



**Summary of Substantive Changes  
between the 2016 and the 2020 editions of  
NSF/ANSI 18 “Manual Food and Beverage Dispensing Equipment”**

**Presented to the IAPMO Standards Review Committee on September 13, 2021**

**General:** The changes to this standard should not impact currently listed products. The substantive changes are:

- Clarified the term potentially hazardous foods into time / temperature control for safety food and added some language for clarification (see Sections 5.27, 6.2, 6.3, 6.4, and Normative Annex 1)

Section 2, Normative references: Referenced standards were updated as follows:  
*IEEE/ASTM SI 10 – ~~2010~~ 2016, American National Standard for Metric Practice*

Section 5, Design and construction: Added abbreviations for clarification as follows:

**5.1 General sanitation**

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**5.1.3** Food zones shall be readily accessible and easily cleanable or shall be designed for ~~in-place-cleaning~~ CIP when a readily accessible design is not feasible.

**5.1.4** Food zones for which ~~in-place-cleaning~~ CIP is intended shall be designed and manufactured so that cleaning and sanitizing solutions may be circulated or passed throughout the fixed system. The design shall ensure that cleaning and sanitizing solutions contact all food contact surfaces. The system shall be self-draining or capable of being completely evacuated. Equipment and appurtenances designed for ~~in~~ place-cleaning CIP shall have a section of the cleaned area accessible for inspection or shall provide for other acceptable inspection methods. The manufacturer shall provide written instructions for the cleaning and sanitizing of all food zone surfaces for which ~~in-place-cleaning~~ CIP is intended. The type and concentration of sanitizing agent recommended in the instructions by the manufacturer shall comply with 40 CFR § 180.940.3

*NOTE — ~~in-place-cleaning~~ CIP procedures are not required for oil distribution systems that only circulate fresh, edible oil throughout the fixed system.*

**5.22 Food dispensing pumps**

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 way of ~~an in-place-cleaning~~ a CIP method.

**5.27 Temperature-indicating devices for hot and cold food storage**

**5.27.1** Storage compartments intended for the hot or cold storage of ~~potentially hazardous-time /~~ temperature control for safety food or beverages shall have a securely mounted temperature-indicating device that clearly displays the air temperature in the compartment. Temperature-indicating devices shall be accurate to  $\pm 2$  °F ( $\pm 1$  °C) and shall be graduated in increments no greater than 2 °F (1 °C) in the intended range of compartment 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 coolest temperature of a heated compartment or the warmest temperature of a refrigerated compartment. A temperature-



indicating device is not required in storage compartments intended for frozen or semi-frozen food only or designed to conform to the requirements of Section 6.4.

**5.27.2** Product reservoirs intended to hold ~~potentially hazardous time / temperature control for safety~~ food or beverage before dispensing shall have a securely mounted temperature-indicating device that clearly displays the temperature of the product. Sensors may be positioned to indirectly measure the product temperature if the temperature-indicating system is designed to display the actual product temperature. Temperature indicating devices shall be accurate to  $\pm 2$  °F ( $\pm 1$  °C) and shall be graduated in increments no greater than 2 °F (1 °C) in the intended range of compartment 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 representative temperature of the product. A temperature-indicating device is not required in product reservoirs intended only for frozen or semi-frozen food or designed to conform to the requirements of Section 6.4.

Section 6, Performance: Clarified the term potentially hazardous foods into time / temperature control for safety food and added some language for clarification as follows:

### **6.1 Cleaning and sanitization procedures**

#### **6.1.1 Performance requirement**

Cleaning and sanitization procedures recommended by the manufacturer shall effectively clean and sanitize food contact surfaces.

NOTE — This requirement applies to manual cleaning and sanitizing procedures and to ~~in-place-cleaning~~ CIP and sanitizing procedures recommended by the manufacturer.

#### **6.1.2 Test method**

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**6.1.2.2** The equipment shall be operated so that food contact surfaces are exposed to the E. coli suspension. The equipment shall then be cleaned in place according to the manufacturer's instructions and refilled with sterile buffered dilution water (SBDW). The SBDW shall be dispensed and five 100-mL samples shall be collected at intervals from the start of the dispensing until the unit is empty. When adequate sample volumes cannot be realized, more SBDW shall be added accordingly. The equipment shall then be operated so that food contact surfaces intended for ~~in-place-cleaning~~ CIP are exposed to the SBDW. Sufficient SBDW shall then be dispensed. The challenge organisms present in each sample shall be collected and enumerated using the Standard Total Coliform Membrane Filter Procedure in accordance with APHA's Standard Methods for the Examination of Water and Wastewater.<sup>5</sup>

### **6.2 Temperature requirements – Cold ~~potentially hazardous time / temperature control for safety~~ foods and beverages**

#### **6.2.1 Performance requirement**

Product reservoirs intended for the cold holding of ~~potentially hazardous time / temperature control for~~ safety food and beverages prior to their being dispensed shall be capable of maintaining product at a temperature of 41 °F (5 °C) or below.

### **6.3 Temperature requirements – Hot ~~potentially hazardous time / temperature control for safety~~ food and beverages**

#### **6.3.1 Performance requirement**

Product reservoirs intended for the hot holding of ~~potentially hazardous time / temperature control for~~ safety food and beverages prior to their being dispensed shall be capable of maintaining product at a temperature of 140 °F (60 °C) or greater.



**6.4 Dispensing equipment without temperature-controlled storage of ~~potentially hazardous time / temperature control for safety~~ food or beverages**

**6.4 Dispensing equipment without temperature controlled storage of potentially hazardous food or beverages**

The requirements in Section 6.4 apply only to dispensing equipment that is equipped to:

- a) Accommodate specially designed, single-use, collapsible containers of aseptically processed and packaged of ~~potentially hazardous time / temperature control for safety~~ food or beverage in a homogeneous, liquid form; and

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**6.4.1 Mechanical barrier effectiveness**

Dispensing equipment shall employ a mechanical barrier as part of the dispensing equipment or mechanical barrier as an intrinsic part of a specially designed product package that, in conjunction with the sanitary design of the equipment, is capable of maintaining the commercial sterility of the ~~potentially hazardous time / temperature control for safety~~ food or beverage product under conditions without temperature-controlled storage in the dispensing equipment. The mechanical barrier shall be effective in preventing the entry of microorganisms while the product container is being opened and during periods of product holding and dispensing.

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**6.4.1.2.1.2 Dynamic barrier test**

NOTE — The mixing chambers in these devices are designed to have a liquid flush system to be used for either product dilution or ~~in-place cleaning CIP~~ of the mixing chamber.

**6.4.2 Dispensing lockout verification – Duration of storage**

Dispensing equipment shall be designed to prevent dispensing of product that has been held in the equipment under non-temperature-controlled conditions beyond the time limit prescribed by the equipment manufacturer. A dispensing lockout that cannot be manually overridden shall be activated when the maximum time limit specified by the manufacturer is reached. The lockout function shall operate on an internal clock that is not affected by interruptions in electrical power. The maximum ~~potentially hazardous time / temperature control for safety~~ food storage time shall be specified by the equipment manufacturer. The maximum storage time specified by the manufacturer shall not exceed 30 ~~days d.~~

**6.4.2.1 Test method**

The dispenser shall be provided with a fresh, new container of product to be dispensed, and operated in accordance with the manufacturer's instructions. The dispenser shall be operated to dispense three portions at the smallest portion setting. Time and date shall be noted, and the unit shall be allowed to remain in service for the maximum ~~potentially hazardous time / temperature control for safety~~ food storage time specified by the manufacturer. After the elapsed time, an attempt shall be made to dispense product.

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**6.4.3 Disposal of remaining product during change-container sequence**

Dispensing equipment shall be designed to prevent the reuse of a container of ~~potentially hazardous time / temperature control for safety~~ food or beverage that has already been held in the dispensing equipment. To prevent the reuse of a partially emptied container, the change-container sequence shall automatically empty and discard product from the container prior to its removal from the dispensing equipment. The requirement to provide for automatically emptying and discarding product is not necessary if:

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#### **6.4.4 Dispensing lockout verification – Power failure/malfunction during dispensing**

Dispensing equipment shall be equipped with a dispensing lockout that is activated if the mechanical barrier mechanism fails to function in a manner that prevents the entry of microorganisms during an interruption of electrical power to the equipment or other malfunction. If an interruption of power or other malfunction occurs while product is being dispensed and the mechanical barrier does not fully close automatically, there shall be a visual indicator that a change of product container is required, and dispensing shall be locked out until a ~~potentially hazardous time / temperature control for safety~~ food container is installed.

#### **Normative Annex 1 (formerly Annex A)**

##### **Methods for preparing and analyzing ~~in-place-cleaning~~ CIP bacteria surrogate**

###### **N-1.1 Summary**

*E. coli* is used as the challenge organism for the ~~in-place-cleaning~~ CIP test. Presented in this Annex are the methods used for suspension preparation, controls, and analysis of the challenge organism.

###### **~~A-8.2~~ N-1.8.2 Challenge culture preparation**

- a) 1 mL of the stock culture shall be transferred to a TSA slant prepared in a French bottle with a surface approximately 75 cm<sup>2</sup> in area. The media shall then be incubated at 36 ± 1 °C (97 ± 1 °F) for 24 h.
- b) Cells shall be washed from agar surface with 5 mL of SBDW. Agar surface shall be scraped with sterile disposable loops.
- c) ~~0.5 mL of~~ The density of *E. coli* culture suspension ~~shall be pipetted into 4 L of SBDW. This will give a density of~~ must be between 1 and 5 × 10<sup>6</sup> colony forming units (CFU) per mL.

Annexes: The Annexes have been revised to editorial update to the names of the Annexes within. They were changed from alpha characters to numeric, preceded by a 'Normative' or 'Informative'. They have also been reordered so the Normative Annexes appear first followed by Informative Annexes.