrope R-32/152a/1234ze(E) (41.5/10.0/48.5) R-444B zeotrope R-32/152a/1234ze(E) (6.0/9.0/85.0) R-445A zeotrope R-32/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/1234ze(E) (68.0/29.0/3.0) R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447B zeotrope R-32/125/1234ze(E) (68.0/8.0/24.0) R-448A zeotrope R-32/125/1234ze(E) (68.0/8.0/24.0) R-449A zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (25.2/24.3/23.2/27.3) R-449C zeotrope R-134a/1234ze(E) (42.0/58.0) R-451A zeotrope R-1234yt/134a (89.8/10.2)	A1	5.1	19,000	82	_	_	<b>—</b>	990	_
R-440A zeotrope R-290/134a/152a (0.6/1.6/97.8) R-441A zeotrope R-170/290/600a/600 (3.1/54.8/6.0/36.1) R-442A zeotrope R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0) R-443A zeotrope R-1270/290/600a (55.0/40.0/5.0) R-444A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0) R-444A zeotrope R-32/152a/1234ze(E) (41.5/10.0/48.5) R-444B zeotrope R-32/152a/1234ze(E) (6.0/9.0/85.0) R-445A zeotrope R-32/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/1234ze(E) (68.0/29.0/3.0) R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447B zeotrope R-32/125/1234ze(E) (68.0/8.0/24.0) R-448A zeotrope R-32/125/1234ze(E) (68.0/8.0/24.0) R-449A zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (25.2/24.3/23.2/27.3) R-449C zeotrope R-32/125/1234yt/134a (89.8/10.2)	A1	4.9	20,000	79	_	_	990	990	
R-441A         zeotrope         R-170/290/600a/600 (3.1/54.8/6.0/36.1)           R-442A         zeotrope         R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0)           R-443A         zeotrope         R-1270/290/600a (55.0/40.0/5.0)           R-444A         zeotrope         R-32/152a/1234ze(E) (12.0/5.0/83.0)           R-444B         zeotrope         R-32/152a/1234ze(E) (6.0/9.0/85.0)           R-445A         zeotrope         R-744/134a/1234ze(E) (6.0/9.0/85.0)           R-446A         zeotrope         R-32/1234ze(E)/600 (68.0/29.0/3.0)           R-447A         zeotrope         R-32/125/1234ze(E) (68.0/3.5/28.5)           R-447B         zeotrope         R-32/125/1234ze(E) (68.0/8.0/24.0)           R-448A         zeotrope         R-32/125/1234yt/134a/1234ze(E)           R-449A         zeotrope         R-32/125/1234yt/134a (24.3/24.7/25.3/25.7)           R-449B         zeotrope         R-32/125/1234yt/134a (25.2/24.3/23.2/27.3)           R-449C         zeotrope         R-32/125/1234yt/134a (20.0/20.0/31.0/29.0)           R-450A         zeotrope         R-134a/1234ze(E) (42.0/58.0)           R-451A         zeotrope         R-1234yt/134a (89.8/10.2)	A2	4.7	26,000	76	18.9	104,000	303.3	1,000	_
R-442A         zeotrope         R-32/125/134a/152a/227ea (31.0/31.0/30.0/3.0/5.0)           R-443A         zeotrope         R-1270/290/600a (55.0/40.0/5.0)           R-444A         zeotrope         R-32/152a/1234ze(E) (12.0/5.0/83.0)           R-444B         zeotrope         R-32/152a/1234ze(E) (61.5/10.0/48.5)           R-445A         zeotrope         R-744/134a/1234ze(E) (6.0/9.0/85.0)           R-446A         zeotrope         R-32/1234ze(E)/600 (68.0/29.0/3.0)           R-447A         zeotrope         R-32/125/1234ze(E) (68.0/3.5/28.5)           R-447B         zeotrope         R-32/125/1234ye(E) (68.0/8.0/24.0)           R-448A         zeotrope         R-32/125/1234yf/134a/1234ze(E)           R-449A         zeotrope         R-32/125/1234yf/134a (24.3/24.7/25.3/25.7)           R-449B         zeotrope         R-32/125/1234yf/134a (25.2/24.3/23.2/27.3)           R-449C         zeotrope         R-32/125/1234yf/134a (20.0/20.0/31.0/29.0)           R-450A         zeotrope         R-134a/1234ze(E) (42.0/58.0)           R-451A         zeotrope         R-1234yf/134a (89.8/10.2)	A2	1.9	12,000	31	7.8 <sup>11</sup>	46,000 <sup>r</sup>	124.7 <sup>r</sup>	1,000	_
R-443A         zeotrope         R-1270/290/600a (55.0/40.0/5.0)           R-444A         zeotrope         R-32/152a/1234ze(E) (12.0/5.0/83.0)           R-444B         zeotrope         R-32/152a/1234ze(E) (41.5/10.0/48.5)           R-445A         zeotrope         R-744/134a/1234ze(E) (6.0/9.0/85.0)           R-446A         zeotrope         R-32/1234ze(E)/600 (68.0/29.0/3.0)           R-447A         zeotrope         R-32/125/1234ze(E) (68.0/3.5/28.5)           R-447B         zeotrope         R-32/125/1234ye(E) (68.0/8.0/24.0)           R-448A         zeotrope         R-32/125/1234yf/134a/1234ze(E)           (26.0/26.0/20.0/21.0/7.0)         R-449A         zeotrope           R-32/125/1234yf/134a (24.3/24.7/25.3/25.7)         R-449B         zeotrope           R-449C         zeotrope         R-32/125/1234yf/134a (20.0/20.0/31.0/29.0)           R-450A         zeotrope         R-134a/1234ze(E) (42.0/58.0)           R-451A         zeotrope         R-1234yf/134a (89.8/10.2)	A3	0.39	3,200	6.3	2.0	16,000	31.7	1,000	_
R-444A zeotrope R-32/152a/1234ze(E) (12.0/5.0/83.0)  R-444B zeotrope R-32/152a/1234ze(E) (41.5/10.0/48.5)  R-445A zeotrope R-744/134a/1234ze(E) (6.0/9.0/85.0)  R-446A zeotrope R-32/1254ze(E)/600 (68.0/29.0/3.0)  R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5)  R-447B zeotrope R-32/125/1234ze(E) (68.0/8.0/24.0)  R-448A zeotrope R-32/125/1234yt/134a/1234ze(E) (68.0/8.0/24.0)  R-449A zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7)  R-449B zeotrope R-32/125/1234yt/134a (25.2/24.3/23.2/27.3)  R-449C zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0)  R-450A zeotrope R-134a/1234ze(E) (42.0/58.0)  R-451A zeotrope R-1234yt/134a (89.8/10.2)	A1	21	100,000	330			1,000		
R-444B zeotrope R-32/152a/1234ze(E) (41.5/10.0/48.5)  R-445A zeotrope R-744/134a/1234ze(E) (6.0/9.0/85.0)  R-446A zeotrope R-32/1234ze(E)/600 (68.0/29.0/3.0)  R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5)  R-447B zeotrope R-32/125/1234ze(E) (68.0/8.0/24.0)  R-448A zeotrope R-32/125/1234yt/134a/1234ze(E) (26.0/26.0/20.0/21.0/7.0)  R-449A zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7)  R-449B zeotrope R-32/125/1234yt/134a (25.2/24.3/23.2/27.3)  R-449C zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0)  R-450A zeotrope R-134a/1234ze(E) (42.0/58.0)  R-451A zeotrope R-1234yt/134a (89.8/10.2)	A3	0.19	1,700		2.2	20,000			_
R-445A zeotrope R-744/134a/1234ze(E) (6.0/9.0/85.0) R-446A zeotrope R-32/1234ze(E)/600 (68.0/29.0/3.0) R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5) R-447B zeotrope R-32/125/1234ze(E) (68.0/8.0/24.0) R-448A zeotrope R-32/125/1234yt/134a/1234ze(E) (26.0/26.0/20.0/21.0/7.0) R-449A zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yt/134a (25.2/24.3/23.2/27.3) R-449C zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0) R-450A zeotrope R-134a/1234ze(E) (42.0/58.0) R-451A zeotrope R-1234yt/134a (89.8/10.2)	A2L	5.0	21,000		19.9	82,000		850	_
R-446A zeotrope R-32/1234ze(E)/600 (68.0/29.0/3.0)  R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5)  R-447B zeotrope R-32/125/1234ze(E) (68.0/8.0/24.0)  R-448A zeotrope R-32/125/1234yt/134a/1234ze(E) (26.0/26.0/20.0/21.0/7.0)  R-449A zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7)  R-449B zeotrope R-32/125/1234yt/134a (25.2/24.3/23.2/27.3)  R-449C zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0)  R-450A zeotrope R-134a/1234ze(E) (42.0/58.0)  R-451A zeotrope R-1234yt/134a (89.8/10.2)	A2L	4.3	23,000	70	17.3	93,000	278.1	930	_
R-447A zeotrope R-32/125/1234ze(E) (68.0/3.5/28.5)  R-447B zeotrope R-32/125/1234ze(E) (68.0/8.0/24.0)  R-448A zeotrope R-32/125/1234yf/134a/1234ze(E) (26.0/26.0/20.0/21.0/7.0)  R-449A zeotrope R-32/125/1234yf/134a (24.3/24.7/25.3/25.7)  R-449B zeotrope R-32/125/1234yf/134a (25.2/24.3/23.2/27.3)  R-449C zeotrope R-32/125/1234yf/134a (20.0/20.0/31.0/29.0)  R-450A zeotrope R-134a/1234ze(E) (42.0/58.0)  R-451A zeotrope R-1234yf/134a (89.8/10.2)	A2L	5.4	16,000		21.6	63,000		930	
R-447B zeotrope R-32/125/1234ze(E) (68.0/8.0/24.0)  R-448A zeotrope R-32/125/1234yt/134a/1234ze(E) (26.0/26.0/20.0/21.0/7.0)  R-449A zeotrope R-32/125/1234yt/134a (24.3/24.7/25.3/25.7)  R-449B zeotrope R-32/125/1234yt/134a (25.2/24.3/23.2/27.3)  R-449C zeotrope R-32/125/1234yt/134a (20.0/20.0/31.0/29.0)  R-450A zeotrope R-134a/1234ze(E) (42.0/58.0)  R-451A zeotrope R-1234yt/134a (89.8/10.2)	A2L	3.7	23,000	59	14.8	93,000	237.7	960	
R-448A zeotrope R-32/125/1234yf/134a/1234ze(E) (26.0/26.0/20.0/21.0/7.0) R-449A zeotrope R-32/125/1234yf/134a (24.3/24.7/25.3/25.7) R-449B zeotrope R-32/125/1234yf/134a (25.2/24.3/23.2/27.3) R-449C zeotrope R-32/125/1234yf/134a (20.0/20.0/31.0/29.0) R-450A zeotrope R-134a/1234ze(E) (42.0/58.0) R-451A zeotrope R-1234yf/134a (89.8/10.2)	A2L	5.2	32,000	83	20.6	128,000	331.4	960	_
(26.0/26.0/20.0/21.0/7.0)       R-449A     zeotrope     R-32/125/1234yf/134a (24.3/24.7/25.3/25.7)       R-449B     zeotrope     R-32/125/1234yf/134a (25.2/24.3/23.2/27.3)       R-449C     zeotrope     R-32/125/1234yf/134a (20.0/20.0/31.0/29.0)       R-450A     zeotrope     R-134a/1234ze(E) (42.0/58.0)       R-451A     zeotrope     R-1234yf/134a (89.8/10.2)	A2L	4.8	30,000	78	19.5	121,000	312.7	970	_
R-449A         zeotrope         R-32/125/1234yt/134a (24.3/24.7/25.3/25.7)           R-449B         zeotrope         R-32/125/1234yt/134a (25.2/24.3/23.2/27.3)           R-449C         zeotrope         R-32/125/1234yt/134a (20.0/20.0/31.0/29.0)           R-450A         zeotrope         R-134a/1234ze(E) (42.0/58.0)           R-451A         zeotrope         R-1234yt/134a (89.8/10.2)	A1	24	110,000	390	-	_	860	<u>860</u>	
R-449B         zeotrope         R-32/125/1234yf/134a (25.2/24.3/23.2/27.3)           R-449C         zeotrope         R-32/125/1234yf/134a (20.0/20.0/31.0/29.0)           R-450A         zeotrope         R-134a/1234ze(E) (42.0/58.0)           R-451A         zeotrope         R-1234yf/134a (89.8/10.2)	A1	23	100,000	370	_	_	<del>                                     </del>	840	_
R-449C         zeotrope         R-32/125/1234yt/134a (20.0/20.0/31.0/29.0)           R-450A         zeotrope         R-134a/1234ze(E) (42.0/58.0)           R-451A         zeotrope         R-1234yt/134a (89.8/10.2)	A1	23	100,000		<u> </u>	l —	<u> </u>	850	
R-451A zeotrope R-1234yf/134a (89.8/10.2)	A1	23	98,000	360	_	_	800	800	
	A1	20	72,000	320	_			880	=
L	A2L	5.3	18,000	81	21.3	74,000	341	530	_
R-451B zeotrope R-1234yf/134a (88.8/11.2)	A2L	5.0	18,000	81	21.3	74,000	341.6	530	_
R-452A zeotrope R-32/125/1234yf (11.0/59.0/30.0)	A1	27	100,000	440	_	_	<del>790</del>	<u>790</u>	
R-452B zeotrope R-32/125/1234yf (67.0/7.0/26.0)	A2L	4.8	30,000	77	19.3	119,000	310.5	870	_
R-452C zeotrope R-32/125/1234yf (12.5/61.0/26.5)	A1	27	100,000		_		_	810	_
R-453A zeotrope R-32/125/134a/227ea/600/601a (20.0/20.0/53.8/5.0/0.6/0.6)	A1	7.8	34,000	120	_	_	1,000	1,000	

CHEMICAL REFRIGERANT	FORMULA	CHEMICAL NAME OF BLEND	REFRIGERANT SAFETY GROUP	AMOU	(F) DEGREES						
			CLASSIFICATION		RCL				EL C		OF HAZARD
				lb/1000			lb/1000		/		I
R-454A	zeotrope	R-32/1234yf (35.0/65.0)	A2L	ft 4.4	<b>ppm</b> 21,000	<b>g/m</b> 70		<b>ppm</b> 84,000	<b>g/m</b> 281.4	<b>ppm</b> 690	_
R-454B	zeotrope	R-32/1234yf (68.9/31.1)	A2L	4.6	29,000	74	18.5	115,000	296.8	850	<del></del>
R-454C	zeotrope	R-32/1234yf (21.5/78.5)	A2L	4.6	19,000	73	18.2	77,000	291.7	620	<del> </del>
		,									_ 
R-455A	zeotrope	R-744/32/1234yf (3.0/21.5/75.5)	A2L	6.8	30,000	108	26.9	118,000	432.1	650	_
R-456A	zeotrope	R-32/134a/1234ze(E) (6.0/45.0/49.0)	A1	20	77,000	320	_	_	_	900	
R-457A	zeotrope	R-32/1234yf/152a (18.0/70.0/12.0)	A2L	3.4	15,000	54	13.5	60,000	216.3	650	
R-457B	zeotrope	R-32/1234yf/152a (35.0/55.0/10.0)	A2L	3.7	19,000	59	14.9	76,000	239	730	
R-457C	zeotrope	R-32/1234yf/152a (7.5/78.0/14.5)	A2L	3.4	13,800	54	13.6	55,000	215	610	ļ
R-457D	zeotrope	R-32/1234yf/152a (4.0/82.0/14.0)	A2L	3.6	14,000	58	14.9	57,000	235	580	ļ
R-458A	zeotrope	R-32/125/134a/227ea/236fa (20.5/4.0/61.4/13.5/0.6)	A1	18	76,000	280	_	_	1,000	1,000	ļ
R-459A	zeotrope	R-32/1234yf/1234ze(E) (68.0/26.0/6.0)	A2L	4.3	27,000	69	17.4	107,000	278.7	870	
R-459B	zeotrope	R-32/1234yf/1234ze(E) (21.0/69.0/10.0)	A2L	5.8	25,000	92	23.3	99,000	373.5	640	_
R-460A	zeotrope	R-32/125/134a/1234ze(E) (12.0/52.0/14.0/22.0)	A1	24	92,000	380				950	<u> </u>
R-460B	zeotrope	R-32/125/134a/1234ze(E) (28.0/25.0/20.0/27.0)	A1	25	120,000	400		_		950	<u> </u>
R-460C	zeotrope	R-32/125/134a/1234ze(E) (2.5/2.5/46.0/49.0)	A1	20	73,000	310		_	_	900	<u> </u>
R-461A	zeotrope	R-125/143a/134a/227ea/600a (55.0/5.0/32.0/5.0/3.0)	A1	17	61,000	270		-		1,000	<u> </u>
R-462A	zeotrope	R-32/125/143a/134a/600 (9.0/42.0/2.0/44.0/3.0)	A2	3.9	16,000	62	16.6 <sup>l</sup>	105,000	265.8	1,000	
R-463A	zeotrope	R-744/32/125/1234yf/134a (6.0/36.0/30.0/14.0/14.0)	A1	19	98,000	300	_	_	_	990	
R-464A	zeotrope	R-32/125/1234ze(E)/227ea (27.0/27.0/40.0/6.0)	A1	27	120,000	430	_	_	_	930	
R-465A	zeotrope	R-32/290/1234yf (21.0/7.9/71.1)	A2	2.5	12,000	40	10.0	98,000	160.9	660	
R-466A	zeotrope	R-32/125/13I1 (49.0/11.5/39.5)	A1	6.2	30,000	99	_	_	860	<u>860</u>	
R-467A	zeotrope	R-32/125/134a/600a (22.0/5.0/72.4/0.6)	A2L	6.7	31,000	110	_	_	1,000	1,000	<u> </u>
R-468A	zeotrope	R-1132a/32/1234yf (3.5/21.5/75.0)	A2L	4.1	18,000	66	_	_	_	610	
R-468B	zeotrope	R-1132a/32/1234yf (6.0/13.0/81.0)	A2L	4.4	18,000	70	<del>570</del>			<u>570</u>	<u> </u>
R-468C	zeotrope	R-1132a/32/1234yf (6.0/42.0/52.0)	A2L	4.3	23,000	69	<del>710</del>			<u>710</u>	<u> </u>
R-469A	zeotrope	R-744/R-32/R-125 (35.0/32.5/32.5)	A1	8	53,000	1			1,600	1,600	<u> </u>
R-470A	zeotrope	R-744/32/125/134a/1234ze(E)/227ea (10.0/17.0/19.0/7.0/44.0/3.0)	A1	17	77,000	270	_	_		1,100	_
R-470B	zeotrope	R-744/32/125/134a/1234ze(E)/227ea (10.0/17.0/19.0/7.0/44.0/3.0)	A1	16	72,000	270	_	_	_	1,100	_
R-471A	zeotrope	R-1234ze(E)/227ea/1336mzz(E) (78.7/4.3/17.0)	A1	9.7	31,000	160	_	_	<del>710</del>	<u>710</u>	
R-472A	zeotrope	R-744/32/134a (69.0/12.0/19.0)	A1	4.5	35,000	72	_	_	_	2,700	_
R-472B	zeotrope	R-744/32/134a (58.0/10.0/32.0)	A1	5.0	36,000	80	<del>2,400</del>			2400	
R-473A	zeotrope	R-1132a/23/744/125 (20.0/10.0/60.0/10.0)	A1	4.8	36,000	77	1,700			<u>1700</u>	
R-474A	zeotrope	R-1132(E)/1234yf (23.0/77.0)	A2L	3.3	13,000	53	13	53,000	209	440	
R-475A	zeotrope	R-1234yf/134a/1234ze(E) (45.0/43.0/12.0)	A1	20.0	73,000	320	690			690	
R-476A	zeotrope	R-134a/1234ze(E)/1336mzz(E) (10.0/78.0/12.0)	A1	11	38,000	180	<del>750</del>			<u>750</u>	
R-477A	zeotrope	R-1270/600a (84.0/16.0)	A3	0.13	1,100	2.0	2.4	21,000	38	530	
R-477B	zeotrope	R-1270/600a (38.0/62.0)	A3	0.27	2,100	4.3	2.3	18,000	37	690	
R-478A	zeotrope	R-744/32/125/134a/152a/1234ze(E)/227ea (7.0/26.0/15.0/15.0/3.0/30.0/4.0)	A2L	4.8	24,000	77	17.1 <sup>f</sup>	95,000 <sup>f</sup>	270 <sup>f</sup>	1,100	
R-479A	zeotrope	R-1132(E)/32/1234yf (28.0/21.5/50.5)	A2L	3.0	15,000	48	12.0	61,000	193	510	
R-480A	zeotrope	R-744/1234ze(E)/227ea (5.0/86.0/9.0)	A1	16	59,000	260	900			900	
R-481A	zeotrope	R-32/125/134a/1233zd(E)/601a (16.9/6.3/74.4/1.8/0.6)	A1	10	45,000	160	1,000			1,000	
R-482A	zeotrope	R-134a/1234ze(E)/1224yd(Z) (10.0/83.5/6.5)	A1	18	62,000	290	830			830	
R-484A	zeotrope	R-1270/600 (12.0/88.0)	A3	0.14	1,000	2.3	2.6	18,000	41	860	
R-500 <sup>C</sup>	azeotrope	R-12/152a (73.8/26.2)	A1	7.4	29,000	120		_	-	1,000	2-0-0 <sup>b</sup>
R-501 <sup>C</sup>	azeotrope	R-22/12 (75.0/25.0)	A1	13	54,000	210	_	_		1,000	_
R-502 <sup>C</sup>	azeotrope	R-22/115 (48.8/51.2)	A1	21	73,000	330	_	_	_	1,000	2-0-0 <sup>b</sup>
R-503 <sup>C</sup>	azeotrope	R-23/13 (40.1/59.9)	_	_	<u> </u>		_	_	_	1,000	2-0-0 <sup>b</sup>
R-504 <sup>C</sup>	azeotrope	R-32/115 (48.2/51.8)	_	28	140,000	450	_	_	-	1,000	_
R-507A	azeotrope	R-125/143a (50.0/50.0)	A1	32	130,000	510	_	_	<u> </u>	1,000	2-0-0 <sup>b</sup>
R-508A	azeotrope	R-23/116 (39.0/61.0)	A1	14	55,000	220	_	_	<u> </u>	1,000	2-0-0 <sup>b</sup>
R-508B	azeotrope	R-23/116 (46.0/54.0)	A1	13	52,000	200	_	_	-	1,000	2-0-0 <sup>b</sup>
R-509A	azeotrope	R-22/218 (44.0/56.0)	A1	24	75,000	380	_	_	_	1,000	2-0-0 <sup>b</sup>
R-510A	azeotrope	R-E170/600a (88.0/12.0)	A3	0.87	7,300	14	3.5	29,000	56.1	1,000	_
R-511A	azeotrope	R-290/E170 (95.0/5.0)	A3	0.59	5,300	9.5	2.4	21,000	38.0	1,000	
R-512A	azeotrope	R-134a/152a (5.0/95.0)	A2	1.9	11,000	31	7.7	45,000	123.9	1,000	
R-513A	azeotrope	R-1234yf/134a (56.0/44.0)	A1	20	72,000	320	-	45,000		650	
R-513B	azeotrope	R-1234yf/134a (58.5/41.5)	A1	21	74,000	330	H	H	<del>-</del>	640	
R-514A	azeotrope	R-1336mzz(S)/1130(E) (74.7/25.3)	B1	0.86	2,400	14	$\vdash$	H	H	320	
R-514A R-515A		R-1336H2Z(S)/1130(E) (74.7/25.3) R-1234ze(E)/227ea (88.0/12.0)	A1	19	63,000	300			$\vdash$	810	
R-515B	azeotrope	R-1234ze(E)/227ea (86.0/12.0) R-1234ze(E)/227ea (91.1/8.9)	A1	18	61,000	290	$\vdash$		<del>810</del>	810	
	azeotrope						10.1	50.000			
R-516A	azeotrope	R-1234yf/134a/152a (77.5/8.5/14.0)	A2	3.2	13,000	52	13.1	50,000	210.1	590	_

CHEMICAL	FORMULA	CHEMICAL NAME OF BLEND	REFRIGERANT SAFETY GROUP CLASSIFICATION	AMOUNT OF REFRIGERANT PER OCCUPIED SPACE							(F) DEGREES
REFRIGERANT					RCL		LFL OEL				OF HAZARD
			02/100/11/01/1	lb/1000		1	lb/1000		l		0
				ft		g/m			g/m	ppm	
R-600	CH <sub>3</sub> CH <sub>2</sub> CH <sub>2</sub> CH <sub>3</sub>	butane	A3	0.15	1,000	2.4	3.0	20,000	48	1,000	1-4-0
R-600a	CH(CH <sub>3</sub> ) <sub>2</sub> CH <sub>3</sub>	2-methylpropane (isobutane)	A3	0.59	4,000	9.5	2.4	16,000	38	1,000	2-4-0
R-601	CH3CH2CH2 CH2CH3	pentane	A3	0.18	1,000	2.9	2.2	12,000	35	600	_
R-601a	(CH <sub>3</sub> ) <sub>2</sub> CHCH <sub>2</sub> CH <sub>3</sub>	2-methylbutane (isopentane)	A3	0.18	1,000	2.9	2.4	13,000	38	600	_
R-610	CH <sub>3</sub> CH <sub>2</sub> OCH <sub>2</sub> CH <sub>3</sub>	ethoxyethane (ethyl ether)	_	_	_	l —	_	_	_	400	_
R-611	HCOOCH <sub>3</sub>	methyl formate	B2	_	_	l —	_	_	_	100	_
<del>R-717</del>	NH <sub>3</sub>	<del>ammonia</del>	<del>B2L</del>	0.014	<del>320</del>	0.22	<del>7.2</del>	167,000	116	<del>25</del>	330 <sup>e</sup>
R-718	H <sub>2</sub> O	water	A1	_	_	l —	_	_	_	_	0-0-0
R-744	CO <sub>2</sub>	carbon dioxide	A1	3.4	30,000	54	_	_	_	5,000	2-0-0 <sup>b</sup>
R-1130(E)	CHCI=CHCI	trans-1,2-dichloroethene	B2	0.25	1,000	4	16	65,000	258	200	_
R-1132a	CF <sub>2</sub> =CH <sub>2</sub>	1,1-difluoroethene	A2	2.0	13,000	33	8.1	50,000	131	500	_
R-1132(E)	(E)-CFH=CFH	Trans-1,2-difluoroethene	B2	1.8	11,000	28	7.0	43,000	113	350	
R-1150	CH <sub>2</sub> =CH <sub>2</sub>	ethene (ethylene)	B3	_	_	l —	2.2	31,000	36	200	1-4-2
R-1224yd(Z)	CF3CF=CHCI	(Z)-1-chloro-2,3,3,3-tetrafluoroethylene	A1	23	60,000	370	_	_	_	1,000	_
R-1233zd(E)	CF <sub>3</sub> CH=CHCI	trans-1-chloro-3,3,3-trifluoro-1-propene	A1	5.3	16,000	85	_	_	_	800	_
R-1234yf	CF <sub>3</sub> CF=CH <sub>2</sub>	2,3,3,3-tetrafluoro-1-propene	A2L	4.5	16,000	75	18.0	62,000	289	500	_
R-1234ze(E)	CF <sub>3</sub> CH=CFH	trans-1,3,3,3-tetrafluoro-1 -propene	A2L	4.7	16,000	76	18.8	65,000	303	800	_
R-1270	CH <sub>3</sub> CH=CH <sub>2</sub>	Propene (propylene)	A3	0.11	1,000	1.7	_	_	_	500	1-4-1
R-1336mzz(E)	CF <sub>3</sub> CHCHCF <sub>3</sub>	trans 1,1,1,4,4,4-hexafluoro-2- butene	A1	3.0	7,200	48	_	_	_	400	
R-1336mzz(Z)	CF <sub>3</sub> CHCHCF <sub>3</sub>	cis-1,1,1,4,4,4-hexaflouro-2-butene	A1	5.2	13,000	84	_	_	_	500	_

For SI: 1 pound = 0.454 kg, 1 cubic foot =  $0.0283 \text{ m}^3$ .

- a. Degrees of hazard are for health, fire, and reactivity, respectively, in accordance with NFPA 704.
- b. Reduction to 1-0-0 is allowed if analysis satisfactory to the code official shows that the maximum concentration for a rupture or full loss of refrigerant charge would not exceed the IDLH, considering both the refrigerant quantity and room volume.
- c. Class I ozone depleting substance; prohibited for new installations.
- d. Occupational Exposure Limit based on the OSHA PEL, ACGIH TLV-TWA, the TERA WEEL or consistent value on a time-weighed average (TWA) basis (unless noted C for ceiling) for an 8 hr/d and 40 hr/wk.
- e. LFL is based on WCF @ 73.4°F (23°C) unless otherwise noted.
- f. WCFF LFL @ 140°F (60°C).
- g. WCFF LFL @ 73.4°F (23°C).
- h. WCF LFL @ 212°F (100°C).

#### FLOOR MODIFICATION #3958

#### **Committee Reason:**

The committee approved the proposal with modifications by a vote of 14-0. The refrigerant classifications are established by ASHRAE SSPC 34 and published in ASHRAE Standard 34. With the addition of additional refrigerants to Standard 34 during the last code cycle, this proposal aims to update the refrigerant table. See https://www.ashrae.org/standards-research-technology/standards-addenda for the rationale behind the incorporation of new refrigerants. The published addenda to ASHRAE Standard 34-2022, accessed via the URL above, incorporates revisions.

M64-24

#### M65-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of this proposal. The committee's justification is based on the proposed code language's dependence on an authorized safety classification.

M65-24

### M66-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve this proposal as submitted. This proposal better aligns the IMC with the current language in ASHRAE 15. This code change proposal correlates with Addendum e of ASHRAE 15-2022 provisions. ASHRAE 15 has removed the term "human comfort" from the standard, as it did not adequately describe the applications it covered, and replaced it with "air conditioners, heat pumps, and dehumidifiers." This proposal better aligns the IMC with the current language in ASHRAE 15.

M66-24

### M67-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 11-3 to approve this proposal as submitted. The proposed code change better aligns the IMC with ASHRAE 15, 2019 edition Addendum I (which was adopted into the 2022 edition). The standard permits greater Group A3 refrigerant charge sizes in commercial refrigeration applications.

M67-24

## M68-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of the proposal. The committee's reasoning is that the standard does not go far enough for safe use of the listed refrigerants.

M68-24

# M69-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 13-1 to disapprove of this proposal. The committee argues that more testing is required for composite pressure pipe items contained in the proposed code language. Additional testing is necessary expressly for the uses mentioned in Table 1107.4 and Section 1107.4 of the code.

M69-24

M70-24

Committee Action: As Modified by Committee

**Committee Modification:** 

Revise as follows:

**TABLE 1107.4 REFRIGERANT PIPE** 

PIPING MATERIAL	STANDARD				
Aluminum tube	ASTM B210 , ASTM B491/B491M				
Brass (copper alloy) pipe	ASTM B43				
Copper linesets	ASTM B280, ASTM B1003				
Copper pipe	ASTM B42, ASTM B302				
Copper tube <sup>a</sup>	ASTM B68 , ASTM B75, ASTM B88, ASTM B280, ASTM B819				
Steel pipe <sup>D</sup>	ASTM A53, ASTM A106, ASTM A333				
Steel tube	ASTM A254, ASTM A334				
Stainless Steel Pipe	ASTM A312/A312M				
Stainless Steel Tube	ASTM A269/A269M, ASTM A632				

- a. Soft annealed copper tubing larger than  $1^3/8$  inch (35 mm) O.D. shall not be used for field-assembled refrigerant piping unless it is protected from mechanical damage.
- b. ASTM A53, Type F steel pipe shall only be permitted for discharge lines in pressure relief systems.

**TABLE 1107.5 REFRIGERANT PIPE FITTINGS** 

FITTING MATERIAL	STANDARD			
Aluminum	ASTM B361			
Copper and copper alloy (brass)	ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.24, ASME B16.26, ASME B16.50			
Steel	ASTM A105, ASTM A181, ASTM A193, ASTM A234, ASTM A420, ASTM A707			
Stainless Steel	ASTM A493/A493M - ASTM 403-19, ASME B16.11			

#### Add new text as follows:

1108.7 Stainless steel pipe.

Joints between stainless steel pipe or fittings shall be brazed, mechanical, threaded, press-connect, or welded joints conforming to Section 1108.3.

1108.8 Stainless steel tube.

Joints between stainless steel tube or fittings shall be brazed, flared, mechanical, press-connect, or welded joints conforming to Section 1108.3.

**Committee Reason:** The committee voted 14-0 to approve this proposal as modified. ASTM A403 / A403M-20 needs to be changed to ASTM 403-19. ASHRAE 15 includes the use of stainless steel pipe and stainless steel tube for refrigerant piping. This proposed change adds to the requirements for stainless steel pipe and tube. The appropriate standards are listed in Table 1107.4 for the pipe and tube and Table 1107.5 for the fittings. Sections 1108.7 and 1108.8 added the joining methods. ASHRAE 15 allows brazed, mechanical, threaded, press-connect, or welded joints for stainless steel tube.

M70-24

### M71-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve this proposal as submitted. The committee's reasoning is that by deleting this section, the requirements are consistent with ASHRAE 15. ASHRAE 15 does not restrict the use of steel pipe to Schedule 80 for Group A2, A3, B2, and B3 refrigerants.

M71-24

### M72-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve this proposal as submitted. ASHRAE 15 established a minimum cup depth for copper solder-swaged joints because lower-pressure Group A1 refrigerant systems can use solder joints. The table yields requirements for brazed and soldered field-made swaged joints by removing the word "brazed" from the section and title. The Copper Development Association, which provides a list of minimum depths for appropriate solder joints, supplied the information on cup depth for solder joints.

M72-24

### M73-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve this proposal as submitted. ASHRAE 15 includes the allowance of brazed joints for both steel pipe and steel tube. This change adds the allowance for these joining methods to the Mechanical Code.

M73-24

#### M74-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of this proposal based on the disapproval of proposals M68-24 and M69-24.

M74-24

### M75-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve this proposal as submitted. The committee reason is that the proposal correlates with ASHRAE 15 and is similar to the proposed code language in M62-24.

M75-24

## M76-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of this proposal based on the disapproval of proposals M68-24 and M69-24. The committee is not comfortable approving multi-layer composites.

M76-24

# M77-24

Committee Action: Disapproved

Committee Reason: The committee voted 14-0 to disapprove of this proposal. The committee reasons that removing "foam" leaves the

language open, and the committee members are concerned that the proponent has a personal interest.

M77-24

### M78-24

Committee Action: As Submitted

Committee Reason: The committee voted 14-0 to approve this proposal as submitted. The committee has given its justification: this proposal amends the code language to allow for the proper usage of piping materials. Some hydronic systems may function at 140°F or below, making them appropriate for high-density polyethylene (HDPE) pipe systems. Examples include low-temperature hydronic distribution, indoor geothermal pipe, and chilled water piping. HDPE is authorized under various codes and is frequently utilized for these purposes. The proposal includes six industry standards for HDPE tubing and pipes, representing pipe materials appropriate for multiple hydronic applications.

M78-24

### M79-24

Committee Action: As Submitted

Committee Reason: The committee voted 14-0 to approve this proposal as submitted. The committee reason is based on approval of proposal M78-24 and the proponents reason statement. Certain hydronic systems operate at temperatures of 140°F or lower and are suitable for high-density polyethylene (HDPE) piping systems. Examples include chilled water piping, indoor geothermal piping, and low-temperature hydronic distribution. HDPE is often used for these applications and is approved in other codes. The four industry standards in the proposal are for different styles of HDPE fittings that are suitable for certain hydronic applications and are all current and up-to-date.

M79-24

# M80-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve this proposal as submitted. The proposal allows for press connections. North America has a harmonized standard for press-connect fittings called IAPMO/ANSI/CAN Z1117. It covers a variety of press-connect materials, including copper, steel, and stainless steel 304 and 316, and is accepted and upheld in the US and Canada. Z1117 aims to provide a harmonized version to facilitate adoption and enforcement throughout North America.

M80-24

#### M81-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve this proposal as submitted. PEX and PE-RT tubing have the exact same dimensions. Most fitting systems are shared. This proposal adds two industry standards for PE-RT tubing fittings to Table 1202.5. ASTM F2623, "Standard Specification for Polyethylene of Raised Temperature (PE-RT) Systems for Non-Potable Water Applications," is the PE-RT system standard for non-potable uses like hydroponics. It includes detailed fittings that are intended to be used with PE-RT tubing.

M81-24

### M82-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve this proposal as submitted. The committee agrees with the proponent's reason statement that this proposal attempts to improve the table by reorganizing the rows with proper material names and proper standards.

M82-24

## M83-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 13-1 to approve this proposal as submitted. The committee reasoned to approve this proposal because it has already been approved in IPC and IRC. The committee also agrees with the proponent's statement that current PEX and PERT manufacturers may allow for the practice of air testing.

M83-24

### M84-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 10-4 to disapprove of this proposal. The committee's reason is that they would like the proponent to work on scripting a clearer definition for resubmittal to be heard at the CAH2.

M84-24

# M85-24

Committee Action: As Submitted

Committee Reason: The committee voted 9-5 to approve this proposal as submitted. The committee's reasoning is that of the proponent's reason statement. Only 10 to 20-foot short lengths are available for PVC, a rigid piping material that can be linked using flanges or other mechanical connections. This pipe's lack of flexibility and the need for several joints over a typical pipe length of 400 feet or more make it unsuitable for ground-loop piping systems. Furthermore, placing pipes in a vertical borehole necessitates the faster installation of more than 400 feet of two vertical pipes to prevent the drilled hole from collapsing. Solvent cement joints take too long to cure. The International Ground Source Heat Pump Association (IGSHPA), established in 1987, has never advised PVC for ground source loop piping. Many years ago, there were field failures when installers tried to use PVC plumbing for similar applications. According to the ANSI, CSA, and IGSHPA C448 Series 16 Bi-National Standard for designing and installing ground source and heat pump systems for commercial and residential buildings, PVC rigid piping is inappropriate for geothermal ground loop installations [12]. Furthermore, after reviewing all acceptable pipe materials for geothermal ground loop installations, the piping task force for the New Edition (2024) of the ANSI, CSA, and IGSHPA C448 Bi-National Standard has decided to keep PVC off the list of acceptable piping materials for geothermal installations.

M85-24

### M86-24

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve the proposal as submitted. The committee's reason is based on a consensus that this proposal aligns with M85-24 and the proponent's reason statement. This proposal is to add two industry standards for fittings for PE-RT tubing to Table 1210.5. PE-RT and PEX have identical dimensions and share most of the same fitting systems. The PE-RT system standard for non-potable applications is ASTM F2623, which also specifies fittings that are meant to be used with PERT tubing.

M86-24

### M87-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 10-4 to disapprove of the proposal. The committee felt that the proposed code language included the wrong standard suggested for Table 1302.3 by the proponent.

M87-24

# M88-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of the proposal based on the proponent asking for the proposal to be disapproved due to the disapproval of proposal M87-24.

# M89-24

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of the proposal. The committee agreed that the proposal required more specificity, as the references are not correct. The committee would like to see this proposal come back at the CAH2 hearings.

M89-24

# International Plumbing Code

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

P1-24

Committee Action: Disapproved

**Committee Reason:** A bathroom group of fixtures is meant to be used by a single occupant. Adding another fixture such as a urinal makes the group a multiple occupant use which could overload the wet vent system.. (14-0)

P1-24

P2-24

Committee Action: As Submitted

Committee Reason: The inclusion of bottle filling station in the definition improves clarity for these optional fixtures. (14-0)

P2-24

P3-24

Committee Action: Disapproved

**Committee Reason:** The term "inherently" is ambiguous. (14-0)

P3-24

P4-24 Part I

Committee Action: Disapproved

Committee Reason: The proposed language needs to be improved for clarity. The proponent asked for disapproval. (13-0)

P4-24 Part I

P4-24 Part II

**Committee Action:** Disapproved Committee Reason: The proposal is overly restrictive for where piping can be located to prevent freezing. (10-0) P4-24 Part II P5-24 **Committee Action:** Disapproved Committee Reason: The two exceptions seem to address the same issue. These need to be clarified. (14-0) P5-24 P6-24 Disapproved **Committee Action:** Committee Reason: The Committee prefers P99 Part I. (13-0) P6-24 P7-24 **Committee Action:** Disapproved Committee Reason: There has been no testing to show that the smaller wire has the necessary durability for the application. The green color could be hard to find in grass cover. (10-4) P7-24 P8-24

Committee Action: As Submitted

Committee Reason: This standard has been used by industry for many years. It is a good alternative to have in the code. (14-0)

P8-24

### P9-24

Committee Action: Disapproved

Committee Reason: The term "waste" is defined separately than drainage and this could cause confusion. (14-0)

P9-24

### P10-24

Committee Action: Disapproved

**Committee Reason:** This proposal changes from "greater than 4 inch" to "4 inch and greater". This doesn't agree with cast iron piping installation instructions. (14-0)

P10-24

### P11-24

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (13-1)

P11-24

### P12-24 Part I

Committee Action: Disapproved

Committee Reason: What happens if pressure regulator exceeds 6 psig? Compressed gas testing is dangerous. (14-0)

P12-24 Part I

## P12-24 Part II

Committee Action: Disapproved

Committee Reason: The availability of a 6psi gauge is unknown. Air testing of cast iron is problematic. (10-0)

P12-24 Part II

### P13-24 Part I

**Errata:** This proposal includes unpublished errata The entered reason statement and cost impact did not show up in monograph: Reason Statement:

PART I: The IRC currently allows pressure testing of PEX piping systems with compressed gas in P2503.7 via an Exception. The Exception should be added to the IPC for consistency, and the Exception should apply to both PEX and PE-RT flexible piping materials.

The Exception found in IRC P2503.7 Water Supply System Testing is technically appropriate, is safe, and is supported by the plastic piping industry. In fact, this Exception should also be expanded to apply to PE-RT piping materials. A separate code change request has been submitted for that purpose. Like PEX, PE-RT is also produced from HDPE material and does not fail via brittle failure or separation of shards. The Plastics Pipe Institute's *Recommendation F* was updated in 2022 to also apply to PE-RT tubing, and is now titled "Testing PEX and PE-RT Tubing Systems with Compressed Air or Inert Gas" Recommendation F.pdf (plasticpipe.org).

Cost Impact: Decrease

#### Estimated Immediate Cost Impact:

\$1 to \$10,000

#### Estimated Immediate Cost Impact Justification (methodology and variables):

By providing the alternative to pressure test PEX and PE-RT tubing materials with compressed gas, this code change proposal may decrease the cost of pressure testing pipes in these types of systems over a range from \$1 to \$10,000. In situations where water is readily available and there is no risk of freezing, the cost decrease can be \$1 or less, because the compressed gas test method is not used. In situations where water is not available on the jobsite at the time when pipes are installed and ready for test, the cost decrease can be \$1 to \$1,000 by preventing the need to transport potable water to the jobsite for testing. In cold weather situations, without the option of using compressed air for testing, the cost to provide temporary heat to the building to prevent freezing of water in pipes during testing is significant and could range from \$100 to \$10,000 depending on the size of the building and its level of completion during the pressure test period. For example, if the building is not yet fully enclosed and must be wrapped with temporary insulation during the use of temporary heat for a pressure test in cold weather, the cost decrease of allowing the use of compressed gas can be as high as \$10,000.

Committee Action: As Submitted

Committee Reason: This exception provides an additional testing method for this type of piping. (8-6)

P13-24 Part I

# P13-24 Part II

**Errata:** This proposal includes unpublished errata The reason statement and cost impact did not show in monograph:Reason Statement: PART II: The IRC currently allows pressure testing of PEX piping systems with compressed gas in P2503.7 Water Supply System Testing via an Exception. The Exception should be revised to also apply to PE-RT piping systems. Like PEX, PE-RT tubing is also produced from HDPE material and does not fail via brittle failure or separation of shards. The Plastics Pipe Institute's *Recommendation F* was updated in 2022 to also apply to PE-RT tubing, and is now titled "Testing PEX and PE-RT Tubing Systems with Compressed Air or Inert Gas" Recommendation F.pdf (plasticpipe.org).Cost Impact:

Cost Impact: Decrease

#### **Estimated Immediate Cost Impact:**

\$1 to \$10,000

#### Estimated Immediate Cost Impact Justification (methodology and variables):

By providing the alternative to pressure test PEX and PE-RT tubing materials with compressed gas, this code change proposal may decrease the cost of pressure testing pipes in these types of systems over a range from \$1 to \$10,000. In situations where water is readily available and there is no risk of freezing, the cost decrease can be \$1 or less, because the compressed gas test method is not used. In situations where water is not available on the jobsite at the time when pipes are installed and ready for test, the cost decrease can be \$1 to \$1,000 by preventing the need to transport potable water to the jobsite for testing. In cold weather situations, without the option of using compressed air for testing, the cost to provide temporary heat to the building

to prevent freezing of water in pipes during testing is significant and could range from \$100 to \$10,000 depending on the size of the building and its level of completion during the pressure test period. For example, if the building is not yet fully enclosed and must be wrapped with temporary insulation during the use of temporary heat for a pressure test in cold weather, the cost decrease of allowing the use of compressed gas can be as high as \$10,000.

Committee Action: As Submitted

Committee Reason: This was already approved for the IPC so IRC needs to match. (10-0)

P13-24 Part II

### P13-24 Part III

Committee Action: Disapproved

**Committee Reason:** The committee voted 14-0 to disapprove of this proposal. The committee does not believe this proposed exemption should expand to apply to PE-RT pipe materials or their systems, despite separate code change proposals submitted for that purpose.

P13-24 Part III

### P14-24

Committee Action: As Submitted

**Committee Reason:** This change is editorial and adds clarity to the code. (14-0)

P14-24

# P15-24

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (12-2)

P15-24

# P16-24

Committee Action: As Submitted

Committee Reason: The proposal provides clarity on toilet facilities for rooftop occupancies. (10-4)

# P17-24

Committee Action: As Submitted

Committee Reason: This proposal adds needed clarity to the code. (13-1)

P17-24

## P18-24

Committee Action: Disapproved

Committee Reason: This occupancy is already covered by the table. (10-4)

P18-24

### P19-24 Part I

Committee Action: Disapproved

**Committee Reason:** The committee is favor of the proposal but the proposal needs modified to add an entry for number of required showers. (9-5)

P19-24 Part I

# P19-24 Part II

Committee Action: As Submitted

**Committee Reason:** The calculation of occupant load by pool type will improve accuracy for determining egress for these types of facilities. (Vote: 13-0)

P19-24 Part II

# P19-24 Part III

Committee Action: As Modified by Committee

#### **Committee Modification:**

#### 321.2 Number of fixtures.

The minimum number of required water closets, urinals, lavatories, and drinking fountains fixtures shall be provided in accordance with the minimum requirements of the *International Building Code* and the *International Plumbing Code*.

**Exception:** For Class C swimming pools, fixtures dedicated to the pool area shall not be required where all <u>sleeping or</u> dwelling units meet all of the following requirements:

- 1. The sleeping or dwelling units have private facilities.
- 2. The sleeping or dwelling units are within a 300 feet path of travel from the pool area.
- 3. The sleeping or dwelling units are not more than one story above or below the pool area.

For Class C swimming pools where some but not all <u>sleeping or</u> dwelling units meet the requirements of this exception, the minimum occupant load used to calculate the minimum fixture requirements shall be reduced by a factor equal to the number of <u>sleeping or</u> dwelling units meeting these requirements, divided by the total number of <u>sleeping or</u> dwelling units served by the pools.

Committee Reason: For the modification: The language needed to include hotel and motel occupancies. (11-0)

For the proposal as modified: This proposal achieves the goal of the pool industry to have better clarity for which types of showers are needed for different pools. The Committee would welcome further input from opponents at CAH#2 to improve the proposals. The Committee suggested that the opponents can work with PHTA. (11-0)

P19-24 Part III

### P20-24

Committee Action: Disapproved

Committee Reason: There was testimony stating that approval (yesterday) of P19-24 Part III took care of this so this proposal needs disapproved. (14-0)

P20-24

### P21-24

Committee Action: As Submitted

**Committee Reason:** This is a needed correction to clear up confusion about how to calculate fixtures in these types of toilet facilities. (14-0)

P21-24

## P22-24

Committee Action: As Submitted

Committee Reason: This clarifies what fixtures need to be accessible in these types of toilet facilities. (10-4)

P22-24

### P23-24

Committee Action: Disapproved

Committee Reason: The Committee preferred the action taken on proposal P25-24. (14-0)

P23-24

### P24-24

Committee Action: Withdrawn

P24-24

# P25-24

**Errata:** This proposal includes published errata Errata: The word "toilet" was missing from the struck out language. See the Consolidated Monograph Updates document; https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (10-4)

P25-24

# P26-24

Committee Action: Disapproved

Committee Reason: The Committee can't justify allowing deletion of facilities where employees are present. (14-0)

P26-24

### P27-24

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (11-3)

P27-24

### P28-24

Committee Action: As Submitted

**Committee Reason:** This proposal offers some flexibility on where to place the lavatories but retains the intent to locate them close to water closets and urinals. There should be some effort to improve "immediate vicinity". (10-4)

P28-24

### P29-24

**Errata:** This proposal includes published errata Errata: The word "facilities" was missing from the struck out language. See the Consolidated Monograph Updates document; https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

**Committee Reason:** The Committee believes that if the lavatory is not in the same room as the water closet that there will be more potential for the spread of disease. (12-2)

P29-24

# P30-24

Committee Action: Disapproved

**Committee Reason:** There is ambiguity about the fire testing requirements in the standard. The cost of testing for the listing of the products will be onerous. This language puts the requirements for Type C units in the code. So what happens if the standard changes? Would the code need to change to math the standard? (8-7)

P30-24

# P31-24

Committee Action: Disapproved

Committee Reason: Urinals do not need carriers as users are not sitting on urinals like they do for wall hung water closets. (11-3)

P31-24

P32-24

Committee Action: As Submitted

Committee Reason: These standards are applicable for the indicated applications. (14-0)

P32-24

### P33-24

Committee Action: Disapproved

**Committee Reason:** The proposal needs rework as the proponent tried tro present multiple modifications (all ruled out of order) where they attempted to fix the proposal. (11-3)

P33-24

## P34-24

Committee Action: Disapproved

Committee Reason: It is unreasonable to expect that users will have bottles or cups to obtain a drink of water. (8-7)

P34-24

# P35-24

Committee Action: Disapproved

**Committee Reason:** It doesn't make sense to state that drinking fountains can be substituted 100 percent and then state that two drinking fountains are required. (11-3)

P35-24

# P36-24

Committee Action: Disapproved

**Committee Reason:** These fixtures are used only in emergency situations so the need for chemical resistant materials is not needed. (12-2)

P36-24

P37-24

Committee Action: Disapproved

Committee Reason: Where final temperature control is required, the code requires a point of use control device to be installed. (13-0)

P37-24

P38-24

Committee Action: Disapproved

Committee Reason: Without any data on injuries that have happened, it cannot be justified to lower the temperature to 115F. (13-0)

P38-24

P39-24

Committee Action: Disapproved

Committee Reason: Requiring seasonal adjustment of limit stops on shower valves is unreasonable and costly. (13-0)

P39-24

P40-24

Committee Action: Disapproved

**Committee Reason:** There is no justification to eliminate a type of water heater that is incapable of producing a temperature greater than 120F. (7-6)

P40-24

#### P41-24

Committee Action: Disapproved

**Committee Reason:** There is no justification to eliminate a type of water heater that is incapable of producing a temperature greater than 120F. (7-6)

P41-24

# P42-24 Part I

**Errata:** This proposal includes published errata Errata: The proponent's name was missing from the proposal. See the Consolidated Monograph Updates document; https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (14-0)

P42-24 Part I

### P42-24 Part II

Committee Action: Disapproved

Committee Reason: The staff analysis of new standard did not indicate that staff had reviewed the standard. (6-4)

P42-24 Part II

## P43-24

Committee Action: As Submitted

Committee Reason: Because the old standard is no longer being supported, this new standard is required to be in the code. (14-0)

P43-24

# P44-24

Committee Action: Disapproved

**Committee Reason:** The term "vulnerable occupants" is open to broad interpretation, Also, the use of "such as" opens the door for inclusion of many other applications. (13-0)

P45-24

Committee Action: As Submitted

Committee Reason: The IPC needs to agree with the IRC on this subject matter. (13-1)

P45-24

P46-24

Committee Action: Disapproved

Committee Reason: Action is consistent with actions on P40 and P41. (9-4)

P46-24

### P47-24 Part I

Committee Action: As Submitted

Committee Reason: This is a new harmonized standard that is already referenced in the code. This just updates the standard. (14-0)

P47-24 Part I

# P47-24 Part II

Committee Action: As Submitted

Committee Reason: Update to standard is needed as old standard is no longer supported. (10-0)

P47-24 Part II

P48-24

Committee Action: Disapproved

**Committee Reason:** There is no need to require toilet seats to be made to a standard. There have been no complaints or problems that would justify adding the expense of certification to this item. (11-3)

P49-24

Committee Action: As Submitted

Committee Reason: Assistive tables need to comply with a standard. (11-2)

P49-24

## P50-24

Committee Action: Disapproved

**Committee Reason:** The overall intent of the proposal is to control legionella however, the basis for the temperature setting is from recommendations from a guideline established by ASHRAE on Legionella control. But testimony indicated that at that temperature setting, Legionella might not be controlled as intended. Having the code go down that path based on guidelines is just too far. (12-1)

P50-24

# P51-24

Committee Action: Disapproved

Committee Reason: The temperature guideline of 140F may not be appropriate for controlling Legionella. (13-0)

P51-24

# P52-24 Part I

Committee Action: Disapproved

Committee Reason: Section 608 would be a better location for this information. (12-1)

P52-24 Part I

# P52-24 Part II

Committee Action: Disapproved

Committee Reason: Standard is not complete. Definition is too broad and confusing. What is or is not a Heat Interface unit? (10-0)

P52-24 Part II

### P53-24 Part I

Committee Action: Disapproved

**Committee Reason:** ASSE 1379 is only in draft form and is not complete. These valves are part of an equipment package. Indirect "fired" seems to be an inappropriate term to be used in the definition. (13-0)

P53-24 Part I

### P53-24 Part II

Committee Action: Disapproved

Committee Reason: Standard is not complete. Definition is confusing. (10-0)

P53-24 Part II

# P54-24 Part I

Committee Action: Disapproved

**Committee Reason:** The proposal is overly prescriptive and fails to coordinate with current manufacturer's instructions. This information should be located in the IMC. (14-0)

P54-24 Part I

# P54-24 Part II

Committee Action: Disapproved

**Committee Reason:** The heat pump water heater industry is in flux with changeover of refrigerants. Too difficult to come up with universal space/volume requirements for these units. The manufacturer's installation instructions for the specific unit must be followed. Also, complex tables as presented in the proposal are discouraged. (10-0)

P54-24 Part II

### P55-24

Committee Action: Disapproved

**Committee Reason:** There is a debate that there could be another valve in this language. The language is very broad. The potability of water was stated and the committee was not sure how that fits into this section. (12-1)

P55-24

### P56-24

Committee Action: Disapproved

Committee Reason: This is an excessive requirement for all water heaters. The requirement is not just for tankless water heaters. (9-4)

P56-24

### P57-24

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (12-1)

P57-24

### P58-24 Part I

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (12-2)

P58-24 Part I

# P58-24 Part II

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (10-0)

P58-24 Part II

### P59-24

Committee Action: Disapproved

Committee Reason: What is the elevation where there is concern about personal injury? (14-0)

P59-24

## P60-24

Committee Action: Disapproved

**Committee Reason:** The added language is an oxymoron. The first sentence requires the end to be readily visible and the new sentence speaks to when the end is not readily visible. Use of parenthesis in code text is not appropriate. (14-0)

P60-24

### P61-24 Part I

Committee Action: Disapproved

**Committee Reason:** The existing language is preferred. Adding the term "elevated" is unclear. Water heaters are dangerous even in existing buildings.(13-0)

P61-24 Part I

## P61-24 Part II

Committee Action: Disapproved

**Committee Reason:** The term "elevated" vague. Who determines whether a pan can be acommodated? How is potential for personal injury determined? (10-0)

P61-24 Part II

# P62-24 Part I

Committee Action: As Submitted

**Committee Reason:** This will reduce flooding. Units with alarm only are not effective when people are not home. Provides more options for damage control. (9-5)

# P62-24 Part II

Committee Action: Disapproved

Committee Reason: There is a concern that if water is shut off to the water heater that the elements could burn out. (10-0)

P62-24 Part II

## P63-24

Committee Action: Disapproved

**Committee Reason:** The language of the proposal is unclear as to the application. There are locations where the pan drain terminates in the same room. Appears to be a one time use only product. (14-0)

P63-24

### P64-24

Committee Action: Disapproved

**Committee Reason:** The term "all" is too inclusive as there are water heaters that are incapable of producing hot water greater than 120F. There are options to the ASSE 1017 valve for controlling temperature. (14-0)

P64-24

# P65-24

Committee Action: Disapproved

**Committee Reason:** The code already allows the piping to be installed. The code shouldn't mandate their installation. Requiring the pipe to be installed dry doesn't allow the pipe to disinfected along with the rest of the potable water supply piping in a newly constructed system. (14-0)

P65-24

# P66-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

#### 602.2.1 Pathogen Control.

Where required When incorporated in a design, water supply and distribution systems shall be designed and maintained to control Legionella and other pathogens in accordance with ASHRAE 188 and ASHRAE 514.

Committee Reason: For the modification: The modification makes it clear that that it is not required. (13-1)

For the proposal as modified: The Committee agreed with the published reason statement. (12-2)

P66-24

### P67-24

Committee Action: Disapproved

**Committee Reason:** The proponent wanted to fix his proposal with a floor modification but it was ruled out of order. The proposal needs to come back with a public comment. (14-0)

P67-24

### P68-24

Committee Action: Disapproved

**Committee Reason:** The Committee prefers the table format of P67. (14-0)

P68-24

# P69-24

Committee Action: Disapproved

**Committee Reason:** There is not need to go beyond the federal mandate. There has been no research on what impact might be for lower flows on drain line carry. (13-1)

P69-24

# P70-24 Part I

Committee Action: Disapproved

**Committee Reason:** Unknown impact of lower flows on drain line carry. Sewage backups are already occurring due to lower flows. (14-0)

P70-24 Part I

### P70-24 Part II

Committee Action: Disapproved

**Committee Reason:** With lower flow, getting hot water to sink will be slower. There is concern about that lower flows are contributing to drain line carry problems. There is no data to show that lower flows actually save water or energy. (10-0)

P70-24 Part II

# P71-24

Committee Action: Disapproved

Committee Reason: Reducing flows below the federal level is too low. (14-0)

P71-24

# P72-24 Part I

Committee Action: Disapproved

Committee Reason: Consistent with actions on P71, P70 and P69. (14-0)

P72-24 Part I

# P72-24 Part II

Committee Action: Disapproved

**Committee Reason:** With lower flow, getting hot water to sink will be slower. There is concern about that lower flows are contributing to drain line carry problems. There is no data to show that lower flows actually save water or energy. (10-0)

P72-24 Part II

## P73-24 Part I

Committee Action: Disapproved

Committee Reason: The standard is still in draft form. (13-1)

P73-24 Part I

# P73-24 Part II

Committee Action: Disapproved

Committee Reason: The standard is not complete. (10-0)

P73-24 Part II

# P74-24

Committee Action: Disapproved

Committee Reason: This topic would be better addressed in the IFGC or IMC. (14-0)

P74-24

# P75-24

Committee Action: As Submitted

Committee Reason: These are applicable standards for PEX and PERT fittings. (14-0)

P75-24

# P76-24

Committee Action: As Submitted

Committee Reason: This is a appropriate standard for these type of products. (14-0)

P76-24

### P77-24

Committee Action: As Submitted

Committee Reason: These are A\appropriate standards for PERT piping. (13-0)

P77-24

# P78-24 Part I

Committee Action: As Submitted

Committee Reason: This proposal simply adds another color for solvent cement. (13-0)

P78-24 Part I

# P78-24 Part II

Committee Action: As Submitted

Committee Reason: The Committee agreed with published reason statement. (10-0)

P78-24 Part II

# P79-24

Committee Action: Disapproved

Committee Reason: There is no documentation that these products create a health hazard. (9-4)

P79-24

# P80-24

Committee Action: Disapproved

Committee Reason: This shouldn't be a requirement for systems that are not designed to ASHRAE 188. (12-1)

P80-24

# P81-24 Part I

Committee Action:

P81-24 Part II

Committee Action:

Withdrawn

P82-24

Committee Action:

As Submittee Committee Reason: The code needs a standard for these tanks. (14-0)

P83-24

Committee Action: Disapproved

Committee Reason: The word "carbonated" needs to be stricken from the new line in the table. (14-0)

P83-24

P82-24

# P84-24 Part I

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (14-0)

P84-24 Part I

### P84-24 Part II

Committee Action: As Submitted

Committee Reason: This proposal clears up up confusion about which piping system needs to be labeled. (10-0)

P84-24 Part II

P85-24

Committee Action: As Submitted

Committee Reason: This adds an appropriate standard for these products. (14-0)

P85-24

# P86-24 Part I

Committee Action: Disapproved

**Committee Reason:** This is a solution to a problem that doesn't exist. (14-0)

P86-24 Part I

# P86-24 Part II

Committee Action: Disapproved

**Committee Reason:** The table number is wrong. Where is the measurement taken from? Why 60 inches? This is too restrictive for IRC buildings. (9-1)

P86-24 Part II

# P87-24

Committee Action: Disapproved

Committee Reason: An ASSE 1032 device should not be used for a carbonated beverage dispenser. (14-0)

P87-24

### P88-24

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (14-0)

P88-24

P89-24

Committee Action: As Submitted

Committee Reason: A needed clarification for the devices indicated in the language. (14-0)

P89-24

P90-24

Committee Action: As Submitted

Committee Reason: This adds a standard for product that is already being used in the industry. (14-0)

P90-24

P91-24

Committee Action: As Submitted

Committee Reason: This adds an appropriate ASSE standard for these products. (14-0)

P91-24

P92-24

Committee Action: As Submitted

Committee Reason: This adds an appropriate standard to the code for these products. (13-1)

P92-24

### P93-24

Committee Action: Disapproved

Committee Reason: The proposal is confusing and needs to be brought back at CAH2 with clearer language. (14-0)

P93-24

## P94-24

Committee Action: Disapproved

**Committee Reason:** The phrase "or portions of systems" is unclear as to how small such a portion could be. The requirements for shutting down a system for disinfection for excessive time periods seems excessive and not workable. There are no limits on maximum chlorine levels given. (13-0)

P94-24

# P95-24

Committee Action: Disapproved

Committee Reason: The proponent indicated that there are issues with ASSE 1087 and it is not complete. (14-0)

P95-24

# P96-24 Part I

Committee Action: As Submitted

Committee Reason: This adds an appropriate standard for this product that will provide for more options for purchase. (12-1)

P96-24 Part I

# P96-24 Part II

Committee Action: As Submitted

Committee Reason: The standard is appropriate for the piping application. (9-1)

## P97-24

Committee Action: Disapproved

**Committee Reason:** The proponent had floor modifications which were ruled out of order. The proposal should be brought back at CAH1 with corrections, (14-0)

P97-24

## P98-24

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (8-7)

P98-24

## P99-24 Part I

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (8-5)

P99-24 Part I

## P99-24 Part II

Committee Action: Disapproved

**Committee Reason:** The ASTM standard is not appropriate for the application. The cost impact states editorial but in reality, there is a substantial cost impact. (10-0)

P99-24 Part II

# P100-24 Part I

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (13-0)

P100-24 Part I

## P100-24 Part II

Committee Action: Disapproved

Committee Reason: Repairs are done in existing systems so the information needs to stay in the code. (9-1)

P100-24 Part II

## P100-24 Part III

Committee Action: As Submitted

**Committee Reason:** The committee voted 14-0 to approve the proposal as submitted. The proponents' reason statement supported the argument presented, which recommends removing lead pipe, which is rarely used, from the Mechanical Code Piping Support Table and other applications.

P100-24 Part III

## P101-24 Part I

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (14-0)

P101-24 Part I

## P101-24 Part II

Committee Action: As Submitted

Committee Reason: The new standard replaces an old standard that will no longer be supported. (10-0)

P101-24 Part II

# P102-24

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (14-0)

P102-24

## P103-24

Committee Action: Disapproved

Committee Reason: This proposal mixes up terminology. If it isn't broken, don't try to fix it. (13-0)

P103-24

## P104-24 Part I

Committee Action: Disapproved

**Committee Reason:** The committee disagrees with the removal of the sentence in Section714.1 because if a surcharge situation occurs then the surcharge will flood into the basement. (13-0)

P104-24 Part I

# P104-24 Part II

Committee Action: Disapproved

**Committee Reason:** Proposal removes a viable option from the code. Would cause every horizontal branch to have a backwater valve. Cost impact would be significant. (10-0)

P104-24 Part II

# P105-24

Committee Action: Disapproved

Committee Reason: The standard doesn't address all the items listed in the sentence. The proposal needs reworded to correct. (12-2)

P105-24

#### P106-24

Committee Action: Disapproved

**Committee Reason:** The standard is not posted so we don't know what the qualifications for the inspectors will be. Everything is too vague yet. A better place for this requirement would be in Section 717.9. The proposal states that there is no cost impact but clearly there is. (14-0)

P106-24

P107-24

Committee Action: As Submitted

Committee Reason: The additional word captures all that needs to be included. (13-1)

P107-24

## P108-24

Committee Action: Disapproved

**Committee Reason:** The current code does not have ASTM F1216 so it would be premature to approve this proposal based on information from a standard that is not yet part of the code.. (13-1)

P108-24

## P109-24

Committee Action: Disapproved

**Committee Reason:** Leaving the decision about whether a permit is needed for the work, in the hands of the plumber is not appropriate. This subject matter would be better addressed in Section 102.4 where it is clearly laid out concerning additions, alterations and repairs as to whether a permit is needed or not. That would give the code official some basis for determining if a permit is required for the work. (14-0)

P109-24

P110-24

Committee Action: Disapproved

**Committee Reason:** There is a lot of work to do in this grouping of proposals [P109-P112]. Fixing defects in pipe is something that you are going to do any way, There needs to be more clarification. The proposal is removing reasons for the code official to not allow the work to take place. The proposal is making the situation worse instead of better. (14-0)

P110-24

## P111-24

Committee Action: Disapproved

Committee Reason: The standard is not written in enforceable language. (11-3)

P111-24

## P112-24

Committee Action: Disapproved

Committee Reason: The code shouldn't eliminate something that could be used. (14-0)

P112-24

#### P113-24

Committee Action: Disapproved

Committee Reason: The words about 'fold and form' method need to be eliminated. (11-3)

P113-24

## P114-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

717.7 Cured-in-place-pipe.

Sectional cured-in-place pipe rehabilitation of building sewer piping and sewer service lateral piping shall be in accordance with ASTM F2599. Main and lateral cure-in-place pipe rehabilitation of building sewer and sewer service lateral pipe and their connections to the main sewer pipe shall be in accordance with ASTM F2561. Hydrophilic rings or gaskets in cure-in-place rehabilitation of building sewer piping and sewer service laterals shall be in accordance with ASTM F3240 to ensure water tightness and elimination of ground water penetration.

Committee Reason: For the modification: Deletes unnecessary commentary. (14-0)

For the proposal as modified: This simply moves information from Section 718 into Section 717. (12-2)

P114-24

## P115-24

Committee Action: As Submitted

**Committee Reason:** The code needs to be clarified that pressure testing needs to be performed on relined piping. The presence of Section 312 is not sufficient. (11-3)

P115-24

## P116-24

Committee Action: Disapproved

Committee Reason: ASTM F1216 has unenforceable language. (12-2)

P116-24

## P117-24 Part I

Committee Action: Disapproved

Committee Reason: Some of the proposed standards are written in unenforceable language. (13-1)

P117-24 Part I

## P117-24 Part II

Committee Action: Disapproved

Committee Reason: There didn't appear to a major section (P3012) in the code for this new section to be placed under. (10-0)

P117-24 Part II

## P118-24

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (8-7)

P118-24

P119-24

Committee Action: As Submitted

Committee Reason: The language clarifies where condensate needs to go. (10-3)

P119-24

P120-24

Committee Action: Disapproved

Committee Reason: The dump sink definition needs to be two sentences. (10-3)

P120-24

P121-24

Committee Action: Disapproved

Committee Reason: The original sentence places the access requirements where they belong. (9-4)

P121-24

P122-24

Committee Action: Disapproved

Committee Reason: The original language clearly defines where the sidewall vent can be from the roof. (8-4)

P122-24

#### P123-24

Committee Action: Disapproved

Committee Reason: Alternatives should be listed as an exception. AAVs are already in the code. (11-2)

P123-24

## P124-24

Committee Action: Disapproved

Committee Reason: The research by the National Bureau of Standards indicated that the a stack vent is unnecessary. (10-3)

P124-24

## P125-24 Part I

Committee Action: Disapproved

Committee Reason: Vent piping should be sloped to promote drainage back to the drainage system. (13-0)

P125-24 Part I

# P125-24 Part II

Committee Action: Disapproved

Committee Reason: The phrase "connected and supported" needs to remain in the code. (10-0)

P125-24 Part II

## P126-24

Committee Action: Disapproved

Committee Reason: The IPC doesn't require addressing a possible future need. The language of "required" in the code is correct. (13-0)

P126-24

#### P127-24

Committee Action: Disapproved

Committee Reason: This device has not been tested for pressures that could occur during a sewer surcharge event. Language would be better placed in Section 917. (12-1)

P127-24

P128-24

Committee Action: Disapproved

Committee Reason: The added language would be better as an exception in Section 917. (11-2)

P128-24

P129-24

Committee Action: Disapproved

Committee Reason: The added language would be better as an exception. (13-0)

P129-24

P130-24

Committee Action: Disapproved

Committee Reason: The language doesn't require that the device needs to comply with the standard proposed. (13-0)

P130-24

P131-24

Committee Action: As Submitted

Committee Reason: This is a good addition to the type of fixtures that can be on a combination waste and vent system. (13-0)

P131-24

#### P132-24

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (10-3)

P132-24

## P133-24

Committee Action: Disapproved

**Committee Reason:** The proposal confuses the issue on what can be connected to stacks. There would be room for miscommunication. (11-2)

P133-24

## P134-24

Committee Action: As Submitted

Committee Reason: This device is a good addition to the code. (8-5)

P134-24

## P135-24

Committee Action: Disapproved

Committee Reason: The language is missing the relationship of the device with the standard proposed. (13-0)

P135-24

## P136-24

Committee Action: Disapproved

Committee Reason: The proposal language is confusing. The current language is preferred. (13-0)

P136-24

## P137-24 Part I

Committee Action: As Submitted

Committee Reason: These devices must be installed in accordance with the manufacturer's instructions. (10-3)

P137-24 Part I

# P137-24 Part II

Committee Action: Disapproved

**Committee Reason:** There is nowhere in the code where it prohibits the manufacturer's instructions to be used. Using the manufacturer's instructions is common for any device. (8-2)

P137-24 Part II

#### P138-24 Part I

Committee Action: Disapproved

Committee Reason: There is no need to state why the vent is there. This is commentary. (13-0)

P138-24 Part I

## P138-24 Part II

Committee Action: Disapproved

**Committee Reason:** This language is unnecessary. The definition of vent system already explains what is being added by the proposal. Also, proponent requested disapproval. (10-0)

P138-24 Part II

# P139-24 Part I

Committee Action: Disapproved

Committee Reason: Manufacturer's installation instructions are not engineered designs. (13-0)

## P139-24 Part II

Committee Action: Disapproved

**Committee Reason:** The application requires an engineered solution. Referencing manufacturers instructions is not adequate for this application. (10-0)

P139-24 Part II

#### P140-24 Part I

Committee Action: Disapproved

**Committee Reason:** There was no evidence that these devices have been tested with respect to the application (protecting mechanical air intakes.) There is a real concern that these devices could allow make up air, for say, for a kitchen, to draw in sewer gases.. (12-1)

P140-24 Part I

## P140-24 Part II

Committee Action: Disapproved

**Committee Reason:** This is a mechanical device that could fail. The IPC rejected this proposal. (9-1)

P140-24 Part II

## P141-24

Committee Action: As Submitted

Committee Reason: This language improves clarity about where to use these devices. (11-2)

P141-24

## P142-24

Committee Action: Disapproved

Committee Reason: This device creates a dire	ect connection. Overall, the device does not comply with the ASSE standard. There i	is not
reason to mandate these devices be installed. (	(14-0)	

P142-24

P143-24

Committee Action: As Submitted

Committee Reason: This is good language for designers to have for sizing. The ASME standards don't cover sizing. (10-3)

P143-24

P144-24

Committee Action: Disapproved

Committee Reason: The committee prefers proposal P143-24 for sizing. (14-0)

P144-24

P145-24

Committee Action: As Submitted

Committee Reason: This is a needed change as all dishwashers should be routed to grease interceptor. (14-0)

P145-24

P146-24

Committee Action: As Submitted

Committee Reason: This provides for better direction for where food waste disposers can be connected to grease interceptors. (10-4)

P146-24

P147-24

Committee Action: Disapproved

Committee Reason: This topic was addressed by action on P143-24. (12-2)

P147-24

P148-24

Committee Action: Disapproved

**Committee Reason:** The language is not clear. Removes existing requirements that have been working fine. The requirements for storage type facilities are excessive. (14-0)

P148-24

P149-24

Committee Action: As Submitted

Committee Reason: Provides for another option for oil separator design. (12-2)

P149-24

P150-24

Committee Action: Disapproved

Committee Reason: There are other means for rehabilitating storm sewers. The method is already in Chapter 7. (13-1)

P150-24

P151-24

Committee Action: As Submitted

Committee Reason: This is simply replacing an old standard with a new standard. The old standard will no longer be supported. (14-0)

P151-24

#### P152-24

Committee Action: Disapproved

Committee Reason: The language is unenforceable and is more prescriptive that what is required. (14-0)

P152-24

P153-24

Committee Action: As Submitted

Committee Reason: This is a necessary update to a standard that will no longer be supported. (14-0)

P153-24

P154-24

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (14-0)

P154-24

P155-24

Committee Action: Disapproved

**Committee Reason:** There will be increased costs for what amounts to be a luxury option.. If the owner wishes to provide that option, it is up to the owner make the accommodation at the time of construction. (14-0)

P155-24

P156-24

Committee Action: As Submitted

Committee Reason: The standard provides another alternative for tanks. (10-4)

P156-24

## P157-24 Part I

Committee Action: As Submitted

**Committee Reason:** This is a big leap forward for water reuse. This will encourage more technology to be developed. There is already overseas widespread use of all waters for applications. (10-4)

P157-24 Part I

#### P157-24 Part II

**Errata:** This proposal includes published errata Errata: The notes were missing from the table. See the Consolidated Monograph Updates document; https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: As Modified by Committee

#### Committee Modification: TABLE P3401.2(1)REQUIRED WATER QUALITY FOR REUSE APPLICATION

Use Category	Application	Exposure <sup>a</sup>	Quality Tier <sup>b</sup>
Process Water	Industrial Process Water (Possibility of Human Contact or Evaporative)	AC	3
	Industrial Washwater applications	AC	3
	Livestock Drinking Water (Milk Producing)	AC	3
	Livestock Drinking Water (Non-Milk Producing)	AC	3
	Parts Cleaning	LC	1
	Pool Water Makeup	<del>AC</del> DC	<del>3</del> 4
	Pressure Washing	AC	3

**Committee Reason:** For the modification: This corrects makeup water for pools to be suitable for Direct Contact Tier 4. (8-2) For the proposal as modified: The Committee agreed with the published reason statement. (8-2)

P157-24 Part II

#### P158-24

Committee Action: As Submitted

Committee Reason: The standard is applicable for the application. (13-0)

P158-24

# P159-24 Part I

Committee Action: As Submitted

**Committee Reason:** Permit fees are for the authority having jurisdiction to develop, not the code. Information doesn't need to be in the code. (14-0)

P159-24 Part I

## P159-24 Part II

Committee Action: As Submitted

Committee Reason: By a vote of 14-0, the committee accepted the proposal as submitted. The justification offered was predicated on the proponent's justification. to coordinate the 2021 IBC, IFC, IEBC, IMC, IPC, IPMC, IFGC, ISPSC, IWUIC, and IZC codes and address uniformity in the Fees section. Fee schedules were removed at the time of adoption into the IMC, IPC, IPMC, IFGC, and ISPSC, according to ADM 27-19. The jurisdiction could be prohibited from changing its fees if it were subject to a code for three to six years. The same outcome would result from adopting an appendix that requires payment (IRC) or that the jurisdiction must fill out (IMC and IPC). The proposal recommends the deletion of these appendices.

P159-24 Part II

#### P160-24 Part I

Committee Action: As Submitted

Committee Reason: This is a necessary correction that needed fixed for a long time. (14-0)

P160-24 Part I

# P160-24 Part II

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (10-0)

P160-24 Part II

P161-24

Committee Action: As Submitted

Committee Reason: This provides all the necessary technical information for fixture manufacturers to develop products. (10-4)

P161-24

## P162-24 Part I

Committee Action: Disapproved

Committee Reason: This is not a code requirement and doesn't need to be in the code. Information can be published elsewhere. (10-4)

P162-24 Part I

## P162-24 Part II

Committee Action: Disapproved

Committee Reason: These calculation tools are in their infancy. This was disapproved in the IPC. (9-1)

P162-24 Part II

# P163-24

Committee Action: As Submitted

Committee Reason: This matches what is already in the IRC and should be in the IPC. (9-5)

P163-24

# International Private Sewage Disposal Code

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

PSD1-24

Committee Action: Disapproved

**Committee Reason:** The language leaves a lot of determinations for compliance up to the code official for which they may not be qualified to make. The scope of the code doesn't cover operation and maintenance. (13-1)

PSD1-24

PSD2-24

Committee Action: As Submitted

Committee Reason: The proposal provides needed guidance on what to do where nitrogen removal is necessary. (13-1)

PSD2-24

# International Residential Code - Mechanical

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

#### RM1-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove of this proposal 9-1. The reason provided was that the cost estimate was way off, as the requirement to add insulation was not factored in. In addition to the inaccurate cost estimate, additional arguments suggest that these stairs take up a lot of space. The example given was the use of these stairs in townhomes without having the required room to properly use the stairs in halls or closets. The continued discussion noted that the practicality of the proposal simply does not work. There is also no standard available for ladders to be installed per this proposed application.

RM1-24

#### RM2-24

Committee Action: As Submitted

**Committee Reason:** The committee voted to approve this proposal as submitted 6-5. The discussion centered around ASHRAE 15.2 being added in this code section for specific use of residential installations. The consensus for approval is that this standard is already included in manufacturers instructions.

RM2-24

#### RM3-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

**M1401.3 Equipment and appliance sizing.** Heating and cooling *equipment* and *appliances* shall be sized in accordance with ACCA Manual S <u>or other approved sizing methodologies</u> based on building loads calculated in accordance with ACCA Manual J <u>or other approved heating and cooling calculation methodologies</u>.

**Committee Reason:** The committee approved this proposal with Buuck-MP2's modifications 9-1. The argument to support the proposal as modified is that it restores code language to improve calculations consistent with the code language already included for manual S & J load calculations.

RM3-24

#### RM4-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove of this proposal 9-1. The committee's reasoning is that they do not agree with the proponent that this proposal is editorial in nature and has no impact on the cost of construction.

RM4-24

## RM5-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove of this proposal 10-0. The consensus of the committee is that the sections referenced for M1413.1 are not correct and that the proposed code language as written for section M1502.3 is limited to how exhaust air should be erected on sidewalks. The committee suggests this specific code language proposed would be more conducive of being added to the IRC.

RM5-24

## RM6-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove of this proposal by 8-2. The committee reasoned that because 2024 is yet to be established, some jurisdictions may not have considered it for adoption, and other jurisdictions may not adopt it at all. The consensus is that this proposal has too many restrictions.

RM6-24

## RM7-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove of this proposal with a vote of 9-1. The committee justified its decision based on the notion of an increased cost impact. Additionally, builders should have some latitude in jurisdictions where these codes have yet to be adopted and should be allowed to continue to utilize framing cavities as plenums. The committee contended that since depressurization impacts other cavities, adjustments to the energy code, not the residential mechanical code, are suggested.

RM7-24

#### RM8-24

Committee Action: Disapproved

**Committee Reason:** The committee voted to disapprove of this proposal by 10-0. The consensus of the committee is that more data is needed to substantiate this allowance. The proposal can not be considered without additional testimony to support further consideration.

RM8-24

#### RM9-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

M1601.1.1 Above-ground duct systems. Above-ground duct systems shall conform to the following:

- 1. Equipment connected to duct systems shall be designed to limit discharge air temperature to not greater than 250°F (121°C).
- 2. Factory-made ducts shall be *listed* and *labeled* in accordance with UL 181 and installed in accordance with the manufacturer's instructions.
- 3. Fibrous glass duct construction shall conform to the SMACNA Fibrous Glass Duct Construction Standards or NAIMA Fibrous Glass Duct Construction Standards.
- Field-fabricated and shop-fabricated metal and flexible duct constructions shall conform to the SMACNA HVAC Duct
   Construction Standards—Metal and Flexible except as allowed by Table M1601.1.1. Galvanized steel shall conform to ASTM
   A653.
- 5. The use of gypsum products to construct return air ducts or plenums is permitted, provided that the air temperature does not exceed 125°F (52°C) and exposed surfaces are not subject to condensation.
- 6. Duct systems shall be constructed of materials having a flame spread index of not greater than 200.
- 7. Stud wall cavities and the spaces between solid floor joists to be used as air plenums shall comply with the following conditions:
  - 7.1. These cavities or spaces shall not be used as a plenum for supply air.
  - 7.2. These cavities or spaces shall not be part of a required fire-resistance-rated assembly.
  - 7.3. Stud wall cavities shall not convey air from more than one floor level.
  - 7.4. Stud wall cavities and joist-space plenums shall be isolated from adjacent concealed spaces by tight-fitting *fireblocking* in accordance with Section R302.11. *Fireblocking* materials used for isolation shall comply with Section R302.11.1.
  - 7.5. Stud wall cavities in the outside walls of building envelope assemblies shall not be utilized as air plenums.
  - 7.6. Building cavities used as plenums shall be sealed.
- 8. Volume dampers, equipment and other means of supply, return and exhaust air adjustment used in system balancing shall be provided with access.
- 9. Zoned duct systems <u>serving heating or cooling equipment</u> shall be designed and installed in accordance with ACCA Manual Zr and the manufacturer's instructions or by other approved methods.

**Committee Reason:** By a vote of 10-0, the committee decided to approve this proposal with modifications. Even though M1601.1 Duct Design refers to ACCA Manual D for duct design, the residential code still needs to address the design of zonal duct systems, mainly

what to do with bypass air when one or more dampers are closed. The modification's additional code language makes the proponent's justification more evident.

RM9-24

## RM10-24

Committee Action: As Submitted

**Committee Reason:** The committee approved the proposal 9-0, as submitted. The UL standards for clothes dryers are in the proposed code language. The proposal aligns with Section 1502, with exclusions granted for specific kinds of listed and labeled clothes dryers. The format of this is the same as that of IMC Section 913.

RM10-24

# International Residential Code - Plumbing

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

**RP1-24** 

Committee Action: As Submitted

Committee Reason: Provides options for installers and for consistency with NFPA 13D (10-0)

RP1-24

**RP2-24** 

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (9-1)

RP2-24

**RP3-24** 

Committee Action: Disapproved

Committee Reason: The terms "restaurants" and "bars" are inappropriate for the IRC. This section doesn't need to match the IPC. (10-0)

RP3-24

**RP4-24** 

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (8-2)

RP4-24

RP5-24

Committee Action: Withdrawn

RP5-24

**RP6-24** 

Committee Action: Disapproved

**Committee Reason:** A backflow preventer is not required. Many jurisdictions don't have the capacity to annually inspect a backflow preventer. (9-1)

RP6-24

## **RP7-24**

Committee Action: Disapproved

**Committee Reason:** Shower users will stay in the shower longer, therefore there is no water savings. There is no data to support that there is a water savings. (10-0)

RP7-24

## **RP8-24**

Committee Action: Disapproved

**Committee Reason:** The cost to install a recirculation pump at the water heater is at least \$800-\$1000. The cost to the homeowner is greater. The IRC should not match what is in the IPC as the cost impact is unacceptable. There are other options that can be used. (10-0)

RP8-24

## RP9-24

Committee Action: Disapproved

Committee Reason: Tank manufacturers instructions indicate how the tank can be supported by piping. (8-2)

RP9-24

#### RP10-24

Committee Action: As Submitted

Committee Reason: The two standards are appropriate for PEX and PERT tubing. (10-0)

RP10-24

#### RP11-24

Committee Action: As Submitted

Committee Reason: The Committee agreed with the published reason statement. (9-0)

RP11-24

#### RP12-24

Committee Action: As Submitted

Committee Reason: The changes are editorial but are good clarifications for what has been intended by the code. (8-2)

RP12-24

# RP13-24

Committee Action: As Modified by Committee

**Committee Modification:** 

P2904.2 Sprinklers.

Sprinklers shall be new *listed* residential sprinklers <u>and</u> shall be installed in accordance with the sprinkler manufacturer's instructions. **Exceptions**:

- 1. High temperature quick response sprinklers shall be permitted to be installed in sauna and steam rooms.
- 2. Quick response sprinklers shall be permitted to be installed in mechanical rooms.

Committee Reason: For the modification: The modification makes the language clearer, (10-1)

For the proposal as modified: The Committee agreed with the published reason statement. (9-1)

RP13-24

# International Swimming Pool and Spa Code

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

SP1-24

Committee Action: As Modified by Committee

#### Committee Modification:

**AQUATIC RECREATION FACILITY.** A facility that is designed for free-form aquatic play and recreation. The facilities may include, but are not limited to, wave or surfaction pools, leisure rivers, sand bottom pools, vortex pools, activity pools, inner tube rides, body slides and interactive <u>water</u> play <u>attractions features</u>.

**ELEVATED SWIMMING POOL OR PERMANENT SPA.** Any permanently installed <u>swimming</u> pool, <u>permanent</u> spa, cold plunge, catch basin, overflow trough, including any connected water feature, or body of water <del>water</del> feature, that is over a habitable, occupiable or unoccupied space that is (1) inside a thermal envelope, (2) outside a thermal envelope, or (3) a combination of inside and outside the thermal envelope.

#### EXERCISE SPA (Also known as a swim spa).

Variants of a spa in which the design and construction includes specific features and equipment to produce a water flow intended to allow recreational physical activity including, but not limited to, swimming in place. Exercise spas can include peripheral jetted seats intended for water therapy, heater, circulation and filtration system, or can be a separate distinct portion of a combination spa/exercise spa and can have separate controls. These spas are of a design and size such that they have an unobstructed volume of water large enough to allow the 99th Percentile Man as specified in APSP 16 to swim or exercise in place.

**EXISTING SWIMMING POOL OR PERMANENT SPA**. A <u>swimming</u> pool or <u>permanent</u> spa constructed prior to the date of adoption of this code, or one for which a legal building permit has been issued.

**PUBLIC SWIMMING POOL (Public Pool).** A pool, other than a *residential* pool, that is intended to be used for swimming or bathing and is operated by an owner, lessee, operator, licensee or concessionaire, regardless of whether a fee is charged for use. Public pools shall be further classified and defined as follows:

Class A competition pool. A pool intended for use for accredited competitive aquatic events such as

Federation Internationale De Natation (FINA) World Aquatics, USA Swimming, USA Diving, USA Synchronized Swimming, USA Water Polo, National Collegiate Athletic Association (NCAA), or the National Federation of State High School Associations (NFHS).

**Class C semi-public pool.** A pool operated solely for and in conjunction with lodgings such as hotels, motels, apartments, condominiums or property owner associations or multi-family-<u>use</u> owned pools used by more than three owner families.

#### Class F wading pools.

A pool with an independent circulation system and physically separated from the main pool with a water depth 18 inches or less.

Diving types of public pools are classified into types as an indication of the suitability of a pool for use with diving equipment.

SPA. A structure or product intended for the immersion of persons in temperature-controlled water for the purpose of relaxing, exercise, therapy or treatment; designed and manufactured to be connected to a circulation system; and not intended to be drained and filled with each use. This term includes, but is not limited to, exercise spas, hot tubs, permanent spas and portable electric spas.

#### Permanent Spa.

A permanently constructed spa where piping and equipment are an integral part of the structure, and not intended to be moved. A permanent spa can be an accessory to a *residential* setting, available to the household and its guests, or it can be operated by an owner, licensee or concessionaire, regardless of whether a fee is charged for sure, for public use.

**Portable Electric Spa**. A factory-built electric spa or hot tub, supplied with piping and equipment for temperature-controlled circulated water at the time of sale or sold separately for subsequent attachment.

#### Exercise Spa (Also known as a swim spa).

Variants of a spa in which the design and construction includes specific features and equipment to produce a water flow intended to allow recreational physical activity including, but not limited to, swimming in place. Exercise spas can include peripheral jetted seats intended for water therapy, heater, circulation and filtration system, or can be a separate distinct portion of a combination spa/exercise spa and can have separate controls. These spas are of a design and size such that they have an unobstructed volume of water large enough to allow the 99th Percentile Man as specified in APSP 16 to swim or exercise in place.

Hot Tub. A portable electric spa with equipment for temperature-controlled water that is circulated in a closed system.

**Committee Reason:** For the modification: The modification was needed to change FINA to World Aquatics. (11-0) For the proposal as modified: The proposal as modified harmonizes the definitions with ANSI standards. (11-0)

SP1-24

#### SP2-24

Committee Action: As Submitted

Committee Reason: The proposal ends the controversy over what constitutes a swimout. (11-0)

SP2-24

#### SP3-24

Committee Action: Disapproved

Committee Reason: These are proposed California requirements that are not appropriate for the ISPSC. (11-0)

SP3-24

## SP4-24

Committee Action: As Submitted

**Committee Reason:** This proposal aligns the ISPSC with the IECC and provides for other options such as attic heat recovery and ground source heat recovery. (11-0)

SP4-24

# SP5-24

Committee Action: Disapproved

**Committee Reason:** The code is currently working to protect against unauthorized entry into pools while providing for the option for powered safety covers for pools. (11-0)

SP5-24

SP6-24

Committee Action: Disapproved

Committee Reason: Manual safety covers can be more complicated to close which might be a deterrent to their use.(10-1)

SP6-24

SP7-24

Committee Action: Disapproved

Committee Reason: This is a local zoning code issue. This doesn't need to be in the code as it doesn't involve the safety of pools. (11-0)

SP7-24

SP8-24

Committee Action: As Submitted

Committee Reason: The changes in this proposal better clarify the scoping of the barrier section of the code. (11-0)

SP8-24

SP9-24

Committee Action: Disapproved

Committee Reason: There are operational problems with these products. The "in pool" option is not reliable. (11-0)

SP9-24

SP10-24

Committee Action: Disapproved

**Committee Reason:** ASTM F2208 only applies to residential pools. This would require sound pressure level testing of the alarm in the field which is difficult to accomplish. (11-0)

SP10-24

## SP11-24

Committee Action: Disapproved

Committee Reason: Approval of proposal SP8 fully addresses what this proposal is attempting to do. (11-0)

SP11-24

## SP12-24

Committee Action: As Submitted

**Committee Reason:** Florida codes have had these requirements for over 5 years. This solves a lot of consistency problems when tests are done with wet surfaces. This also gives plasterers more options for colors. (11-0)

SP12-24

## SP13-24

Committee Action: As Submitted

Committee Reason: This is a needed clarification that aligns the code with the Model Aquatic Health Code. (11-0)

SP13-24

## SP14-24

Committee Action: As Submitted

**Committee Reason:** The exception takes the design of pools out of the hands of the engineers. Compressive strength of 2500 psi is much too low for most pools. The design of concrete pool structures is to be per ACI 318. The cost impact information about the cost of a swimming pool (\$30,000 to \$50,000) is much too low. (10-1)

#### SP15-24

Committee Action: As Submitted

**Committee Reason:** This is an excellent set of requirements for pools close to buildings. Most cities already have these requirements in place to protect foundations of buildings. (11-0)

SP15-24

#### SP17-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

**SURGE CAPACITY.** The storage volume in a surge tank, *gutter*, and plumbing lines that is available during operation of the pool to temporarily hold water that has been displaced from the pool by bathers, without diverting that water to waste.

Water held in surge capacity shall not be in motion due to gravity, rather, only by the pumps.

#### 316.4.1 Surge capacity.

Where perimeter surface skimming overflow systems are used, they shall be connected to a circulation system with a system surge capacity of not less than 0.5 1 gallon for each square foot (20.4-40.7 liters per square meter) of water surface. unless there is 2 inches (51 mm) or more of freeboard around the entirety of the pool perimeter. The capacity of the perimeter overflow system and related piping is permitted to be considered as a portion of the surge capacity.

Exception: Surge capacity is not required if the following conditions are present:

- 1. Automatic surface skimmers that are designed to process not less than 100 percent of the turnover rate.
- 2. Freeboard of 2 inches (51 mm) or more around the entirety of the pool perimeter,

#### 316.3 Skimmer sizing.

Where automatic surface skimmers are used as the sole <u>overflow skimming</u> system, not less than one surface skimmer shall be provided for the square foot (square meter) areas, or fractions thereof, indicated in Table 316.3. Skimmers shall be located to maintain effective skimming action.

Committee Reason: For the modification: The modification provides clarity to the original proposal.(11-0)

For the proposal as modified: The proposal will reduce the needed surge capacity. (11-0)

SP17-24

# SP18-24

Committee Action: As Submitted

Committee Reason: The proposal streamlines references and aligns the code with federal law. (11-0)

SP19-24

Committee Action: As Submitted

**Committee Reason:** These are important clarifications to the code. There are many partners that are not aware of the need for separation of equipment and chemical storage rooms. (9-2)

SP19-24

SP20-24

Committee Action: As Submitted

Committee Reason: The addition of the ACCA 10 manual ensures that the intent of this section is carried out. (11-0)

SP20-24

SP21-24

Committee Action: As Submitted

Committee Reason: This appropriately adds "mechanical" to to the section title as proposal SP20 was added to the code.(11-0)

SP21-24

SP22-24

Committee Action: As Submitted

Committee Reason: Indoor air quality for aquatic facilities has been a major issue. This proposal solves the issue.(11-0)

SP22-24

SP23-24

Committee Action: As Submitted

Committee Reason: The number one complaint about the ISPSC is that it does not address pool water quality. Code users have been

using the Model Aquatic Heath Code (MAHC) for guidance however that document is not written in enforceable language. The PHTA has been working to absorb the MAHC into the ISPSC. The ISPSC will now allow authorities to have one book to cover pools. (10-1)

SP23-24

#### SP24-24

Committee Action: As Submitted

**Committee Reason:** This safety equipment should have never been removed from the code. Terminology changes align with terminology used in the Model Aquatic Health Code. (11-0)

SP24-24

## SP25-24

Committee Action: As Submitted

Committee Reason: This proposal appropriately addresses entry requirements for shallow pools. (11-0)

SP25-24

## SP26-24

Committee Action: As Submitted

**Committee Reason:** The data used for lowering the time from 15 minutes to 10 minutes was flawed as the study involved bathers that were affected by alcohol or cocaine. There is an availability issue with 10 minute timers. Other codes around the country call for 15 minutes. The requirement aligns with the Model Aquatic Health Code. (11-0)

SP26-24

# SP27-24

Committee Action: As Submitted

Committee Reason: This proposal reduces circulation rates that were unnecessary and wasteful of energy. (11-0)

SP27-24

#### SP28-24

Committee Action: As Submitted

Committee Reason: Class D6 pools have a small volume of water with a large volume of users such that the pool needs increased water quality. (11-0)

SP28-24

#### SP29-24

Committee Action: Disapproved

**Committee Reason:** The ISPSC is a construction code and not an operation and maintenance code. How is the code official able to enforce the standard after the construction is complete? Also, there is concern about allowing the code official to approve a zero flow rate. Although in favor of a radical turn down of flow rate when the pool is closed, the flow rate should not be zero in order for automated chemical monitoring equipment to maintain proper water chemistry. (11-0)

SP29-24

## SP30-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

**Class D-1 wave action pool.** A pool designed to simulate breaking or cyclic waves for purposes of general play . It does not include a *surf venue*, *surf basin* or *stationary wave system*.

#### **SURF VENUE.**

A facility designed to accommodate a large body of water dedicated only to surfing on a surfboard or other similar surfing or wave-riding device, with bathymetry, shape, and design that can use a variety of different mechanisms to generate ocean like surfable waves that shoal and break progressively towards shallow water.

**TABLE 604.2 TURNOVER TIME** 

CLASS OF POOL	MAXIMUM TURNOVER TIME <sup>a</sup> (hours)
D-1 <sup>b</sup>	2
D-2 with less than 24 inches water depth	1
D-2 with 24 inches or greater water depth	2
D-3	1
D-4	2
D-5	1
D-6	1

For SI: 1 inch = 25.4 mm.

- a. Pools with a sand bottom require a 1-hour turnover time.
- b. Surf venues, s Surf basins, and stationary wave systems in compliance with Section 613 are not considered D-1 pools.

#### **SECTION 613**

#### SURF VENUES, SURF BASINS, AND STATIONARY WAVE SYSTEMS

#### 613.1 Surf venues.

Surf venues shall comply with Section 613.1.1 or 613.1.2.

**Committee Reason:** For the modification: Appropriately removes the terms "surf venue" as this is not an industry term.(11-0) For the proposal as modified: The Committee agreed with the published reason statement. (11-0)

SP30-24

#### SP31-24

Committee Action: As Submitted

**Committee Reason:** The committee agrees that the floor slope requirements for these types of pools as they don't apply. A waterline tolerance is good so that the code official can verify that the pool is installed on level ground as they are intended. The proposal accommodates the permanent type of onground pools that are buried. (11-0)

SP31-24

## SP32-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

811.1 Slope change identification.

The point at which the shallow area changes slope to the deep area in the pool shall be identified in an approved manner.

**Committee Reason:** For the modification: Leaving the decision as to how to identify the slope transition up to the code official is not appropriate. (11-0)

For the proposal as modified: The committee agreed with the published reason statement. (11-0)

# SP33-24

Committee Action: As Submitted

**Committee Reason:** This was overlooked in the 2018 when the timer switch requirement was added to the code. The proposal eliminates public pool requirements from the residential portion of the code. (11-0)

SP33-24

### International Wildland Urban Interface Code

2024 Group A - Report of the Committee Action Hearing (CAH1) Results

**WUIC1-24** 

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: It removes the reference to Appendix A, which would only be applicable to and enforceable if it were adopted. It removes the chapter objective language which has no practical importance to the requirements as they exist in the current code. (Vote: 13-0)

**WUIC1-24** 

## **WUIC2-24**

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: It cleans up terminology that is used in the code, which is currently inconsistent throughout and sometimes undefined regarding the material for the structure. It also provides a new term, WUI construction class with the definition which addresses the undefined terms of the conditions of the construction and ignition resistant building materials. (Vote: 13-0)

WUIC2-24

## **WUIC3-24**

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The intent is correct, but there is a conflict between the use of the defined term driveways and the number that is associated with it. In addition, there was objection to the use of the term structure in the requirement. (Vote: 11-2)

WUIC3-24

# **WUIC4-24**

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The previous action taken on proposals WUIC9 and WUIC7. Specific concern over the proposed addition of "or" instead of "and" in the exception reduction. This type

of system needs to evolve a lot further and must be more inclusive of the whole industry.

Further concern was noted regarding if the system is activated and there is also a fire in the house and the interior fire sprinkler system is discharging. Then for some reason, they think it is smart idea to protect the outside space and they activate it as well. This would result in a problem with the further reduction of water supply.

Fire flow is a long-standing requirement of the code, and the sprinkler reduction is also a long-standing requirement for interior sprinklers and to change whether that is considered an incentive in some places or now it is an added requirement, this confuses the true intent of the exception. (Vote: 13-0)

**WUIC4-24** 

### **WUIC5-24**

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: There is currently no prohibition from using the equivalency criteria that is allowed in Section 104.2.2.4 of the code. Based on the previous actions and reasons for related proposals. It was noted that there is a lack of technical data for a code official to approve these systems and by just installing them there is no data that shows that they are going to have a specific impact on how the fire hazard scenario is determined. (Vote: 13-0)

**WUIC5-24** 

## **WUIC6-24**

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: Based on the previous action and reason for WUIC5. Without the data and a standard, it is not possible to determine specific equivalencies in the code. There was concern about areas that are extremely dry and in a high fire danger situation where the humidity is so low that when you put water on using the system and 15 minutes later is gone. Then if it is reactivated, at what point is it monitored to determine that it is going to work because there is enough moisture to put out the fire. Additionally, it was noted that there was concern about the cost of maintenance of these systems in different regions specifically including freezing that needs to be addressed. (Vote: 13-0)

WUIC6-24

## **WUIC7-24**

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: There is no prohibition in the code that prevents the code official from permitting an exterior wildfire sprinkler system being proposed. In comparison to an automatic sprinkler system, which is required to be installed in accordance with nationally recognized standards, there is no such standard at this time for an exterior wildfire sprinkler system. This results in the code official having to make too many decisions for the use of this type of nonrequired system. It was also noted that this is the incorrect section for this type of system, and it would be better located elsewhere in

the code or in an appendix. In addition, there was concern about the operation of the control mechanism and the lack of specific requirements for the design or other system components such as nozzles. (Vote: 13-0)

**WUIC7-24** 

### **WUIC8-24**

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: Based on the previous action and reason for WUIC6. The concern about the cost on these systems as optional systems in place of code requirements. There is a human factor that is actively tied into these systems. Specifically, someone must use an app to turn the system on or press a manual button. Thus, it is not a trade off for defensible space for home hardening because you could be away from the property not knowing that something is happening at the location. Additionally, there is the need for further information on the impact that these systems have on the water supply. (Vote: 13-0)

**WUIC8-24** 

### **WUIC9-24**

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The definition is vague in the use of system of piping, devices, and equipment design in that it could be anything and there is no standard for these systems. In addition, it was noted that the proposed definition does not line up with what is already in Appendix G. (Vote: 11-2)

WUIC9-24

## WUIC10-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was based on the previous action and reason for WUIC8. (Vote: 13-0)

WUIC10-24

# WUIC11-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reason for the disapproval of the proposal was that if something is being proposed to

be deleted completely out of an appendix because there are specific issues with it, updated information related to the exterior sprinkler systems should be presented in the reason statement. (Vote: 13-0)

WUIC11-24

### WUIC12-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The noted concerns were about the "qualified" person requirement and that these requirements should be in an appendix as recommended planning guidance. Furthermore, there were issues within the language of the preliminary and final lists regarding the application to different situations and locations. The desire to see the cost impact on this requirement in areas outside of California. (Vote: 11-2)

WUIC12-24

## WUIC13-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The proposal does not take into account accessory structure fire loading above 120 square feet and no technical substantiation was given for how that affects the wildfire hazard to buildings next to it within the 50-foot range. Also, there was concern that this is based on experience in California. However, the experience in California seems to also call for the defensible space around the structures, which does not get addressed in the proposal. Additional concern was noted about striking the 120 square feet area that could require an automatic sprinkler system for certain structures over 120 square feet in area required by the building code and those structures could pose a risk to the wildland. Finally, there was a little concern with the definition of accessory structure regarding the specific text of "occupancy other than a habitable building." (Vote: 13-0)

WUIC13-24

## WUIC14-24

Committee Action: As Modified by Committee

Committee Modification: 2024 International Wildland Urban Interface Code Revise as follows:

**501.1 Scope.** Buildings and structures in a wildland urban interface area shall be constructed in accordance with the *International Building Code* or *International Residential Code*, as applicable, and this code.

**Exceptions:** 

^

- 1. Group U accessory Accessory structures not exceeding 120 square feet (11 m<sup>2</sup>) in floor area where located not less than 50 feet (15 240 mm) from applicable buildings.
- 2. Group U agricultural buildings not less than 50 feet (15 240 mm) from applicable buildings.

**501.2 Objective.** The objective of this chapter is to establish minimum standards to locate, design and construct buildings and structures or portions thereof for the protection of life and property, to resist damage from wildfires, and to mitigate building and structure fires from spreading to wildland fuels. The minimum standards set forth in this chapter vary with the critical *fire weather*, slope and fuel type to provide increased protection, above the requirements set forth in the *International Building Code* or *International Residential Code*, from the various levels of hazards.

**Committee Reason:** The committee stated that the reason for the approval of the modification was that it clears up the issues with the International Residential Code that allow for the use of other buildings, and structures and keeps in the accessory buildings and the Group U agricultural buildings. The approval of the proposal with the modification was based on the improvement of the section language from the additional text and the new added definition used therein. (Vote: 13-0)

WUIC14-24

## WUIC15-24

Committee Action: As Submitted

#### **Committee Modification:**

2024 International Wildland Urban Interface Code

**501.3 Fire-resistance-rated construction.** Where this code requires 1-hour *fire-resistance-rated construction*, the fire-resistance rating of building elements, components or assemblies shall be determined in accordance with the test procedures set forth in ASTM E119 or UL 263.

#### **Exceptions:**

- 1. The fire-resistance rating of building elements, components or assemblies based on the prescriptive designs prescribed in Section 721 of the International Building Code.
- 2. The fire-resistance rating of building elements, components or assemblies based on the calculation procedures in accordance with Section 722 of the International Building Code.
- 3. The fire-resistance rating of log wall construction, shall be calculated in accordance with the provisions of Section 303 of ICC 400.

**Committee Reason:** The committee stated that the reason for the approval of the modification was that the text of "shall be" does not really make a difference so the deletion keeps the intent. The committee stated that the reason for the approval of the proposal was that the addition of the reference standard for the design and construction of log wall structures that is currently referenced in the IBC provides more clarity on the fire performance that is to be determined in accordance with that standard. (Vote: 13-0)

WUIC15-24

### WUIC16-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

2024 International Wildland Urban Interface Code

#### 501.4.1 Testing.

Materials required to be noncombustible shall be tested in accordance with pass ASTM E136-and pass the test. Alternately, materials required to be noncombustible shall be tested in accordance with ASTM E2652 using and meet the acceptance criteria prescribed by ASTM E136.

**Exception:** Materials having a structural base of noncombustible material as determined in accordance with ASTM E136, or with ASTM E2652 using the acceptance criteria prescribed by ASTM E136, with a surfacing of not more than 0.125 inch (3.18 mm) in thickness having a flame spread index not greater than 50 when tested in accordance with ASTM E84 or UL 723 shall be acceptable as noncombustible.

Committee Reason: The committee stated that the reason for the approval of the modification was that it clarifies the testing criteria better. The committee stated that the reasons for the approval of the proposal with the modification were: The proposal deletes the definition that contains technical requirements in it and then relocates the requirements for noncombustible materials that are consistent with the IBC with the same language into new sections in Chapter 5. Additionally, it also retains the added requirements from the WUIC regarding surface finish, materials, and materials close to the flues and heating appliances. (Vote: 13-0)

WUIC16-24

## WUIC17-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: The proposal places the fire-retardant treated wood roof covering in its own section, which are different types of materials than that of ignition-resistant building materials that are covered in the Section 503.2. This allows a reduction on listing all of these out in multiple sections and just reference Section 503.2 to make the language cleaner. (Vote: 12-0)

WUIC17-24

## WUIC18-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reason for the disapproval of the proposal was that although the change relocates the requirements to the right section, there is some work that needs to be done based upon the proponent's request to bring it back to the committee. (Vote: 12-0)

WUIC18-24

## WUIC19-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was based on the previous action and reason provided for WUIC18. (Vote: 12-0)

WUIC19-24

WUIC20-24

Committee Action: As Submitted

**Committee Modification:** 

2024 International Wildland Urban Interface Code

Revise as follows:

TABLE 503.1 IGNITION-RESISTANT WUI CONSTRUCTION CLASSES CLASSIFICATION

	FIRE HAZARD SEVERITY						
	Moderate Hazard		High Hazard		Extreme Hazard		
	Water Supply		Water Supply		Water Supply		
DEFENSIBLE SPACE <sup>a</sup>	Conforming <sup>b</sup>	Nonconforming <sup>C</sup>	Conforming <sup>D</sup>	Nonconforming <sup>C</sup>	Conforming <sup>D</sup>	Nonconforming <sup>C</sup>	
Less than required by Table 603.2	Class 2	Class 1	Class 1	Rated Class 1 <sup>d</sup>		NP	
					Class 1 <sup>d</sup>		
Complies with Table 603.2	Class 3	Class 2	Class 2	Class 1	Class 1		
						Class 1 <sup>d</sup>	
150% or more of distance required in Table 603.2	NR	Class 3	Class 3	Class 2	Class 2	Class 1	

	NP = Not Permitted; NR = Not Required; Class 1 = Ignition resistant construction in accordance with Section 504; Class 2 = Ignition resistant construction in accordance with Section 505; Class 3 = Ignition resistant construction in accordance with Section 506.
a.	Distance of defensible space provided on all sides of structure as required in Table 603.2.
b.	A conforming water supply complying with Section 404.
c.	A nonconforming water supply is any water system or source that does not comply with Section 404, including situations where there is no water supply for structure protection or fire suppression.
d.	In addition to Class 1 construction, the exterior walls shall comply with any of the following:
	1. Exterior walls having a fire-resistance rating of 1 hour or more with a noncombustible exterior wall covering.
	2. Exterior walls of heavy timber construction construction constructed of heavy timber members.
	Exterior walls of log wall construction.

Committee Reason: The committee stated that the reason for the approval of first modification was that it was appropriate to change the terminology from heavy timber member to heavy timber construction. The committee stated that the reason for the approval of the second modification was that it deleted ignition resistance in the footnotes and in the title. The committee stated that the reasons for the approval of the proposal with the modifications were: It clarifies the intent by replacing ignition resistant IR 1 through 3 with Class 1 through 3, making it now consistent with the charging section of Section 503.1 and Sections 504, 505 and 506. (Vote: 13-0)

WUIC20-24

## WUIC21-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it enhances the requirements of Table 503.1 by establishing a minimum construction class. (Vote: 13-0)

WUIC21-24

### WUIC22-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The action taken on WUIC21 that

added the IR 3 requirement with a 1.5 conforming defensible space in a moderate hazard location. The concern over the requirements for existing buildings and homes. It was noted that the non-conforming column would be useful to the code official in challenging situations when you are building in a location that has an existing infrastructure. Additionally, the impact on existing homes that could put a homeowner in a situation where they may never be able to do a renovation or do anything on their own because they cannot comply with the water supply requirements. (Vote: 9-4)

WUIC22-24

## WUIC23-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was the desire to retain the 1.5 conforming defensible space row in the table, which was noted to be a viable construction option. (Vote: 9-4)

WUIC23-24

### WUIC24-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The previous action taken on WUIC15 and the request of the proponent. (Vote: 13-0)

WUIC24-24

# WUIC25-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it clarifies the requirement is to have the fire-retardant-treated wood labeled instead of just being identified. (Vote: 13-0)

WUIC25-24

# WUIC26-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The opposition to adding a

prohibition in the code for these methods. There is no technical substantiation provided in the reason statement and it is being proposed to be added to the wrong section. (Vote: 12-1)

WUIC26-24

### WUIC27-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was the need for additional revisions to be made including the referenced standards in the modifications. (Vote: 12-0)

WUIC27-24

### WUIC28-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was the same as the reason for WUIC27. (Vote: 11-0)

WUIC28-24

## WUIC29-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

2024 International Wildland Urban Interface Code

**504.2.1 Roof** valleys flashings. Where provided, valley flashings shall run the full length of the valley and be not less than 0.019 inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley or a roof assembly classified as Class A when tested in accordance with ASTM E108 or UL 790.

505.2.1 Roof valleys-flashings. Where provided, valley flashings shall run the full length of the valley and be not less than 0.019-inch (0.48 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley or a roof assembly classified as Class A when tested in accordance with ASTM E108 or UL 790.

506.2.1 Roof valleys flashings. Where provided, valley flashings shall run the full length of the valley and be not less than 0.019-inch (

<u>0.48</u>0.44 mm) (No. 26 galvanized sheet gage) corrosion-resistant metal installed over a minimum 36-inch-wide (914 mm) underlayment consisting of one layer of 72-pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 running the full length of the valley

or a roof assembly classified as not less than Class B. when tested in accordance with ASTM E108 or UL 790.

**Committee Reason:** The committee stated that the reason for the approval of the modification was the improvement to the proposal by removing the references to the roof assembly classifications. The reason for the approval of the proposal was that it adds clarity to the code. (Vote: 11-0)

WUIC29-24

## WUIC30-24

Committee Action: As Submitted

#### **Committee Modification:**

2024 International Wildland Urban Interface Code

#### 504.2.2 Flame and ember protection at eaves.

For *roof assemblies* where the profile allows a space between the *roof covering* and *roof deck*, the space at the eave ends shall resist flames and embers by one or more of the following methods:

- 1. Firestopping Fireblocking of the space between the roof covering and the roof deck.
- 2. Installation of one layer of 72 pound (32.4 kg) mineral-surfaced, nonperforated cap sheet complying with ASTM D3909 over the combustible *roof deck*.

#### 505.2.2 Flame and ember protection at eaves.

For *roof assemblies* where the profile allows a space between the *roof covering* and *roof deck*, the space at the eave ends shall resist flames and embers by one or more of the following methods:

- 1. Firestopping Fireblocking of the space between the roof covering and the roof deck.
- Installation of one layer of cap sheet complying with ASTM D3909 over the combustible roof deck.

#### 506.2.2 Flame and ember protection at eaves.

For *roof assemblies* where the profile allows a space between the *roof covering* and the *roof deck*, the space at the eave ends shall resist flames and embers by one or more of the following methods:

- 1. Firestopping Fireblocking of the space between the roof covering and the roof deck.
- 2. Installation of one layer of cap sheet complying with ASTM D3909 over the combustible roof deck.

**Committee Reason:** The committee stated that the reason for the approval of the modification was the improvement by the replacement of the term to the more appropriate terminology of what type of protection was being required. The reason for the approval of the proposal was that it adds clarity to the code. (Vote: 12-0)

WUIC30-24

#### WUIC31-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it takes care of the technical problem noted in the proponent's reason statement and allows for the proper application of the reference standard. (Vote: 11-1)

WUIC31-24

### WUIC32-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal is that it removes an unnecessary provision that does not have technical merit. (Vote: 12-0)

WUIC32-24

# WUIC33-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it adds the appropriate terminology of classification. (Vote: 13-0)

WUIC33-24

## WUIC34-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that the revisions create a clear reference to the requirement and makes an addition to provide the defined term in the description. (Vote: 10-3)

WUIC34-24

## WUIC35-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The concern that it does not appear that it is far enough along for the committee to make a good consideration of whether the standard is going to be effective or not. The testimony indicated that there was a lot of things going back and forth within the standard development process that there is not agreement on. There was additional concern about the title of the standard and the scope of the requirement. (Vote: 12-1)

WUIC35-24

### WUIC36-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for disapproval of the proposal were: Concerns about the new proposed definition of exterior surfaces regarding weather-exposed surfaces. Specifically, that there are degrees of weather exposure including all sorts of different types of exposure including being subject to sun, rain, and moisture. There was also expressed concern about the 40-minute test requirement. (Vote: 13-0)

WUIC36-24

# WUIC37-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was based upon the testimony of proponent that previous actions address the concerns this proposal was attempting trying to address. (Vote: 13-0)

WUIC37-24

## WUIC38-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it provides needed clarity. This was based on the proponent's reason statement. (Vote: 8-0)

WUIC38-24

## WUIC39-24

Committee Action: As Submitted

Committee Reason: The committee stated that the reason for the approval of the proposal was that it necessary to work out how the specified material or flashing is to be installed in the locations listed and it is a minimal cost worthwhile detailed addition. (Vote: 11-2)

WUIC39-24

### WUIC40-24

Committee Action: As Modified by Committee

**Committee Modification:** 

2024 International Wildland Urban Interface Code

Revise as follows:

#### 504.6 Underfloor enclosure.

Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls in accordance with Section 504.5.

**Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are constructed with one of the following:

- 1. Exterior 1-hour fire-resistance-rated construction.
- 2. Noncombustible material.
- 3. Heavy timber or log wall construction.
- 4. Fire retardant treated wood labeled for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*. Ignition-resistant building materials complying with Section 503.2 on the exterior side.
- 5. Ignition-resistant building material on the exterior surface.

#### 505.6 Underfloor enclosure.

Buildings or structures shall have underfloor areas enclosed to the ground, with exterior walls in accordance with Section 505.5.

**Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are constructed with one of the following:

- 1. Exterior 1-hour fire-resistance-rated construction.
- 2. Noncombustible material.
- 3. Heavy timber or log wall construction.
- 4. Fire retardant treated wood labeled for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*. Ignition-resistant building materials complying with Section 503.2 on the exterior side.
- 5. Ignition resistant building material on the exterior surface.

#### 506.3 Underfloor enclosure.

Buildings or structures shall have underfloor areas enclosed to the ground with exterior walls.

**Exception:** Complete enclosure shall not be required where the underside of exposed floors and exposed structural columns, beams and supporting walls are constructed with one of the following:

1. Exterior 1-hour fire-resistance-rated construction.

- 2. Noncombustible material.
- 3. Heavy timber or log wall construction.
- 4. Fire retardant treated wood labeled for exterior use and meeting the requirements of Section 2303.2 of the *International Building Code*. Ignition-resistant building materials complying with Section 503.2 on the exterior side.
- 5. Ignition-resistant building material on the exterior surface.

**Committee Reason:** The committee stated that the reason for the approval of the modification was that it cleans up the section language and aligns it with the previous approvals. The committee stated that the reason for the approval of the proposal with the modification was that it is a reformatting that it makes the exceptions easier to read. (Vote: 13 -0)

WUIC40-24

### WUIC41-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it brings consistency to the code regarding any attachments to the building. (Vote: 13-0)

WUIC41-24

### WUIC42-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: It is premature to add this option if there is a standard under development. It would be good for that standard to be developed and testing to be done to see how the deck would affect the exterior wall. Also, the need to address the exterior glazing, vents, and door openings. (Vote: 12-1)

WUIC42-24

## WUIC43-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was based on the previous action and the proponent's recommendation. (Vote: 12-0)

WUIC43-24

#### WUIC44-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposals were: It is expanding options versus being more restrictive and because of that, it provides more options for the design. Additionally, it was noted that it is supported with the data provided. (Vote: 8-4)

WUIC44-24

## WUIC45-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The desire to have the revisions in two separate proposals. The underfloor space and noncombustible door there add value to the requirements. Concern about putting something in the code that in real life scenarios may not do anything. It includes all types of doors including glass doors which is not appropriate. The committee would like to see some more evidence of the doors and the fire consuming the structure. (Vote: 12-1)

WUIC45-24

### WUIC46-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that the testimony all supported the fact that gaps in garage door openings is a problem that needs fixing, and the nationally recognized standards can be used in the new requirements to protect these gaps. (Vote: 12-1)

WUIC46-24

## WUIC47-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was this is a very inexpensive way of making sure that people can evacuate when the utility power is out. (Vote: 10-2)

WUIC47-24

#### WUIC48-24

Committee Action: As Submitted

Committee Reason: The approval of the proposal was based on the proponent's reasons statement. (Vote: 11-2)

WUIC48-24

#### WUIC49-24

Committee Action: As Modified by Committee

#### **Committee Modification:**

2024 International Wildland Urban Interface Code

#### 504.10 Vents.

Where provided, ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 504.10.1 or Section 504.10.2.

#### Revise as follows:

#### 504.10.1 Performance requirements.

Ventilation openings shall be fully covered with listed vents, tested in accordance with ASTM E2886, to demonstrate compliance with all the following requirements:

- 1. There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
- 2. There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
- 3. The maximum temperature of the unexposed side of the vent shall not exceed 662°F (350°C).

Joints Gaps around such vents shall be sealed with sealants complying with ASTM E814 or ASTM E1966 and in accordance with vent manufacturer installation instructions to avoid flame intrusion through the gaps joints.

#### 504.10.2 Prescriptive requirements.

Where provided, attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical or horizontal surfaces and vents through roofs shall not exceed 144 square inches  $(0.0929 \text{ m}^2)$  each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed  $^{1}/_{8}$  inch (3.2 mm) or shall be designed and approved to prevent flame or ember penetration into the structure.

#### 505.10 Vents.

Where provided, ventilation openings for enclosed attics, gable ends, ridge ends, under eaves and cornices, enclosed eave soffit spaces, enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters, underfloor ventilation, foundations and crawl spaces, or any other opening intended to permit ventilation, either in a horizontal or vertical surface, shall be in accordance with Section 505.10.1 or Section 505.10.2.

#### 505.10.1 Performance requirements.

Ventilation openings shall be fully covered with listed vents, tested in accordance with ASTM E2886, to demonstrate compliance with all the following requirements:

- 1. There shall be no flaming ignition of the cotton material during the Ember Intrusion Test.
- 2. There shall be no flaming ignition during the Integrity Test portion of the Flame Intrusion Test.
- 3. The maximum temperature of the unexposed side of the vent shall not exceed 662°F (350°C).

<del>Joints</del> <u>Gaps</u> around such vents shall be sealed <del>with sealants complying with ASTM E814 or ASTM E1966 and i</del>n accordance with vent manufacturer installation instructions to avoid flame intrusion through the <u>gaps</u> <del>joints</del>.

#### 505.10.2 Prescriptive requirements.

Where provided, attic ventilation openings, foundation or underfloor vents, or other ventilation openings in vertical or horizontal surfaces and vents through roofs shall not exceed 144 square inches (0.0929 m<sup>2</sup>) each. Such vents shall be covered with noncombustible corrosion-resistant mesh with openings not to exceed 1/8 inch (3.2 mm) or shall be designed and approved to prevent flame or ember penetration into the structure.

<del>ASTM</del>	ASTM International 100 Barr Harbor Drive, P.O. Box C700West Conshohoeken PA 19428 2959					
ASTM E814 2013A(2017) Standard Test			and for Fire Tests of Penetration Firestop Systems			
ASTM E1966-15 (Reapproved 2019)			Standard Test Method for Fire Resistive Joint Systems			

**Committee Reason:** The proposal with the modifications was approved based on the improvement to the code language and that was more appropriate to change the description from joints to gaps. (Vote: 13-0)

WUIC49-24

### WUIC50-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it removes the prohibitive language for venting which common practice and would already be required to be protected by other sections of his code. (Vote: 13 -0)

WUIC50-24

## WUIC51-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was that it is an editorial change to bring into compliance what is already acceptable practice. (Vote: 13-0)

WUIC51-24

## WUIC52-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: It is a substantial move in the right direction to remove exposure hazards. It doesn't prohibit you from having the opening towards the main structure, it just requires you to treat those openings the same as you would on the main structure itself. It is also data supported with testing information that is consistent with other proposals. (Vote: 9-4)

WUIC52-24

## WUIC53-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: Based on the action and comments on WUIC54. The committee noted that they had a desire to see all these related proposals correlated into one package that could come back in the next cycle. (Vote: 11-2)

WUIC53-24

### WUIC54-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The comparison between California and the many other states that have just adopted the code and what their results are. There is a lot of information in the proposal and there was a lot of attempts at making modifications that the committee really did not want to try to do. The desire to see the proposal, along with what has been already approved, being combined into the proposal in some way, shape or form, or take out those things that has already addressed. The reason for this is that the proposal is confusing, and it is difficult to prepare a position for it with all the other changes being made by other proposals. The code is not broken the way it is now. There are enhancements forthcoming and going through and affordable housing, which this country desperately needs, especially for lower to median incomes, this proposal works against these objectives. Using these standards, a lot of multifamily housing is to the point where you have already got automatic fire sprinklers and you are just adding more and more building standards on top, and it is tough to compete. It just has to be added a little bit slower or it is really going to be tough for affordable housing if they have to build in these areas and at the same time try to be cost effective, keep rents down for residents. (Vote: 11-2)

WUIC54-24

## WUIC55-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The concern about the use of the code in states other than California and the negative impact of limiting the construction options in these locations with different types and levels of hazard. The desire to have more data to reinforce the deletions. The preference is to make smaller incremental changes

instead of larger wholesale changes for the locations that are a little slower in adopting the code. (Vote: 11-2)

WUIC55-24

## WUIC56-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval for the proposal was that it is a simple incremental change within the framework of addressing requirements based on the relative hazard. (Vote: 12-0)

WUIC56-24

### WUIC57-24

Committee Action: As Submitted

**Committee Modification:** 

2024 International Wildland Urban Interface Code

#### 507.1 General.

The *roof covering* on buildings or structures in existence prior to the adoption of this code that are replaced or have 25 percent or more replaced in a 12-month period shall be replaced with a *roof covering* required for new construction in accordance with Sections 504.2 and 504.2.1. All repairs or maintenance of a roof <u>assembly eovering</u> with a Class A fire classification shall be accomplished to maintain the Class A fire classification.

**Committee Reason:** The approval of the modification by the committee was based on the improvement to section language to use appropriate terminology. The approval of the proposal was based on the proponent's reason statement as discussed. (Vote: 7-5)

WUIC57-24

## WUIC58-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was the need to retain the 25 percent threshold and to further clarify the requirement. (Vote: 13-0)

WUIC58-24

# WUIC59-24

Committee Action: As Submitted

**Committee Modification:** 

2024 International Wildland Urban Interface Code

#### 602.1 General.

An approved automatic sprinkler system shall be installed in all occupancies in new buildings required to meet the requirements for Class 1 ignition-resistant construction in Chapter 5. The installation and maintenance of the automatic sprinkler systems shall be in accordance with the *International Building Code* or *International Residential Code*, as applicable.

**Committee Reason:** The approval of the modification was based on agreement that this proposal is focused on installation versus maintenance. The committee stated that the approval of the proposal with the modification was that it provides direction to the more specific reference to ICC codes instead of recognized standards. (Vote: 13-0)

WUIC59-24

### WUIC60-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: Agreement that the requirements might be more appropriately located in an appendix. There was a request from the committee to see some more information and reasoning with regards to some of the prescriptive requirement such as the spacing. The need for language cleanup that could be done throughout the proposal that was brought up in the testimony. The cost impact statement was questioned and that there is a need for more information. The intent is going in the right direction, but there is a need to see a little bit more correlation with the vegetation management plan and the fire protection plan. (Vote: 12-1)

WUIC60-24

## WUIC61-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reason for the approval of the proposal was the term needs to be defined and it replaces the previous term which is an improvement. (Vote: 12-1)

WUIC61-24

WUIC62-24

Committee Action: As Modified by Committee

**Committee Modification:** 

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#### 603.2.2.1 New Trees.

Planting of new trees shall be permitted within the defensible space provided they are separated or planted so that the tree's drip line at maturity is a minimum of 10 feet (3048 mm) from adjacent trees, overhead electrical facilities or unmodified vegetation and combustible structures. The 10-foot measurement is derived from the outreach of the branch at the mature width.

**Committee Reason:** The committee stated that the reasons for the approval of the modification and the proposal were: based on the proponent's reason statement, it enhances fire safety, and it gives guidance over the life of a property. (Vote: 12-0)

WUIC62-24

### WUIC63-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: The validity of the research in the proponent's reason statement and that it aligns with the other related proposals involving combustible materials. (Vote: 9-3)

WUIC63-24

## WUIC64-24

Committee Action: As Submitted

#### Committee Reason:

The committee stated that the reasons for the approval of the proposal were: Based on the previous action on WUIC63 that addresses combustible mulch and other previous changes. It was noted to be important for structural integrity to break up the continuity to ensure that it does not reach the home. Personal experience in past wildfires showed that this was found to be a significant contributor to the number of homes that were lost.

(Vote: 13-0)

WUIC64-24

## WUIC65-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The language is vague and may be misinterpreted. Based on the previous action and preference for WUIC61. (Vote: 10-3)

WUIC65-24

#### WUIC66-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reason for the disapproval of the proposal was that it might take the requirement further than it was intended based on the previous action on WUIC61. (Vote: 13-0)

WUIC66-24

## WUIC67-24

Committee Action: As Submitted

**Committee Modification:** 

2024 International Wildland Urban Interface Code

Revise as follows:

#### 606.3 Clear Area.

LP-gas installations shall be surrounded by a 10-foot (3048 mm) wide clear area to bare mineral soil. An additional 10 feet (3048 mm) beyond the bare mineral soil is permitted to have vegetation provided it is fire smart vegetation.

**Committee Reason:** The committee stated that the reason for the approval of the modification was that it provides clarity to the requirement. This is the result of removing the wording that may be difficult to enforce. The stated reason for the approval of the proposal with the modification was that it is consistent with the NFPA 58, and it is needed in WUI areas based on experiences. (Vote: 13-0)

WUIC67-24

## WUIC68-24

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: The setback distance in relation to code requirements needs to be further studied. Issues with planning, zoning, and limiting affordable housing options. The term practical is not a good term to be using in the code. The list of possible solutions to reduce the setback is problematic. It does not specifically say who approves the reduction. There is no definition of hardscape landscaping, and it should state that the requirement applies to new buildings. (Vote: 13-0)

WUIC68-24

WUIC69-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: The subject is a land use issue that is better resolved at a local level by stakeholders as to what they need to do to make the community safe. There were some noted issues with the language including construction fuel breaks. It should be considered in a new subdivision as a possibility on new projects. It would result in the local jurisdiction having some liability. (Vote; 12-1)

WUIC69-24

### WUIC70-24

Errata: This proposal includes published errata https://www.iccsafe.org/wp-content/uploads/2024-Group-A-Consolidated-Monograph-Updates.pdf

Committee Action: Disapproved

Committee Reason: The committee stated that the reasons for the disapproval of the proposal were: It was noted by the committee that it is not the intent of the existing conditions requirements in Section 102.8 for all existing properties to comply with the proposed new conditions, whether they were subject to this code or not when they were originally built. There are a few other sections like ground cover that could be better aligned with the other requirements that have already been approved in other proposals. (Vote: 10-3)

WUIC70-24

### WUIC71-24

Committee Action: Disapproved

**Committee Reason:** The committee stated that the reasons for the disapproval of the proposal were: Concern that the framework outline in the proposal is a lot more sophisticated than is currently in the existing appendix and how it relates back to the severity and additionally how it is treated elsewhere in the code. Concern for states like New York that have a statewide mutually globalization plan and how that is calculated into this, especially the value of structural firefighting versus wildland firefighting abilities. (Vote: 12-1)

WUIC71-24

## WUIC72-24

Committee Action: As Submitted

Committee Reason: The committee stated that the reasons for the approval of the proposal were: It updates the appendix with new information and brings it up to current criteria. It is an information only existing appendix that is being updated with current terminology. It is an appropriate change regarding providing information and as an educational piece, it also allows ICC as a code organization to modify it as the code continues to be modified to make sure it aligns the two groups together. It has a lot of credibility because it's been vetted by organizations that have expertise and it correlates with the intent of the code. (Vote: 11-2)

WUIC72-24

# WUIC73-24

Committee Action: As Submitted

**Committee Reason:** The committee stated that the reasons for the approval of the proposal were: The proponent's reason statement and based on the combined previous actions on the proposals this cycle, the existing appendix is broken and needs to be deleted as it currently exists. (Vote: 13-0)

WUIC73-24