NSF/ANSI International Standard for Food Equipment —

Commercial refrigerators and freezers — refrigeration equipment

1 General

1.4 Measurement

Decimal and SI conversions provided parenthetically shall be considered equivalent. Metric conversions and significant figure rounding have been made according to IEEE/ASTM SI 10.

Reason: At the 2011 annual Joint Committee meeting, the proposed modification was motioned as written to ballot (FE-2010-12).

2 Normative references

The following documents contain provisions that, through reference, constitute provisions of this NSF/ANSI Standard. At the time this standard was balloted, the editions listed below were valid. All documents are subject to revision, and parties are encouraged to investigate the possibility of applying the most recent editions of the documents indicated below. The most recent published edition of the document shall be used for undated references.

Reason: Language clarifies undated references. This statement is being added to all NSF Standards.


ANSI/ASHRAE 72 -2005, Method of Testing Commercial Refrigerators and Freezers


ANSI/UL 197 — 2004, Standard for Commercial Electric Cooking Appliances

1 American National Standards Institute, 23 West 23rd Street, New York, NY 10036 www.ansi.org


3 Underwriters Laboratories, Inc., 33 Pfingsten Road, Northbrook, IL 60062 www.ul.com
ASHRAE Refrigeration Handbook 4

ASTM A653/A653M, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process, Vol. 01.06 4

ASTM A924/A924M, Specification for General Requirements Steel Sheet, Metallic-Coated by the Hot Dip Process, Vol. 01.06 6


NSF/ANSI 2. Food equipment

NSF/ANSI 51. Food equipment materials

NSF/ANSI 170. Glossary of food equipment terminology

3 Definitions

Terms used in this Standard that have special technical meaning are defined in NSF/ANSI 170.

4 Materials

4.6 Storage shelving

Storage shelving that is manufactured, in whole or in part, of metallic materials and is intended for use in refrigerator or freezer interiors shall meet the corrosion resistance requirements in NSF/ANSI 51 section 8.

4.6.1 Shelving manufactured of stainless steel in the AISI SAE 200 or 300 series, or of aluminum of the alloy series/designations listed in NSF/ANSI 51 section 4.2.2.1 and 4.2.2.2, is exempt from corrosion resistance requirements.

4.6.2 The coating requirements in section 6 of NSF/ANSI 51 shall also apply to storage shelving.

5 Design and construction

6 ASTM International, 100 Barr Harbor Dr., West Conshohocken, PA 19428 www.astm.org

5 British Standard, 389 Chiswick High Road, London W4 4AL United Kingdom www.bsi-global.com
5.3 Joints and seams

5.3.1 Permanent joints and seams in a food or splash zone shall be sealed and smooth. Seams formed by the attachment of breaker strips shall be exempt from this requirement.

5.3.2 Permanent joints and seams in a non-food zone shall be closed. Welded joints and seams in a non-food zone shall be deburred.

5.3.3 Joints formed by overlapping sheets of material shall not create upwardly facing horizontal ledges.

5.3.4 Sealants shall only be used to seal joints and seams that are structurally sound and are less than \( \frac{1}{8} \) in (0.13 in, 3.2 mm) wide before sealing. Sealants may be used to fill spaces around collars, grommets, and service connections. Sealants shall not be used in place of grommets or gaskets.

5.3.5 Solder and other fillet material shall be smooth and securely bonded to its substrate so that it will not crack or chip. All flux and catalytic material shall be removed.

5.3.6 In addition to conforming to 5.3.1, permanent seams located below the liquid overflow level of a food storage compartment shall be filled and made flush with the adjoining surfaces.

Reason: Relocated to be consistent with boilerplate format.

5.3 5.4 Fasteners

5.3 5.4.1 Fasteners shall not be used in areas having direct food contact.

5.3 5.4.2 Fasteners shall be easily cleanable. Fasteners meeting this requirement include, but are not limited to, slot-head and Phillips-head screws, hex-head fasteners, and flush-break pop rivets. Hex-key screws and non flush-break pop rivets may be used in a splash zone or non-food zone provided that the heads are capped or filled.

5.3 5.4.3 Fasteners shall be tight-fitting to the surface except as permitted in 5.3.4.

5.3 5.4.4 No more than one locking washer and one flat washer shall be used per fastener head. The diameter of the washer adjacent to the fastening surface shall not be less than the diameter of the washer under the fastener head. External-tooth lock washers shall not be used.

5.3 5.4.5 There shall be no exposed threads, projecting screws, or studs in a food or splash zone. There shall be no more than 2.5 exposed threads or \( \frac{1}{8} \) in (0.25 in, 6.4 mm) of exposed threads, whichever is less, in a non-food zone. Exposed threads on electrical cord strain relief devices in a nonfood zone shall be exempt.

5.3 5.4.6 The sharp point of a fastener shall not be exposed.

5.3 5.4.7 Fasteners used in food storage compartments shall be removable. Rivets and other non-removable fasteners may be used:
on electrical components and their housings; and

– in refrigerators and freezers intended solely for the storage or display of packaged foods (e.g., beverage coolers, self-service display refrigerators and freezers).

**Reason:** This requirement is applicable to refrigerators and freezers. This change is made throughout the document but will only be noted here (FE-2010-14).

### 5.5 Insulation

5.5.1 Insulated spaces in a food and splash zone shall be sealed. Insulated spaces in the nonfood zone shall be closed.

5.5.2 Insulation shall be installed so as to prevent it from separating, settling, or becoming compacted under use conditions.

5.5.3 Insulated space shall be closed and sealed to protect it from condensation, spills, and seepage. Tight-fitting, readily removable plugs conforming to the zone-specific material requirements may be used to seal off openings to insulated spaces.

**Reason:** Relocated to be consistent with boilerplate format.

### 5.6 Reinforcing and framing

5.6.1 Exposed reinforcing and framing members and gussets shall be easily cleanable. Reinforcing and framing members shall be designed and manufactured to prevent the harborage of vermin (See figure 2).

5.6.2 Horizontal surfaces of reinforcing and framing members and gussets shall not be located where debris may accumulate.

5.6.3 Vertical channels that form hollow sections shall be closed at each end, open at each end, or readily accessible along the entire channel. All other hollow sections shall be closed at each end.

**Reason:** Relocated to be consistent with boilerplate format.

### 5.7 Inspection and maintenance panels

When necessary for equipment inspection and maintenance, removable panels of adequate size shall be provided. Each panel shall be sized to permit removal and replacement by one person.

### 5.8 Doors

5.8.1 Doors shall be sized to fit their openings and shall close properly.

5.8.2 Sliding doors shall slide freely and shall be readily removable.

5.8.3 Exposed channel sections on single panel doors shall be inverted or easily cleanable. Clean-outs shall be provided if channels are not inverted (see figure 3).

5.8.4 Exposed edges of glass doors shall be protected by tight-fitting channels, stripping materials, or other
means such as rounding the edges of tempered glass to protect against chipping. The glass shall conform to the requirements in 5.30.3 (See figure 4).

5.8.5 Door gaskets

5.8.5.1 Door gaskets shall be easily cleanable and shall be removable for replacement.

5.8.5.2 Retaining grooves and other devices for holding readily removable gaskets shall be easily cleanable.

5.9 Door tracks and guides

5.9.1 Door tracks and guides shall be easily cleanable. Channel tracks shall not have a depth greater than the width of the channel top.

5.9.2 Tracks and guides shall:

- have clear open slots continuously or at intervals along their entire length; or
- have clean-out holes at each end; or
- terminate at least ½ in (0.50 in, 13 mm) short of framing at each end; or
- be integral with the equipment surface and have no square corners.

This shall not apply to lower guides for overhead door suspensions that are integral with the equipment surface and channel-type bottom tracks equipped with readily removable strips.

5.10 Door closers, handles, knobs, and pulls

5.10.1 Exposed surfaces shall meet the design and construction requirements of the zone of intended use.

5.10.2 Door closers, handles, knobs and pulls shall meet at least one of the following:

- be easily cleanable as installed on the equipment; or
- be removable for cleaning.

5.10.3 If locking features are provided, the keyway and lock are exempt from 5.10.2.

5.11 Hinges

5.11.1 Hinges located in a food zone shall be easily cleanable while in place or shall be designed to be disassembled, without the use of tools, for routine cleaning. Hinges located in a splash zone shall be easily cleanable while in place or shall be designed to be disassembled (with or without the use of tools) for routine cleaning.

5.11.2 Continuous hinges shall not be used in a food zone.

5.11.3 Hinges on splash zone doors and covers weighing 80 lb (36 kg) or more shall have no more than five knuckles in total per hinge set and shall have sealed joints and seams on the hinge body (except for seams at the pivot joint).

5.11.4 Hinges on splash zone doors and covers weighing less than 80 lb (36 kg) shall conform to the requirements in 5.11.3 or each of the following:
– the hinge pin shall be lift-off style or have a removable pin; and
– the diameter of the hinge pin shall be greater than or equal to \(\frac{3}{16}\) in (0.19 in, 5.0 mm); and
– mating surfaces of the hinge (such as the joint between a knuckle and leaf) shall be closed or be separated by at least \(\frac{1}{8}\) in (0.13 in, 3.2 mm).

5.12 Covers

5.12.1 Covers protecting a food zone shall overlap the opening and shall be sloped to provide drainage from the cover surface. Inset covers for stackable pans are exempt from the slope requirement. Areas of handles and knobs of covers are not required to be sloped.

5.12.2 Covers shall be designed with sufficient clearance to prevent contact with food.

5.12.3 Port openings through a food zone cover shall be flanged upward at least \(\frac{3}{16}\) in (0.19 in, 5.0 mm) and shall have a cover overlapping the flange.

5.12.4 Hinges and pivots shall conform to 5.11.

5.12.5 Covers shall be readily removable and easily cleanable.

5.12.6 Covers shall be designed and manufactured to prevent accumulation of liquid or debris on the covers and contamination of the food zone during opening and closing. Sliding covers and hinged covers protecting a food zone shall be designed and manufactured to prevent accumulation of liquid or debris on the covers and contamination of the food zone during opening or closing.

Note – Inset covers for stackable pans are exempt from this requirement.

Reason; Language added per the TG discussion on 7-21-2011 (FE-2010-16).

5.12.7 Covers shall be free of cracks, crevices, and exposed horizontal ledges.

5.12.8 Handles and knobs on covers shall be easily cleanable. Internal corners and angles of roll covers, tilt covers, and other similar covers that are less than 135° shall have a minimum smooth radius of 1/8 in (0.13 in, 3.2 mm). Solder or other fillet material may be used to provide a minimum radius on the underside of roll-type covers.

Reason; 1/8 in radius requirement is applicable only to section 7.

5.13 Edges and nosings

If a shelf or unit top is reinforced by forming its edge into a structural shape (nosing), and there is an adjoining vertical surface (i.e., cabinet body), the following requirements shall apply:

– the nosing shall be integral with the shelf or unit top; and

– the edge shall be deburred; and
the nosing and adjoining vertical surface shall be closed or shall have a clearance of at least \( \frac{3}{4} \) in (0.75 in, 19 mm) or \( \frac{3}{8} \) of the nosing’s vertical dimension, whichever is greater.

If the profile edge is turned in to form a channel-like configuration, the return (horizontal) shall not exceed \( \frac{1}{2} \) in (0.50 in, 13 mm) and shall be angled downward at least 5° from the horizontal plane. This requirement does not apply to readily removable shelves or knockdown shelves.

5.14 Openings into food zones

5.14.1—Openings into food zones shall be equipped with covers, doors, or other means effective in protecting stored food from contamination.

5.14.2 In areas where liquids may accumulate, top openings into food zones shall be protected by a raised rim that extends at least \( \frac{3}{16} \) in (0.19 in, 5.0 mm) above the flood level (See figure 5).

5.22 Ventilation openings

Areas housing compressors or other electrical equipment that may be subject to spills, splashes, or overhead drips shall be protected by louvers or other drip deflecting devices.

5.16 Louvers

5.16.1 Louvers that may be subject to overhead splashes, spills, and drips shall be of a deflecting design, or they shall be readily removable and the space immediately behind the louver easily cleanable.

5.16.2 If electrical safety requirements prohibit the use of readily removable louvers on compressor compartments, then such louvers need only be removable.

5.16.3 Louvers shall be deburred and shall have spaces large enough to allow for easy cleaning.

5.16.4 Screening on louvered openings, if provided, shall be 16 mesh (minimum 16 strands per 1.0 in [25mm]) or greater and removable.

5.16.5 If the louvers are not drip reflective, the panel shall be readily removable or removable as indicated in 5.16.1 or 5.16.2.

Reason: 5.16.5 added per TG discussion on 7-21-2011 (FE-2010-17).

5.17 Hardware

Hardware shall be smooth, easily cleanable, and corrosion resistant. Hardware shall not have open seams, recesses, or unnecessary projections.

5.18 Latches and catches

Latches and catches shall be easily cleanable while in place or shall be designed to be removable for cleaning. Openings that are functionally necessary are exempt from cleanability requirements.

5.19 Breaker strips
5.19.1 Breaker strips shall:

- be securely fastened around the entire perimeter; and

- be designed and manufactured to minimize accumulations of spillage, condensation, and foreign matter; and

- have smooth, easily cleanable surfaces without sharp or rough edges.

5.19.2 Seams between the breaker strip and capping shall be closed.

5.20 Equipment mounting

5.20.1 Floor-mounted units shall be designed and manufactured to be:

- portable; or

- mobile; or

- sealed to the floor; or

- elevated on legs that provide a minimum unobstructed clearance of 6.0 in (150 mm) beneath the unit; or

- elevated on legs that provide a minimum unobstructed clearance beneath the unit of 4.0 in (100 mm) provided that no part of the floor under the equipment is more than 6.0 in (150 mm) from the point of cleaning access.

5.20.2 Counter-mounted equipment shall be designed and manufactured to be:

- portable; or

- sealed to the counter; or

- elevated on legs that provide a minimum unobstructed clearance of 4.0 in (100 mm) beneath the unit; or

- elevated on legs that provide a minimum unobstructed clearance beneath the unit of 3.0 in (76 mm) provided that no part of the counter top under the footprint of the equipment is more than 16 in (41 cm) from the point of cleaning access; or

- elevated on legs that provide a minimum unobstructed clearance beneath the unit of 2.0 in (50 mm) provided that no part of the counter top under the footprint of the equipment is more than 3.0 in (76 mm) from the point of cleaning access.

5.20.2.3 Portable equipment shall not weigh more than 80 lb (36 kg) and shall not exceed 36 in (90 cm) in any plane.

5.20.2.4 Utility connections on portable equipment and mobile equipment shall be designed to be disconnected without the use of tools or shall be of sufficient length to permit the equipment to be moved for cleaning.
5.20.2.5 Equipment intended to be sealed to the floor or counter shall not create inaccessible cavities or areas that may be subject to soiling or vermin harborage.

5.20.2.6 Kick plates on floor-mounted equipment shall be removable.

5.21 Legs and feet

5.21.1 Legs and feet shall be fastened to the body of the machine and shaped at their floor or counter contacts to minimize the accumulation of dirt and the harborage of vermin.

5.21.2 Legs and feet shall be sufficiently rigid to support the machine with a minimum of cross bracing.

5.21.3 If the outer dimension of a leg exceeds the outer dimension of its foot by ½ in (0.50 in, 13 mm) or more in the same plane, then the foot shall extend at least 1.0 in (25 mm) below the leg at the minimum adjustment (See figure Xa).

5.21.4 Hollow sections between a leg and a foot shall be closed. Legs and feet shall have no exposed threads at the maximum adjustment.

5.21.5 Gussets shall be assembled to the equipment and shall be easily cleanable and designed to prevent vermin harborage. The resultant assembly shall have no recessed areas (See figure Xb).

5.22 Casters, rollers, and gliders

If used, casters, rollers, and gliders shall be easily cleanable and conform to NSF/ANSI 2.

5.23 Shelving

5.23.1 Shelving and shelf support systems shall be easily cleanable and shall not provide harborage for vermin.

5.23.2 Shelving shall be readily removable.

5.23.3 Readily removable shelves shall be sized to permit handling by one person. Shelves used as readily removable false bottoms shall have flanged corners that are closed or are sufficiently notched to permit cleaning (See figure X).

5.24 Food drawers

Refrigerated food drawers and drawer pan assemblies shall be readily removable for cleaning. Drawer slides and tracks need not be readily removable, provided that they are easily cleanable as installed. Joints and seams between drawer pan assemblies and drawer slides shall be closed, and recessed areas shall be minimized.

5.25 Food shields

Food shields shall conform to the food shield requirements in NSF/ANSI 2.

5.26 Breakable glass components
5.26.1 Fixtures and devices that, if impacted, may break and contaminate food shall be protected by guards. This requirement shall not apply to view ports and windows constructed of heat tempered glass.

5.26.2 Light bulbs that have been plastic-coated or otherwise treated to resist shattering shall have a permanent label affixed near the bulb indicating that the lamp has been treated to resist shattering and must be replaced with a similarly treated lamp.

5.26.3 Glass shall conform to the requirements in NSF/ANSI 51 applicable to the zone in which the glass is used.

5.27 Cutting boards

Cutting boards shall be readily removable for cleaning and shall conform to the cutting board requirements in NSF/ANSI 2.

5.15.28 Entry ports

Entry ports through which piping, thermometers, equipment, rotary shafts, and other functional parts enter into a food zone shall be closed and sealed at the point of entry and exit.

5.16.29 Drains

There shall be no drains other than those from a condensate evaporator in a food zone. Drains utilized for condensate shall be fabricated or located to prevent their use as a general drain for a food zone.

5.29.30 Temperature controls

Self-contained refrigerators and freezers shall have automatic controls capable of maintaining temperatures in accordance with the applicable performance requirements of this Standard.

5.31 Veneers

When provided, veneers shall be permanently affixed to equipment surfaces. Air pockets between veneer materials and equipment surfaces shall be eliminated.

6 Storage refrigerators and freezers and refrigerated food transport cabinets

6.3 Joints and seams

In addition to the requirements specified in 5.4:
6.3.1 Seams within 3.0 in (75 mm) of the interior bottoms of dry, chest-type refrigerators and freezers shall be filled and made flush with the adjoining surfaces.

6.3.2 The joints and seams of a refrigerated food transport cabinet need not be sealed if:

- the unit is intended to be cleaned using high pressure cleaning methods as described in written cleaning instructions provided by the manufacturer; or and
- the joints and seams are readily accessible for high-pressure cleaning methods; or and
- the unit is capable of being completely drained in an upright position.

Reason: As options, the stated conditions are not adequate requirements conducive to cleaning the unit. Therefore, the term ‘or’ has been replaced the term ‘and’.

6.9 Equipment labeling and literature requirements

6.9.1 Equipment intended solely for the storage and display of packaged food products shall have a permanently attached label that states: “This equipment is intended for the storage and display of packaged products only.” The label shall be clearly visible to the user after installation of the equipment. This label is not required on self-service display refrigerators and freezers or units intended solely for the storage and display of ice cream and other frozen desserts.

6.9.2 The manufacturer of a remote refrigerator and freezers shall specify the load requirements BTU/hr (kW/hr) and the applicable evaporator temperature for each unit at its test condition.

7 Refrigerated buffet units and refrigerated food preparation units

This section contains requirements for refrigerated buffet units and refrigerated food preparation units, which shall also meet the requirements of 4 and 5.

7.1 Internal angles and corners

In addition to the requirements in 5:

7.1.1 Internal angles or corners of less than 135° in a food zone shall be smooth and shall have minimum continuous radii of ¼ in (0.25 in, 6.4 mm). The following internal angles are exempt from this requirement:

- angles formed by the ceiling and side walls of the interior liner of refrigerators; and
- angles formed where an evaporator is mounted to the interior liner of refrigerators and freezers.
9 Display refrigerators and freezers

9.2 Design and construction

The food storage compartments of display refrigerators and freezers shall conform to the splash zone design and construction requirements of this Standard.

9.3 General sanitation

Display refrigerators and freezers shall be designed to facilitate cleaning of food storage compartments manually, or by flushing them with water or other appropriate liquid in accordance with the manufacturer’s cleaning instructions.

9.7 Doors

In addition to the requirements specified in 5.9, sliding doors on display refrigerators and freezers shall be readily removable, or shall be removable and easily cleanable as installed.

9.8 Drains

In addition to the applicable requirements specified in 5.16:

9.8.1 A drain or waste outlet may be provided for the draining of a display refrigerator. If display refrigerator drains are provided for flushing, they shall have a minimum internal diameter of 1.0 in (25 mm).

9.8.2 Display refrigerators and freezers equipped with automatic or off-time defrost systems shall have a drain located at the lowest level of the compartment to which water will drain.

9.9 Shelving

In addition to the applicable requirements specified in 5.21:

9.9.1 Shelving in self-service display refrigerators and freezers shall be removable or readily removable.

9.9.2 Shelving for self-service display refrigerators and freezers shall be exempt from the requirements of NSF/ANSI 51, section 5.2.2, if made with a minimum G60 galvanized steel. Galvanized steel shelves may be coated for appearance.
9.9.3 Shelving and shelf support systems shall be easily cleanable and shall not provide harborage for vermin.

NOTE – This requirement shall not preclude the use of hollow shelf standards in display refrigerators and freezers as permitted in 9.6.

9.10 Equipment mounting

In addition to the applicable requirements in 5.24:

9.10.1 Self-service display refrigerators and freezers shall be exempt from 5.24.1 if the unit is elevated on an open channel base or other support that provides a minimum clearance of 6 in (15 cm) beneath the unit.

9.10.2 Self-service display refrigerators and freezers shall be exempt from 5.24.1 if the unit:

- is designed so that the unit is elevated on an open channel base or other support that provides a minimum clearance of at least 3.0 in (75 mm) beneath the unit; and
- is provided with installation instructions that provide for sufficient access for inspection, maintenance, and cleaning under the unit, as installed; and
- is provided with instructions for cleaning under the unit including the recommended equipment to be used.

9.10.3 Self-service display refrigerators and freezers shall be exempt from 5.24.1 if the unit:

- is designed such the unit is elevated on an open channel base or other support that provides a minimum clearance of at least 2.0 in (50 mm) beneath the unit; and
- is equipped with barriers that prevent spills of liquids and solids from passing under the unit; and
- is provided with installation instructions that provide for sufficient access for inspection, maintenance, and cleaning under the unit, as installed; and
- is provided with instructions for cleaning under the unit including the recommended equipment to be used.

9.11 Refrigeration and cooling components

9.11.1 Refrigeration components shall be accessible for necessary cleaning and maintenance.

9.11.2 Evaporator coils and refrigerant tubing shall not be in direct contact with food contact surfaces, and shall be installed so that condensate will not contact food or insulation. Top-mounted coils in service display refrigerators and freezers shall have a drain pan (drip pan) that prevents condensate from dripping onto food and drains condensate away from the food storage areas.
9.12 Temperature-indicating devices (thermometers)

9.12.1 Each refrigerated storage compartment and cabinet shall have at least one securely mounted temperature-indicating device that clearly displays the air temperature in the compartment. A temperature-indicating device shall not be required in beverage coolers or units intended solely for the storage and/or display of ice cream and other frozen desserts.

9.12.2 The temperature display of a temperature-indicating device shall be visible immediately upon opening a door to each refrigerated compartment, or shall be visible from the equipment exterior without opening a door to each compartment. The sensing element of the device shall be easily cleanable and located to reflect the temperature in the warmest part of the food storage compartment.

Open display refrigerators and freezers shall have a temperature-indicating device that is easily cleanable and located to reflect the air temperature in the warmest part of the food storage compartment. Open display refrigerators and freezers shall include a thermometer and instructions for installing the thermometer in the warmest part of the food storage compartment, as determined by the manufacturer.

9.12.3 Temperature-indicating devices shall be removable.

9.12.4 Temperature-indicating devices shall be accurate to ± 2 °F (± 1 °C) and shall be graduated in increments no greater than 2 °F (1 °C) in the intended range of compartment temperatures.

9.13 Equipment labeling and literature requirements

9.13.1 Beverage coolers shall have a permanently attached label that states: “This equipment is intended for the storage and display of non-potentially-hazardous bottled or canned products only.” The label shall be clearly visible to the user after installation of the equipment. This statement shall also appear in the product literature and the product manual.

9.13.2 Type I display refrigerators and freezers shall have a permanent label indicating that the equipment is intended for use in an area where the environmental conditions are controlled and maintained so that the ambient temperature typically does not exceed 75 °F (24 °C).

Type II display refrigerators and freezers shall have a permanent label indicating that the equipment is intended for use in an area where the environmental conditions are controlled and maintained so that the ambient temperature typically does not exceed 80 °F (27 °C).

Display refrigerators tested in accordance with 6.10.2 shall have a label indicating that the equipment is for use in ambient temperatures not exceeding 86 °F (30 °C).

9.13.3 Display refrigerators intended solely for the display of foods that are not potentially hazardous shall have a permanently attached label that states: “This display refrigerator is not for the display of potentially hazardous foods.” The label shall be clearly visible to the user after installation of the equipment.

9.13.4 Display refrigerators and freezers shall have the maximum load level clearly marked on the unit or indicated in the operating instructions.
9.13.5 The manufacturer of a display refrigerator and freezers shall provide written instructions that include the following:

– electrical requirements;
– installation procedures that address setting, pull-up, trimming, assembly, wiring, and special procedures such as properly ventilating the backs of units under special conditions;
– operational data such as control settings, checking methods, and typical temperatures; and
– maintenance procedures.

9.13.6 The manufacturer of a remote refrigerator and freezers shall specify the load requirements BTU/hr (kW/hr) and the applicable evaporator temperature for each unit at its test condition.

9.14 Performance

9.14.1 Performance requirement

Display refrigerators shall be capable of maintaining a product temperature of 41 °F (5 °C) or lower when tested in accordance with 9.14.2. This requirement shall not apply to display refrigerators that are not intended for the display of potentially hazardous foods and that are labeled in accordance with 9.13.3. This requirement shall not apply to display freezers.

Display refrigerators that conform to the performance requirements for storage refrigerators in 6.10 shall be considered acceptable in meeting this requirement.

A storage compartment in a Type I or Type II display refrigerator shall be tested in accordance with 6.10 and with the ambient conditions described in 9.14.2. Compressor run time requirements shall not apply.

Reason: Language added to address how display refrigerators are tested when a storage compartment is included in the unit (FE-2010-15).

NOTE – This test is not required for remote refrigerators not supplied with refrigeration or beverage coolers labeled in accordance with 9.13.1.

10 Rapid pull-down refrigerators and freezers

10.4 Equipment labeling and literature requirements

10.4.1 The manufacturer of a remote refrigerator or freezer shall specify the load requirements BTU/hr (kW/hr) and the applicable evaporator temperature for each unit at its test condition.