NSF/ANSI International Standard
for Food Equipment —

Dispensing freezers

4 Materials

The requirements contained in this section are intended to protect food from contamination and ensure that the materials used in the manufacture of dispensing freezers resist wear; penetration by vermin; and the effects of foods, cleaning compounds, sanitizers, and other substances that may contact the materials in the intended use environment. Materials used in unexposed nonfood zone areas shall be exempt from all requirements in 4.

4.1 Conformance with NSF/ANSI 51

Materials shall conform to the requirements in NSF/ANSI 51 applicable to the zone in which the material is used.

4.1.1 Copper-nickel alloys shall not be used in dispensing freezers.

Reason: Editorial. The term “alloy materials” is a more correct term.

5 Design and construction

This section contains design and construction requirements for equipment covered under the scope of this Standard.

5.1 General sanitation

5.1.5 All surfaces having direct product contact shall be exposed to sanitizing solutions during the manufacturer’s recommended mechanical sanitization procedures. Areas having direct product contact shall be self-draining or otherwise designed to be completely evacuated of product and sanitizing solutions.

Reason: Consistent with boiler plate language in NSF/ANSI 2.
5.9 Doors

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

5.9.2 Sliding doors shall slide freely and be readily removable.

5.9.3 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 4).

5.9.4 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 of the impact test in ANSI Z97.1 or the impact test in ANSI/UL 197 5.24.3.

Reason: Consistent with boiler plate in NSF/ANSI 2. Sections 5.44.1, 5.44.2 and 5.44.3 in NSF/ANSI 2 covering breakable glass components may be applicable to and have been added to this standard. 5.44.3 makes reference to the impact tests in ANSI Z97.1 and UL 197.

5.9.5 Door gaskets shall be easily cleanable and shall be removable for replacement  Door Gaskets

5.9.5.1 Exposed surfaces of door gaskets shall be easily cleanable. Hollow sections of door gaskets shall be sealed.

5.9.5.2 Gaskets shall be capable of being removed and reinstalled by hand or with the use of simple tools. Staples, pop rivets, nails, adhesives, and other similar items that cannot be reattached easily shall not be used to secure door gaskets.

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

Reason: Consistent with boiler plate language in NSF/ANSI 2.

5.11 Door closers, handles, knobs, and pulls

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

5.11.2 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.

5.11.3 If locking features are provided, the keyway and lock are exempt from 5.11.2.

5.14 Openings to food zones
5.14.1 Openings in food zones shall be protected to prevent the entry of seepage, condensation, and spills. 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 liquid level (see figure 5).

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

**Reason:** Editorial. All related requirement for openings to food zones should be under a single section.

5.16 Hardware

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

5.17 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.

5.18 Breaker strips

Breaker strips shall:

- be securely fastened around the entire perimeter with closed seams; 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.

**Reason:** Hardware, handles and pulls, latches and catches and breaker strips are applicable to equipment certified under this standard.

5.18 Entry ports

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

**Reason:** Language moved to 5.14.2.

5.22 Casters, rollers and gliders

If used, casters, rollers, and gliders shall be easily cleanable and shall comply with NSF/ANSI 2.
5.23 Temperature indicating devices for refrigerated cabinets

Refrigerated cabinets on dispensing freezers shall be equipped with a securely mounted temperature indicating device that clearly displays the air temperature in the cabinet. The temperature indicating device shall be accurate to ± 2 °F (±1 °C) at 40 °F (4 °C). The device shall be removable and easy to read. The sensing element of the device shall be easily cleanable and located so as to measure the air temperature in the warmest part of the cabinet.

Refrigerated cabinets on dispensing freezers intended for the cold storage of potentially hazardous food or beverages shall have a securely mounted temperature-indicating device that clearly displays the air temperature in the cabinet. 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 cabinet temperatures. The device shall be removable and easy to read. The sensing element of the device shall be easily cleanable and located to reflect the warmest temperature of a refrigerated cabinet. A temperature-indicating device is not required in refrigerated cabinets intended for frozen or semi-frozen food only.

Reason: Language modified to be consistent with NSF/ANSI 18 – Manual food and beverage dispensing equipment section 5.27 Temperature-indicating devices for hot and cold food storage.

5.24 Breakable glass components

5.24.1 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.

5.24.2 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.

5.24.3 Glass, other than light fixtures, that may be subject to contact during use and routine maintenance and cleaning shall conform to the impact test in ANSI Z97.1 or to the impact test within ANSI/UL 197.

Reason: Consistent with boiler plate in NSF/ANSI 2. Sections 5.44.1, 5.44.2 and 5.44.3 in NSF/ANSI 2 covering breakable glass components may be applicable to and have been added to this standard.

5.25 Tank valves

Tank valves shall be readily accessible for cleaning and inspection. Tank valves and shall comply with the general requirements in this Standard that apply to surfaces having direct contact with product 4 and 5 applicable to food contact surfaces.

Reason: Consistent with boiler plate language in NSF/ANSI 2.

5.26 Springs

Coil springs shall have open ends. The pitch shall be at least three times the diameter of the wire.

5.27 Food dispensing pumps

Pumps shall comply with the materials, design, and construction requirements of this Standard.

The entire pump assembly shall be easily cleanable. The assembly includes all valves and springs. Food dispensing pumps designed as a closed system may be cleaned by an in-place cleaning (IPC) method.
5.27.1 The assembly below the cover shall not have V threads.

NOTE – Locking devices may be used provided that they consist of no more than two V threads and all surfaces are visible for inspection.

5.27.2 There shall be no V threads in the delivery tube of the pump assembly.

5.27.3 Tubes shall be designed so that a cleaning brush may be readily moved from one end to the other.

5.27.4 When plugs are used at the ends of tubes, they shall be readily removable for cleaning.

5.27.5 Top plates of syrup pumps shall be readily removable, shall fit closely over containers, and shall have a flange that overlaps the opening.

Reason: Language consistent with boilerplate language found in NSF/ANSI 2 for Food dispensing pumps.

5.28 Remote product supply systems

Sections of tubing for a remote product supply system shall not exceed 7.5 ft (2.3 m) in length. Remote product supply systems and shall comply with the zone specific design and construction requirements in 5.1 4 and 5 applicable to direct food contact zones.

Reason: Consistent with boiler plate language in NSF/ANSI 2. The zone of compliance has been specified in order to establish specific requirements.

5.29 Instruction plate

5.29.1 A legible plate or label that provides the manufacturer's recommended cleaning and sanitization procedures shall be permanently affixed to each dispensing freezer. The plate shall call attention to the need to comply with the minimum cleaning and sanitization frequencies specified by the federal, state, or local regulatory agency having jurisdiction. A legible plate or label that provides the manufacturer's recommended cleaning and sanitization procedures shall be permanently affixed to each dispensing freezer. The plate shall call attention to the need to comply with the minimum cleaning and sanitization frequencies specified by the federal, state, or local regulatory agency having jurisdiction.

Reason: A manufacturer can not reasonably be expected to know minimum cleaning frequencies specified by Federal, state or local regulatory agency having jurisdiction.

Reason: Language as previously proposed allowed the manufacturer to set their own cleaning and sanitization frequencies. A manufacturer could suggest a once/year cleaning, which could contradict the federal, state and/or local jurisdiction.

5.29.2 Batch dispensing freezers shall have a legible plate or label indicating stating that the unit is not designed for product storage and that a single batch of product should not remain in the unit for longer than one hour.

Reason: Clarification

5.30 Heat treatment dispensing freezer

5.30.1 Heat treatment cleaning and sanitizing

5.30.1.1 Thermostatic control
A heat treatment dispensing freezer shall be equipped with an automatic thermostatic control(s) having a maximum temperature differential of 2 °F (1 °C). The control(s) shall be located so that the proper product temperatures are maintained during the heat treatment cycle and refrigerated storage.

5.30.1.2 Dispensing lockout—Heat treatment frequency

A heat treatment dispensing freezer shall be equipped with a dispensing lockout that is activated if more than 25 h have elapsed since the time that the last complete heat treatment cycle was initiated.

5.30.1.3 Dispensing lockout—Heat treatment cycle completion

A heat treatment dispensing freezer shall be equipped with a dispensing lockout that is activated if a heat treatment cycle, once initiated, is not completed as intended. The dispensing freezer shall also be equipped with a visible or audible signal that is activated if a heat treatment cycle, once initiated, is not completed as intended.

5.30.1.4 Dispensing lockout—Manual cleaning and sanitization frequency

A heat treatment dispensing freezer shall be equipped with a dispensing lockout that is activated if the dispensing freezer has not been completely disassembled for manual cleaning and sanitization in accordance with the manufacturer’s instructions within a specified time period. The manufacturer shall specify the maximum number of days the dispensing freezer may be operated before being disassembled and manually cleaned and sanitized. The specified period shall not exceed 42 d (1,008 h). The dispensing lockout mechanism shall be designed so that the lockout cannot be reset or overridden by the partial disassembly of the equipment or by means of a manual switch or similar device.

5.30.1.5 Monitoring display

A heat treatment dispensing freezer shall have a clearly visible display showing the following information:

- the time elapsed since the last heat treatment cycle was completed; and
- the time elapsed since the product temperature was last at or above 150 °F (65 °C); and
- the number of heat treatment cycles completed since the time the machine was most recently disassembled for manual cleaning and sanitization; and
- the temperature of the product mix in the product reservoir.

6 Performance

6.3 Heat treatment cycle – Product heating

6.3.1 Performance requirement

During its heat treatment cycle, a heat treatment dispensing freezer shall be capable of elevating product temperature from 41 °F (5 °C) to 150 °F (65 °C) within a period of 90 min, and of maintaining a product temperature of not less than 150 °F (65 °C) for a period of at least 30 min.
6.3.2 Test method

The product reservoir shall be filled with the intended product at 35 ± 1 °F (1.5 ± 0.5 °C) and the system shall be purged of entrapped air by dispensing approximately 1 qt (1 L) of product. The heat treatment cycle shall be activated, and the product temperature shall be monitored by temperature sensing devices at the following locations: the top-front, geometric center, and bottom-rear of the product reservoir, the product holding area of the dispensing head, and as close as possible to the rear of the freezing barrel. Thermocouples accurate to ± 1.0 °F (0.5 °C). The thermocouples shall be positioned as close as possible to the following locations:

**Thermocouple #1:** (when facing the front of the unit) 1.0 ± 0.25 in (25 ± 6.4 mm) from the front interior wall, 1.0 ± 0.25 in (25 ± 6.4 mm) below the surface of the product and centered left-to-right.

**Thermocouple #2:** centered front-to-back, centered top-to-bottom, centered left-to-right.

**Thermocouple #3:** (when facing the unit) 1.0 ± 0.25 in (25 ± 6.4 mm) from the rear interior wall, 1.0 ± 0.25 in (25 ± 6.4 mm) above the bottom horizontal plane of the product reservoir, and centered left-to-right.

**Thermocouple #4:** product-holding area of the dispensing head.

**Thermocouple #5:** as close to the rear of the freezing barrel as possible.

The time required for the temperature at each of the monitoring locations to increase from 41 °F (5 °C) to 150 °F (65 °C) shall be recorded. The time elapsed while the product temperature is continuously maintained at 150 °F (65 °C) or greater shall be recorded for each sensor thermocouple location. The heat treatment cycle shall be allowed to continue through the cooling portion. The test shall be conducted in a controlled temperature environment at an ambient temperature of 73 ± 3 °F (23 ± 2 °C).