

IIAR

International Institute of Ammonia Refrigeration
1001 N. Fairfax Street, Suite 503
Alexandria, VA 22314

Standard reference number	Title	Referenced in code section number
IIAR-2—2014	Equipment, Design and Installation of Closed-Circuit Ammonia Mechanical Refrigerating Systems606.12.1.1
IIAR-7—2013	Developing Operating Procedures for Closed-Circuit Ammonia Mechanical Refrigerating Systems606.12.1.1

IKECA

International Kitchen Exhaust Cleaning Association
100 North 20th Street, Suite 400
Philadelphia, PA 19103

Standard reference number	Title	Referenced in code section number
C10—2011 ANSI/IKECA	Standard for Cleaning of Commercial Kitchen Exhaust Systems609.3.3.2

ISO

International Organization for Standardization (ISO)
ISO Central Secretariat
1 ch, de la Voie-Creuse, Case postale 56
CH-1211 Geneva 20, Switzerland

Standard reference number	Title	Referenced in code section number
ISO 8115—86	Cotton Bales—Dimensions and Density	Table 2704.2.2.1, Table 5003.1.1(1)

NEMA

National Electrical Manufacturer’s Association
1300 N. 17th Street, Suite 1752
Rosslyn, VA 22209

Standard reference number	Title	Referenced in code section number
250—2003	Enclosures for Electrical Equipment (1,000 Volt Maximum)6005.2

NFPA

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471

Standard reference number	Title	Referenced in code section number
02—16	Hydrogen Technologies Code2309.3.1.1, 2309.3.1.2, 5301.1, 5307.3, 5801.1
11—13	Standard for Low-, Medium- and High-expansion Foam904.7, 5704.2.9.2.2
12—11	Standard on Carbon Dioxide Extinguishing Systems	Table 901.6.1, 904.8, 904.12
12A—09	Standard on Halon 1301 Fire Extinguishing Systems	Table 901.6.1, 904.9

Modifications to NFPA 13, 2016, from the 2016 *California Fire Code (CFC)*

3206.4.1, 3206.9, 3207.2, 3207.2.1, 3208.2.2, 3208.2.2.1,
3208.4, 3210.1, 3401.1, 5104.1, 5104.1.1, 5106.5.7,
5704.3.3.9, Table 5704.3.6.3(7),
5704.5.7.5.1, 5704.5.8.4

***NFPA 13, Amended Sections as follows:**

Revise Section 2.2 and add publications as follows:

2.2 NFPA Publications.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems*, 2013 California edition.

Revise Section 8.15.1.2.15 as follows:

8.15.1.2.15 Exterior columns under 10 ft² (0.93m²) in total area, formed by studs or wood joist, with no sources of ignition within the column, supporting exterior canopies that are fully protected with a sprinkler system, shall not require sprinkler protection.

Add new Sections 8.15.5.6.1 as follows:

8.15.5.6.1 The sprinkler required at the top and bottom of the elevator hoistway by 8.15.5.6 shall not be required where permitted by Chapter 30 of the California Building Code.

Revise Section 8.15.7.1* as follows:

8.15.7.1* Unless the requirements of 8.15.7.2 or 8.15.7.3 are met, sprinklers shall be installed under exterior roofs, canopies, porte-cochere, balconies, decks, or similar projections exceeding 4 ft (1.2 m) in width.

Revise Section 8.15.7.2* as follows:

8.15.7.2* Sprinklers shall be permitted to be omitted where the exterior canopies, roofs, portecocheres, balconies, decks, or similar projections are constructed with materials that are noncombustible, limited-combustible, or fire retardant treated wood as defined in NFPA 703, *Standard for Fire Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials*.

Delete Section A.8.15.7.2 of Annex

Revise Section 8.15.7.3

8.15.7.3 Sprinklers shall be permitted to be omitted from below the canopies, roofs, balconies, decks, or similar projections are combustible construction, provided the exposed finish material on the roof, or canopy is noncombustible, limited-combustible, or fire retardant treated wood as defined in NFPA 703, *Standard for Fire Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials*, and the roofs, or canopies contains only sprinklered concealed spaces or any of the following unsprinklered combustible concealed spaces:

- (1) Combustible concealed spaces filled entirely with noncombustible insulation.
- (2) Light or ordinary hazard occupancies where noncombustible or limited-combustible ceilings are directly attached to the bottom of solid wood joists so as to create enclosed joist spaces 160 ft³ (4.5 m³) or less in volume, including space below insulation that is laid directly on top or within the ceiling joists in an otherwise sprinklered attic [See 11.2.3.1.5.2(9)].
- (3) Concealed spaces over isolated small roofs, or canopies not exceeding 55 ft² (5.1 m²).

Delete language to section 8.15.7.4 and reserve section number.

8.15.7.4 Reserved.

Revise Annex Section A.8.15.7.5 as follows:

A.8.15.7.5 The presence of planters, newspaper machines and *similar items*, should not be considered storage.

Add Section 8.15.7.6 as follows:

8.15.7.6 Sprinklers may be omitted for following structures:

- (1) Solar photovoltaic panel structures with no use underneath. Signs may be provided, as determined by the enforcing agency prohibiting any use underneath including storage.
- (2) Solar photovoltaic (PV) panels supported by framing that have sufficient uniformly distributed and unobstructed openings throughout the top of the array (horizontal plane) to allow heat and gases to escape, as determined by the enforcing agency.

Modifications to NFPA 13, 2016, from the 2016 California Fire Code (CFC)

Add new Sections 8.16.1.1.4 and 8.16.1.1.5 as follows:

8.16.1.1.4 Where a system includes floor control valves, a hydraulic design information sign containing information for the floor shall be provided at each floor control valve. A hydraulic design information sign shall be provided for each area calculated. The installing contractor shall identify a hydraulically designed sprinkler system with a permanently marked weatherproof metal or rigid plastic sign secured with corrosion resistant wire, chain, or other approved means. Such signs shall be placed at the alarm valve, dry pipe valve, preaction valve, or deluge valve supplying the corresponding hydraulically designed area.

8.16.1.1.5 Control valves, check valves, drain valves, antifreeze valves shall be readily accessible for inspection, testing, and maintenance. Valves located more than 7 feet above the finished floor shall be provided with a means of opening and closing the valve from the floor level.

Add new Sections 8.16.1.6, 8.16.1.6.1, 8.16.1.6.1.1, 8.16.1.6.1.2, 8.16.1.6.1.3, 8.16.1.6.2, as follows:

8.16.1.6 Sectional Valves.

8.16.1.6.1 Private fire service main systems shall have sectional control valves at appropriate points in order to permit sectionalizing the system in the event of a break or for the making of repairs or extensions.

8.16.1.6.1.1 Sectional control valves are not required when the fire service main system serves less than six fire appurtenances.

8.16.1.6.1.2 Sectional control valves shall be indicating valves in accordance with Section 6.6.1.3.

8.16.1.6.1.3 Sectional control valves shall be located so that no more than five fire appurtenances are affected by shut-down of any single portion of the fire service main. Each fire hydrant, fire sprinkler system riser, and standpipe riser shall be considered a separate fire appurtenance. In-rack sprinkler systems shall not be considered as a separate appurtenance.

8.16.1.6.1.4 The number of fire appurtenances between sectional control valves is allowed to be modified by the authority having jurisdiction.

8.16.1.6.2 A valve shall be provided on each bank where a main crosses a body of water or outside the building foundation(s) where the main or section of main runs under a building.

Add new Section 9.1.3.9.1.1 as follows:

9.1.3.9.1.1 Powder-driven studs used for attaching hangers to the building structure are prohibited in Seismic design Categories C, D, E and F.

Revise Section 9.3.5.11.4 as follows:

9.3.5.11.4 Where threaded pipe is used for sway bracing, it shall have a wall thickness of not less than Schedule 40.

Replace Section 9.3.5.12.5 as follows:

9.3.5.12.5 Lag screws or power-driven fasteners shall not be used to attach braces to the building structure.

Replace Section 9.3.5.12.6 as follows:

9.3.5.12.6 Fastening methods other than those identified in 9.3.5.12 shall not apply to other fastening methods, which shall be acceptable for use if certified by a registered professional engineer to support the loads determined in accordance with the criteria in 9.3.5.9. Calculations shall be submitted to the authority having jurisdiction.

Revise Section 9.3.5.12.8.4 as follows:

9.3.5.12.8.4 Concrete anchors other than those shown in Table 9.3.5.12.2(a) through Table 9.3.5.12.2(f) and identified in 9.3.5.11.11 shall be acceptable for use where designed in accordance with the requirements of the building code and certified by a registered professional engineer.

Revise Section 9.3.6.1(3) as follows:

9.3.6.1*(3) No. 12, 440 lb (200 Kg) wire installed at least 45 degrees from the vertical plane and anchored on both sides of the pipe. Powder-driven fasteners for attaching restraint is allowed to be used provided that the restraint component does not support the dead load.

Revise Section 10.4.3.1.1 as follows:

10.4.3.1.1 Pipe joints shall not be located under foundation footings. The pipe under the building or building foundation shall not contain mechanical joints.

Exceptions:

1. Where allowed in accordance with Section 10.4.3.2.
2. Alternate designs may be utilized where designed by a registered professional engineer and approved by the enforcing agency.

Modifications to NFPA 13, 2016, from the 2016 *California Fire Code (CFC)*

REFERENCED S

Revise Section 11.2.3.1.5.2(9) as follows:

11.2.3.1.5.2(9) Exterior columns under 10 ft² (0.93m²) in total area, formed by studs or wood joist, *with no sources of ignition within the column*, supporting exterior canopies that are fully protected with a sprinkler system.

Revise Section 11.2.3.2.3.1 as follows:

11.2.3.2.3.1 Where listed quick-response sprinklers, excluding extended coverage quick-response sprinklers, are used throughout a system or portion of a system having the same hydraulic design basis, the system area of operation shall be permitted to be reduced without revising the density as indicated in Figure 11.2.3.2.3.1 when all of the following conditions are satisfied:

- (1) Wet pipe system
- (2) Light hazard occupancy
- (3) 20 ft (6.1 m) maximum ceiling height
- (4) There are no unprotected ceiling pockets as allowed by 8.6.7 and 8.8.7 exceeding 32 ft² (3 m²)

Revise Section 11.2.3.2.3.2 as follows:

11.2.3.2.3.2 The number of sprinklers in the design area shall never be less than *seven*.

Revise Section 12.1.1.2 as follows:

12.1.1.2 Early suppression fast-response (ESFR) sprinklers shall not be used in buildings with automatic heat or smoke vents unless the vents use a standard-response operating mechanism *with a minimum temperature rating of 360°F (182°C) or 100°F (56°C) above the operating temperature of the sprinklers, whichever is higher*.

Revise Section 25.1 as follows:

25.1 Approval of Sprinkler Systems and Private Fire Service Mains. The installing contractor shall do the following:

- (1) Notify the authority having jurisdiction and the property owner or property owner's authorized representative of the time and date testing will be performed.
- (2) Perform all required testing (*see Section 25.2*).
- (3) Complete and sign the appropriate contractor's material and test certificate(s) (*see Figure 25.1*).
- (4) Remove all caps and straps prior to placing the sprinkler system in service.
- (5) *Upon system acceptance by the authority having jurisdiction a label prescribed by Title 19 California Code of Regulations, Chapter 5 shall be affixed to each system riser.*

Revise Section 25.4 as follows:

25.4 Instructions. The installing contractor shall provide the property owner or the property owner's authorized representative with the following:

- (1) All literature and instructions provided by the manufacturer describing proper operation and maintenance of any equipment and devices installed.
- (2) NFPA 25, *Standard for the Inspection, testing, and maintenance of Water-Based Fire Protection Systems, 2013 California Edition*.
- (3) *Title 19, California Code of Regulations, Chapter 5, "Fire Extinguishing Systems."*

Revise Section 25.5.1 as follows:

25.5.1 The installing contractor shall identify a hydraulically designed sprinkler system with a permanently marked weatherproof metal or rigid plastic sign secured with corrosion resistant wire, chain, or other approved means. Such signs shall be placed at the alarm valve, dry pipe valve, preaction valve, or deluge valve supplying the corresponding hydraulically designed area. *Pipe schedule systems shall be provided with a sign indicating that the system was designed and installed as a pipe schedule system and the hazard classification(s) included in the design.*

Revise Section 25.5.2 as follows:

25.5.2 The sign shall include the following information:

- (1) Location of the design area or areas
- (2) Discharge densities over the design area or areas
- (3) *Required flow and pressure of the system at the base of the riser.*

Modifications to NFPA 13 & 13D, 2016, from the 2016 California Fire Code (CFC)

NFPA—continued

- (4) Occupancy classification or commodity classification and maximum permitted storage height and configuration
- (5) Hose stream allowance included in addition to the sprinkler demand
- (6) The name of the installing contractor
- (7) *Required flow and pressure of the system at the water supply source.*
- (8) *Required flow and pressure of the system at the discharge side of the fire pump where a fire pump is installed.*
- (9) *Type or types and number of sprinklers or nozzles installed including the orifice size, temperature rating, orientation, K-Factor, sprinkler identification number (SIN) for sprinkler heads when applicable, and response type.*
- (10) *The minimum discharge flow rate and pressure required from the hydraulically most demanding sprinkler.*
- (11) *The required pressure settings for pressure reducing valves.*
- (12) *For deluge sprinkler systems, the required flow and pressure at the hydraulically most demanding sprinkler or nozzle.*
- (13) *The protection area per sprinkler based on the hydraulic calculations.*
- (14) *The edition of NFPA 13 to which the system was designed and installed.*

Revise Section 25.6.1 as follows:

25.6.1 The installing contractor shall provide a general information sign used to determine system design basis and information relevant to the inspection, testing, and maintenance requirements required by NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 2013 California Edition*.

13D—16

Standard for the Installation of Sprinkler Systems in One- and Two-family Dwellings and Manufactured Homes as amended* 903.3.1.3. 903.3.5.1.1

*NFPA 13D, Amended Sections as follows:

Revise Section 6.2.2 to read as follows:

6.2.2 Where a well, pump, tank or combination thereof is the source of supply for a fire sprinkler system, the water supply shall serve both domestic and fire sprinkler systems, and the following shall be met:

- (1) A test connection shall be provided downstream of the pump that creates a flow of water equal to the smallest sprinkler on the system. The connection shall return water to the tank.
- (2) Any disconnecting means for the pump shall be approved.
- (3) A method for refilling the tank shall be piped to the tank.
- (4) A method of seeing the water level in the tank shall be provided without having to open the tank.
- (5) The pump shall not be permitted to sit directly on the floor.

Add new Section 6.2.2.1 as follows:

6.2.2.1 Where a fire sprinkler system is supplied by a stored water source with an automatically operated means of pressurizing the system other than an electric pump, the water supply may serve the sprinkler system only.

Add new Section 6.2.4 as follows:

6.2.4 Where a water supply serves both domestic and fire sprinkler systems, 5 gpm (19 L/min) shall be added to the sprinkler system demand at the point where the systems are connected, to determine the size of common piping and the size of the total water supply requirements where no provision is made to prevent flow into the domestic water system upon operation of a sprinkler.

Revise Section 8.3.4 as follows:

8.3.4* Sprinklers shall not be required in detached garages, open attached porches, carports with no habitable space above, and similar structures.

Add new Sections 8.3.10 and 8.3.10.1 as follows:

8.3.10 Solar photovoltaic panel structures

8.3.10.1 Sprinklers shall be permitted to be omitted from the following structures:

- (1) Solar photovoltaic panel structures with no use underneath. Signs may be provided, as determined by the enforcing agency prohibiting any use underneath including storage.
- (2) Solar photovoltaic (PV) panels supported by framing that have sufficient uniformly distributed and unobstructed openings throughout the top of the array (horizontal plane) to allow heat and gases to escape, as determined by the enforcing agency.

Modifications to NFPA 13R, 2016, from the 2016 California Fire Code (CFC)

REFERENCE

NFPA—continued

Installation of Sprinkler Systems in Residential Occupancies
up to and including Four Stories in Height *as amended* 903.3.1.2, 903.3.5.1.1, 903.3.5.1.2, 903.4

**NFPA 13R, Amended Sections as follows:*

Revise Section 2.2 and add publications as follows:

2.2 NFPA Publications.

NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 2013 California edition.

Add new Sections 6.6.10 and 6.10.1 as follows:

6.6.10 Solar photovoltaic panel structures

6.6.10.1 *Sprinklers shall be permitted to be omitted from the following structures:*

- (1) *Solar photovoltaic panel structures with no use underneath. Signs may be provided, as determined by the enforcing agency prohibiting any use underneath including storage.*
- (2) *Solar photovoltaic (PV) panels supported by framing that have sufficient uniformly distributed and unobstructed openings throughout the top of the array (horizontal plane) to allow heat and gases to escape, as determined by the enforcing agency.*

Revise Section 11.4 as follows:

11.4 Instructions.

The installing contractor shall provide the property owner or the property owner's authorized representative with the following:

- (1) *All literature and instructions provided by the manufacturer describing proper operation and maintenance of any equipment and devices installed.*
- (2) *NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems 2013 California Edition and Title 19, California Code of Regulations, Chapter 5.*
- (3) *Once the system is accepted by the authority having jurisdiction a label as prescribed by Title 19, California Code of Regulations, Chapter 5, shall be affixed to each system riser.*

14—13

Installation of Standpipe and Hose System, *as amended** 905.2, 905.3.4, 905.4.2, 905.6.2, 905.8

**NFPA 14, Amended Sections as follows:*

Replace Section 6.3.7.1

6.3.7.1 *System water supply valves, isolation control valves, and other valves in fire mains shall be supervised in an approved manner in the open position by one of the following methods:*

- (1) *Where a building has a fire alarm system or a sprinkler monitoring system installed, the valve shall be supervised by:*
 - (a) *a central station, proprietary, or remote supervising station, or*
 - (b) *a local signaling service that initiates an audible signal at a constantly attended location.*
- (2) *Where a building does not have a fire alarm system or a sprinkler monitoring system installed, the valve shall be supervised by:*
 - (a) *Locking the valves in the open position, or*
 - (b) *Sealing of valves and an approved weekly recorded inspection where valves are located within fenced enclosures under the control of the owner.*

15—12

Water Spray Fixed Systems for Fire Protection 5704.2.9.2.3

16—15

Installation of Foam-water Sprinkler and Foam-water Spray Systems 904.7, 904.11

17—09

Dry Chemical Extinguishing Systems Table 901.6.1, 904.6, 904.11

17A—09

Wet Chemical Extinguishing Systems Table 901.6.1, 904.5, 904.11

20—16

Installation of Stationary Pumps for Fire Protection 913.1, 913.2, 913.5.1, 913.6

22—13

Water Tanks for Private Fire Protection 507.2.2

24—16

Installation of Private Fire Service Mains and Their Appurtenances: *as amended** 507.2.1, 2809.5