
 * INCH-POUND *

 OO-I-2795
 August 20, 1992
 SUPERSEDING
 MIL-I-16042E
 22 August 1983

FEDERAL SPECIFICATION

ICE CREAM PLANTS

This specification is approved by the Commissioner, Federal Supply Service, General Services Administration, for the use of all Federal agencies.

1. SCOPE AND CLASSIFICATION

1.1 Scope. This specification covers two sizes of ice cream plants, each consisting of an electric-motor-driven, mechanically refrigerated ice cream freezer and a mechanically refrigerated ice cream hardening cabinet.

1.2 Classification. The ice cream plant shall be of the following sizes as specified (see 6.2):

Size 1 - Consisting of a freezer with 10-quart batch capacity and a hardening cabinet with 35-gallon storage capacity

Size 2 - Consisting of a freezer with 20-quart batch capacity and a hardening cabinet with 60-gallon storage capacity

2. APPLICABLE DOCUMENTS

2.1 Government documents.

 Beneficial comments (recommendations, additions, deletions) and any pertinent
 *data which may be of use in improving this document should be addressed to: *
 *Commanding Officer (Code 156), Naval Construction Battalion Center, *
 *621 Pleasant Valley Road, Port Hueneme, CA 93043-4300, by using the *
 *Standardization Document Improvement Proposal (DD Form 1426) appearing at *
 *the end of this document or by letter. *

FSC 4120

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2.1.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Federal Specification

QQ-S-775 - Steel, Sheets, Carbon, Zinc-Coated (Galvanized) by the Hot Dip Process

Federal Standard

FED-STD-123 - Marking For Shipment (Civil Agencies)

(Activities outside the Federal Government may obtain copies of Federal specifications, standards, and commercial item descriptions as outlined under General Information in the Index of Federal Specifications, Standards, and Commercial Item Descriptions. The Index, which includes cumulative bimonthly supplements as issued, is for sale on a subscription basis by the Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.)

(Single copies of this specification and other Federal specifications and Commercial Item Descriptions required by activities outside the Federal Government for bidding purposes are available without charge from General Services Administration Business Service Centers in Boston, MA; New York, NY; Philadelphia, PA; Washington, DC; Atlanta, GA; Chicago, IL; Kansas City, MO; Fort Worth, TX; Denver, CO; San Francisco, CA; Los Angeles, CA; and Seattle, WA.)

(Federal Government activities may obtain copies of Federal standardization documents, and the Index of Federal Specifications, Standards, and Commercial Item Descriptions from established distribution points in their agencies.)

Military Specifications

MIL-V-173 - Varnish, Moisture and Fungus Resistant (for Treatment of Communications, Electronic, and Associated Equipment)

MIL-R-12323 - Refrigerator and Related Equipment, Packaging and Packing of

Military Standards

MIL-STD-461 - Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference

MIL-STD-462 - Electromagnetic Interference Characteristics, Measurements of

(Copies of military specifications and standards required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

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2.2 Non-Government publications. The following documents form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DOD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues of documents not listed in the DODISS are the issues of the documents which are current on the date of the solicitation (see 6.2).

Air-Conditioning and Refrigeration Institute (ARI):

ARI 520 - Standard for Positive Displacement Refrigerant Compressor and Condensing Units

(Application for copies should be addressed to the Air-Conditioning and Refrigeration Institute, 4301 N. Fairfax Drive, Suite 425, Arlington, VA 22203.)

ASTM:

ASTM A167 - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip

ASTM A176 - Stainless and Heat-Resisting Chromium Steel Plate, Sheet and Strip

ASTM C286 - Definitions of Terms Relating to Porcelain Enamel or Ceramic-Metal Systems

ASTM D3951 - Commercial Packaging

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

International Association of Milk, Food, and Environmental Sanitarians (IAMFES):

IAMFES Number 19-04 - 3-A Sanitary Standards for Batch and Continuous Freezers for Ice Cream, Ices, and Similarly-Frozen Dairy Foods

(Application for copies should be addressed to the International Association of Milk, Food, and Environmental Sanitarians, P.O. Box 701, Ames, IA 50010.)

National Fire Protection Association (NFPA):

NFPA 70 - National Electrical Code

(Application for copies should be addressed to the National Fire Protection Association, One Batterymarch Park, Quincy, MA 02269.)

National Sanitation Foundation (NSF):

NSF Standard No. 7 - Food Service Refrigerators and Storage Freezers

NSF Listing of Food Service Equipment

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(Application for copies should be addressed to the National Sanitation Foundation, 3475 Plymouth Road, P.O. Box 1468, Ann Arbor, MI 48106.)

Underwriters Laboratories, Inc. (UL):

UL 62 - Flexible Cord and Fixture Wire

UL 471 - Commercial Refrigerators

UL 498 - Electrical Attachment Plugs and Receptacles

UL 621 - Ice Cream Freezers and Soda Fountain Units

(Application for copies should be addressed to the Underwriters Laboratories, Inc., 333 Pfingsten Road, Northbrook, IL 60062.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

3. REQUIREMENTS

3.1 Description. The freezer for the ice cream plant shall be of the batch type, designed for operating cycles which include admitting one batch of the product to the freezing cylinder, partially freezing and incorporating air into the product to provide the overrun specified herein, adding flavoring materials and nuts or fruit, and discharging the product to containers for hardening. The hardening cabinets shall be designed primarily for the hardening and storage of ice cream. The ice cream plant shall include a single, self-contained condensing unit to service both the freezer and the hardening cabinet.

3.2 First article. When specified in the contract or purchase order, a sample shall be subjected to first article inspection (see 4.2.1, 6.2, and 6.4).

3.3 Codes and standards. The ice cream plant shall meet the requirements of the following sanitary and safety standards, as applicable:

- a. Freezers - IAMFES Sanitary Standard Number 19-04 and UL 621.
- b. Hardening cabinets - All cabinets shall meet the requirements of NSF Standard No. 7. In addition to NSF Standard No. 7, all cabinets of the air-cooled type employing hermetic compressor motors shall meet the requirements of UL 471.

3.3.1 Compliance. Prior to approval of the first shipment, the contractor shall submit for the approval of the contracting officer, or his authorized representative, satisfactory evidence that the equipment he proposes to furnish under this specification meets the requirements of the IAMFES, NSF, and UL as applicable.

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3.3.1.1 IAMFES Sanitary Standard Number 19-04. Acceptable evidence of meeting the requirements of IAMFES Sanitary Standard Number 19-04 shall be the official IAMFES symbol on the equipment and a listing by the IAMFES 3-A Sanitary Standards Symbol Administrative Council, or a certified test report (see 6.3) from a recognized independent testing laboratory indicating the equipment has been tested and conforms to IAMFES Sanitary Standard Number 19-04.

3.3.1.2 NSF Standard No. 7. Acceptable evidence of meeting the requirements of NSF Standard No. 7 shall be the official listing of the model being furnished in the current edition of the NSF "Listing of Food Service Equipment" and authorized display of the NSF seal on the furnished item, or a certified test report (see 6.3) from a recognized independent testing laboratory indicating the equipment has been tested and conforms to NSF Standard No. 7.

3.3.1.3 UL standards. Acceptable evidence of meeting the requirements of UL 62, UL 471, UL 498, and UL 621 shall be the UL approved listing and listing mark as applicable, or a certified test report (see 6.3) from a recognized independent testing laboratory indicating the equipment has been tested and conforms as applicable.

3.4 System of measurement. The dimensions used in this specification are not intended to preclude the use of the metric system of measurement in the fabrication and production of the material, individual parts, and finished product, provided form, fit, and function requirements are satisfied.

3.5 Standard commercial product. The ice cream plant shall, as a minimum, be in accordance with the requirements of this specification and shall be the manufacturer's standard commercial product (see 6.5.1). Additional or better features which are not specifically prohibited by this specification but which are a part of the manufacturer's standard commercial product, shall be included in the ice cream plant being furnished.

3.6 Interchangeability. All units of the same classification furnished with similar options under a specific contract shall be identical to the extent necessary to ensure interchangeability of component parts, assemblies, accessories, and spare parts.

3.7 Materials. Materials used shall be free from defects which would adversely affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and articles incorporated in the work covered by this specification are to be new and fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The term "recovered materials" means materials which have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials. Unless otherwise specified, none of the above shall be interpreted to mean that the use of used or rebuilt products is allowed under this specification.

3.7.1 Dissimilar metals. Contact between dissimilar metals likely to cause deterioration of parts by galvanic corrosion shall be avoided. Where such contact cannot be avoided, joints between dissimilar metals shall be protected against galvanic corrosion by plating, coating, insulation, gaskets, or other

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suitable means. Bolts, nuts, pins, screws, and other fastenings shall be of the same material as the metals joined or shall be cathodic to the metals joined.

3.7.2 Corrosion-resistant steel. Corrosion-resistant steel shall be class 302, 303, or 304 of ASTM A167 or class 430 of ASTM A176 annealed or tempered as required to suit the intended application. Corrosion-resistant material for product contact surfaces shall be as specified in IAMFES Sanitary Standard Number 19-04.

3.7.3 Porcelain enamel. Porcelain enamel shall be as defined in ASTM C286.

3.7.4 Galvanized sheet steel. Galvanized sheet steel shall conform to the Class D requirements of QQ-S-775.

3.7.5 Insulation. Insulation shall have a commercially rated thermal conductivity not greater than 0.275 British thermal units per hour per square foot per inch of thickness per degree Fahrenheit (F). Insulation shall be of such material and installed in such a manner that occurrences of gaps or open spaces between parts of the insulation will not exist; it shall remain in place and shall be effectively and permanently sealed from seepage and condensation. The thickness of insulation shall be sufficient to insure compliance with all performance requirements of 3.13.

3.8 Capacity.

3.8.1 Freezers. The capacity of the freezer shall be based upon the batch size. One batch shall consist of the volume in gallons of the product as discharged with 100 percent overrun from the freezer after one cycle is completed. The capacity of the freezer for the Size 1 ice cream plant shall be not less than 10 quarts. The capacity of freezer for the Size 2 ice cream plant shall be not less than 20 quarts.

3.8.2 Cabinets. The capacity of the hardening cabinet shall be based on the use of round 2.50 gallon containers. The capacity of the hardening cabinet for Size 1 ice cream plants shall be not less than 35 gallons storage capacity. The capacity of the hardening cabinet for Size 2 ice cream plants shall be not less than 60 gallons storage capacity.

3.9 Design. The ice cream plant and accessories shall be designed to prevent conditions hazardous to personnel or deleterious to equipment, shall withstand the hard usage encountered in military service, and shall permit easy accessibility for maintenance and service in the field.

3.10 Construction. The ice cream plant shall consist of a freezer and a hardening cabinet. The freezer and hardening cabinet shall meet the requirements of 3.10.1 and 3.10.2 respectively. The ice cream plant shall include one condensing unit to service both the freezer and the hardening cabinet. The condensing unit may be mounted either in the base of the freezer as specified in 3.10.1 or in the hardening cabinet. If the condensing unit is located in the hardening cabinet, the freezer shall be furnished without a base section and shall be mounted on the top of the hardening cabinet over the condensing unit. Appropriate refrigeration controls shall be provided to automatically maintain the operating temperatures specified herein.

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3.10.1 Freezers. The freezer shall consist of a cabinet enclosure, self-contained condensing unit, freezing cylinder, electric-motor-driven beater, automatic temperature controls, and necessary valves, piping and associated appurtenances. The cabinet shall form a rigid structure having the refrigeration system in the base and the freezing section in the top. The outer shell of the cabinet shall be fabricated of corrosion-resistant steel specified in 3.7.2. The freezing cylinder shall be horizontally mounted and shall be equipped with one or more scraper blades. The beater motor shall have a continuous horsepower (hp) rating of not less than 1 hp for the Size 1 ice cream plant and 1.5 hp for the Size 2 ice cream plant. The freezer shall be furnished with a gravity-feed filler tube or spout suitable for charging the cylinder with mix, a removable or hinged cylinder head, a quick-operating dispensing valve, and a container shelf located under the dispensing valve. The freezer shall otherwise be constructed in accordance with IAMFES Sanitary Standard Number 19-04.

3.10.2 Hardening cabinets. The hardening cabinets shall consist of a refrigerated, ice cream storage compartment or compartments with inner liner and outer shell; a self-contained, automatically-controlled condensing unit with evaporator sections sized and located as required to meet the performance requirements of 3.13; panels for access to the condensing unit; lids; and insulation conforming to 3.7.5. The hardening cabinet shall be constructed to support a full load of ice cream without deformation of the inner bottom liner or other supporting panels or structural members. The outer shell shall be as follows:

- a. Top - Corrosion-resistant steel conforming to 3.7.2; one-piece construction unless full-depth lids form the top of the cabinet.
- b. Front and ends - Corrosion-resistant steel conforming to 3.7.2 or porcelain enamel conforming to 3.7.3.
- c. Rear and bottom - Corrosion-resistant steel conforming to 3.7.2 or porcelain enamel conforming to 3.7.3, or galvanized or galvanized sheet steel conforming to 3.7.4.

The inner liner of the storage compartment(s) shall be corrosion-resistant steel or galvanized or galvanized sheet steel at the option of the contractor. Lids shall be fabricated of corrosion-resistant steel, shall be insulated, and shall be of the double section type with integral dividing hinge or shall be of the single section type, hinged to the cabinet at the rear, and providing complete access from the front to the rear of the cabinet compartment. The thickness of materials used for fabrication of the cabinet, including the outer shell, inner liner, and lids shall be the thickness used on the models approved under the standards specified in 3.3. Unless skid mounting is required (see 3.10.3), the unit shall be designed to be sealed to the floor with raised base, and be provided with casters, rollers, gliders, or legs. When mounted on legs, not less than 6 inches of unobstructed space shall be provided beneath the unit. Methods of mounting shall conform to NSF Standard No. 7.

3.10.3 Skid mounting. When specified (6.2), the ice cream plant shall be skid mounted. The skid shall consist of two structural aluminum I-beam runners mounted longitudinally under the front and rear edges of the hardening cabinet. The runners shall be equal in length to the cabinets except that, when the

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freezer is separate rather than cabinet mounted, the runners shall be extended sufficiently to accommodate the freezer. The I-beam runners shall be not less than 5 inches in depth by 3 inches in width and shall be upturned or beveled at each end to facilitate skidding. Towing holes not less than 2 inches in diameter shall be provided at both ends of each runner. The skids shall be welded or bolted to framing members of the cabinet with suitable aluminum cross bracing or mounting plates provided as required. The skid base shall have sufficient strength and rigidity to permit skidding of the complete plant into place on level ground without damage or deformation to the skid base or to the components which the skid base supports.

3.11 Refrigeration system. The refrigeration system shall be completely self-contained, pre-charged and wired with a hermetically sealed compressor unit capable of maintaining the freezer temperature at 38 degrees F +/-2 degrees F and the storage compartment temperature at -10 degrees F or lower in an ambient temperature of 100 degrees F, +/-2 degrees F. The refrigeration system shall be completely dehydrated and fully charged prior to shipment. The refrigeration system shall consist of an electrically-operated compressor, a condenser, evaporator sections with capillary tube or thermal expansion valve, automatic thermostatic controls, dehydrator (drier), liquid indicator, and all necessary valves, fittings, and piping. Unless water-cooled condensing units are specified (see 6.2), the condensers shall be air-cooled. The condensing units shall be constructed and rated in accordance with ARI 520. The refrigeration system shall have sufficient hp and refrigeration capacity to meet the requirements of 3.13 without exceeding the established hp and thermal-capacity ratings or the UL approved electrical rating. Unless otherwise specified (see 6.2), condensing units rated at 3/4 hp or less shall be designed for operation on a nominal 120 volt, 60 Hertz, alternating current power supply. The single condensing unit for the ice cream plant assembly shall have sufficient capacity to permit simultaneous operation of both the freezer and the hardening cabinet.

3.12 Electrical wiring and components. All wire, cord, and electrical components shall be installed in accordance with NFPA 70. Electric cords shall conform to UL 62 and connected to a 3 wire, grounding type plug conforming to UL 498. A wiring diagram shall be furnished with each unit.

3.13 Performance. The freezer and hardening cabinet of the ice cream plant shall meet the performance requirements herein under the specified ambient temperatures.

3.13.1 Ice cream freezers. Ice cream freezers shall be capable of producing, in a period not greater than 10 minutes, one batch of ice cream from a vanilla mix having a temperature, when introduced into the freezer, of 38 degrees F and a temperature when discharged, not greater than 24.5 degrees F. The vanilla mix shall be a standard commercial mix consisting of 10 percent butterfat with not less than 20 percent total solids. During the freezing process, sufficient air shall be introduced by the beater into the product to provide overrun in the range of 90 to 100 percent by volume (50 percent mix and 40 to 50 percent air). These performance requirements shall be met in an ambient temperature of 100 degrees F, after the freezing cylinder has been stabilized at the normal operating temperature.

3.13.2 Hardening cabinets. Hardening cabinets shall meet the following performance requirements:

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- a. In an ambient temperature of 100 degrees F, the refrigeration system shall be capable of lowering the temperature of the empty cabinet from 100 degrees F, to -10 degrees F in not more than six hours.
- b. When the cabinet temperature has been stabilized at -10 degrees F, the maximum operating time in an ambient temperature of 100 degrees F under no load conditions shall be 80 percent over any six hour period.
- c. After the cabinet temperature has been stabilized at -10 degrees F in an ambient temperature of 100 degrees F, the cabinet shall be capable of reducing the temperature of a full load of ice cream from 24.5 degrees F to 0 degrees F or below in not more than 16 hours.
- d. Hardening cabinets shall be capable of operating without exceeding the rated capacity of the condensing unit in ambient temperatures up to 100 degrees F, and under ambient conditions of 65 degrees F to 75 degrees F, shall be capable of maintaining a cabinet temperature of -20 degrees F.

3.14 Identification marking. Identification shall be permanently and legibly marked directly on the cabinet of either the freezer or hardening cabinet or on a corrosion-resisting metal plate securely attached to either cabinet. Identification shall be applied at the source of manufacture. Identification shall include the manufacturer's model and serial number, name, and trademark to be readily identifiable to the manufacturer.

3.15 Fungus resistance. When specified (see 6.2), electrical components and circuit elements, including terminal and circuit connections, shall be coated with varnish conforming to MIL-V-173, except that:

- a. Components and elements inherently inert to fungi or in hermetically sealed enclosures need not be coated.
- b. Current-carrying contact surfaces, such as relay contact points, shall not be coated.

3.16 Finish. The exterior cabinet surfaces of both the freezer and hardening cabinet and the interior compartment surfaces shall be finished in accordance with the manufacturer's standard practice. Concealed steel supporting shapes and plates shall be finished as specified in NSF Standard No. 7.

3.17 Commercial publications. Publications furnished with each ice cream plant shall be the manufacturer's standard commercial publications (see 6.3).

3.18 Electromagnetic interference control. When specified (see 6.2), equipment procured under this specification shall be designed and equipped to meet the UM05 electromagnetic interference control requirements and test limits for Class C3, Group I equipment as specified in MIL-STD-461 when tested in accordance MIL-STD-462.

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3.19 Workmanship. The finished equipment shall be clean inside and outside.

All exposed sharp edges, burrs, loose solder, weld splatter, and trimming marks shall be removed. The quality of workmanship shall otherwise be of the level applied to freezers and cabinets sold on the commercial market and as established by UL, IAMFES, and NSF for the approval of freezers and cabinets.

3.19.1 Steel fabrication. The steel used in fabrication shall be free from kinks, sharp bends, and other conditions which would be deleterious to the finished product. Manufacturing processes shall not reduce the strength of the steel to a value less than intended by the design. Manufacturing processes shall be done neatly and accurately. All bends shall be made by controlled means to ensure uniformity of size and shape.

3.19.2 Bolted connections. Bolt holes shall be accurately punched or drilled and shall have the burrs removed. Washers or lockwashers shall be provided in accordance with good commercial practice, and all bolts, nuts, and screws shall be tight.

3.19.3 Riveted connections. Rivet holes shall be accurately punched or drilled and shall have the burrs removed. Rivets shall be driven with pressure tools and shall completely fill the holes. Rivet heads, when not countersunk or flattened, shall be of approved shape and uniform size for the same diameter of rivet. Rivet heads shall be full, neatly made, concentric with the rivet holes, and in full contact with the surface of the member.

3.19.4 Welding. Welding procedures shall be in accordance with a nationally recognized welding code. The surface of parts to be welded shall be free from rust, scale, paint, grease, or other foreign matter. Welds shall be of sufficient size and shape to develop the full strength of the parts connected by the welds. Welds shall transmit stress without permanent deformation or failure when the parts connected by the weld are subjected to proof and service loadings.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this document where such inspections are deemed necessary to ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this document shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in this document shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an

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acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 Component and material inspection. Components and materials shall be inspected in accordance with all the requirements specified herein and in applicable referenced documents.

4.2 Classification of inspections. The inspection requirements specified herein are classified as follows:

- a. First article inspection (see 4.2.1).
- b. Quality conformance inspection (see 4.2.2).

4.2.1 First article inspection. The first article inspection shall be performed on one complete ice cream plant when a first article is required (see 3.2 and 6.2). This inspection shall include the examination of 4.3, the tests of 4.4.1, 4.4.2, 4.4.3, and, when specified, the preproduction pack inspection of 4.5 (see 6.2). When electromagnetic interference control is specified (see 6.2), the first article shall be subjected to the test of 4.4.4. The first article may be either a first production item or a standard production item from the supplier's current inventory provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

4.2.2 Quality conformance inspection. The quality conformance inspection shall include the examination of 4.3, the tests of 4.4.1, and the packaging inspection of 4.5.

4.3 Examination. Each ice cream plant shall be examined for compliance with the requirements specified in section 3 of this document. Any redesign or modification of the contractor's standard product to comply with specified requirements, or any necessary redesign or modification following failure to meet specified requirements shall receive particular attention for adequacy and suitability. This element of inspection shall encompass all visual examinations and dimensional measurements. Noncompliance with any specified requirement or presence of one or more defects preventing or lessening maximum efficiency shall constitute cause for rejection.

4.3.1 Standards compliance. The contractor shall make available to the contracting officer or his authorized representative evidence of compliance with the applicable standard(s) cited in 3.3.1. The Government reserves the right to examine and test all ice cream plants to determine the validity of the certification.

4.4 Tests. Failure to pass any test shall constitute cause for rejection.

4.4.1 Functional test. The ice cream plant shall be operated for a length of time sufficient to insure, by visual inspection of the liquid indicator, that the refrigeration system is dehydrated, that switches and controls are correctly adjusted and function properly, that the refrigeration system is leaktight, and that mechanical components, such as the freezer beater, operate properly.

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4.4.2 Freezer test. The freezer unit of the first article shall be operated for not less than one hour using the vanilla mix specified in 3.13.1. The unit shall be checked for capacity and the final product checked for temperature and overrun.

4.4.3 Cabinet test. The hardening cabinet of the first article shall be operated for a period of time sufficient to verify compliance with the performance requirements of 3.13.2. The tests shall include the no-load pull down test. The tests shall be conducted in the ambient temperatures specified. For the full load tests, ice cream in 2.50 gallon containers, or a liquid having the same specific heat may be used. When a simulated load is used, the total weight of the load shall be equivalent to the weight of a full load of ice cream having 100 percent overrun. After the full load test is completed, compliance with the temperature requirement of 3.13.2 shall be verified in an ambient temperature between 65 degrees F and 75 degrees F.

4.4.4 Electromagnetic interference control tests. When electromagnetic interference control is specified (see 6.2) and the condensing units furnished are capable of inducing conducted or radiated interference, the first article sample shall be tested in accordance with the methods of MIL-STD-462 to verify compliance with the UM05 limits of MIL-STD-461 as specified (see 3.18).

4.5 Preparation for delivery inspection. The inspection of the preservation, packing, and marking shall be in accordance with the requirements of section 4 of MIL-R-12323. The inspection shall consist of the quality conformance inspection; and, when specified (see 6.2), a preproduction pack shall be furnished for examination and test within the timeframe required (see 6.2).

5. PREPARATION FOR DELIVERY

5.1 Preservation, packaging, and packing. Unless otherwise specified (see 6.2), preservation, packaging, and packing shall be commercial. When specified (see 6.2), preservation, packaging, and packing shall be Level A or Level B as specified herein.

5.1.1 Commercial. Preservation, packaging, and packing shall be in accordance with the requirements of ASTM D3951.

5.1.2 Level A. Preservation, packaging, and packing shall be in accordance with the requirements of MIL-R-12323.

5.1.3 Level B. Preservation, packaging, and packing shall be in accordance with the requirements of MIL-R-12323.

5.2 Marking

5.2.1 Military agencies. Shipments to military agencies shall be marked in accordance with MIL-STD-129.

5.2.2 Civil agencies. Shipments to civil agencies shall be marked in accordance with FED-STD-123.

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6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The freezer unit of the ice cream plant is used for the production of ice cream, ices, and similarly frozen dairy foods. The freezers are not designed for the production of "soft" ice cream served directly from the freezer. The hardening cabinet is used for hardening and storing ice cream and is not intended for dispensing purposes. Cabinets suitable for dispensing are covered by MIL-I-20565. Use of ice cream cups or use of one quart containers for sliced portions (six to eight slices per container) minimizes the need for separate dispensing facilities.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification
- b. Size of ice cream plant required (see 1.2)
- c. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2)
- d. When first article is required for inspection and approval (see 3.2 and 4.2.1)
- e. When the ice cream plant is to be skid mounted (see 3.10.3)
- f. When water-cooled in lieu of air-cooled condensing units are required (see 3.11)
- g. When power supply for the refrigeration system is to be other than 120 volts, 60 Hertz, alternating current (see 3.11)
- h. When fungus resistance treatment is required (see 3.15)
- i. When electromagnetic interference control and testing is required (see 3.18, 4.2.1, and 4.4.4)
- j. When a preproduction pack inspection is required and the timeframe required (see 4.2.1 and 4.5)
- k. When Level A or Level B preservation, packaging, and packing is required (see 5.1)

6.3 Data requirements. When this specification is used in an acquisition and data are required to be delivered, the data requirements shall be developed as specified by an approved Data Item Description (DD Form 1664) and delivered in accordance with the approved Contract Data Requirements List (CDRL), incorporated into the contract. When the provisions of DOD Federal Acquisition

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Regulations (FAR) Supplement, Part 27, Sub-Part 27.475-1 (DD Form 1423) are invoked and the DD Form 1423 is not used, the data should be delivered by the contractor in accordance with the contract or purchase order requirements.

6.4 First article. When a first article inspection is required, the item will be tested and should be a first article sample, or it may be a standard production item from the contractor's current inventory as specified in 4.2.1. The first article should consist of one complete ice cream plant. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examination, test, and approval of the first article.

6.5 Definitions

6.5.1 Standard commercial product. A standard commercial product is a product which has been sold or is being currently offered for sale on the commercial market through advertisements or manufacturer's catalogs, or brochures, and represents the latest production model (see 3.5).

6.6 Supersession data. This specification supersedes military specification MIL-I-16042E, dated 22 August 1983.

6.7 Cross-reference data. Cross-reference of classification changes between this specification and the superseded specification is as follows:

MIL-I-16042E	OO-I-2795
Type I - Freezers	Not included
Size 10 - 10-quart batch size	Not applicable (NA)
Size 20 - 20-quart batch size	NA
Type II - Hardening cabinets	Not included
Size 35 - 35-gallon storage capacity	NA
Size 60 - 60-gallon storage capacity	NA
Type III - Plants	Included
Size 10-35 - Type I, size 10 and type II, size 35	Size 1
Size 20-60 - Type I, size 20 and type II, size 60	Size 2

6.8 Part or identifying number (PIN). The PIN to be used for ice cream plants covered by this specification is created as follows:

	F2795	X
	*	*
Federal specification designation -----	*	*
		*
Size code (see 1.2) -----		*

6.9 Subject term (key word) listing.

Ice cream cabinets
Ice cream freezers
Hardening cabinets
Mechanically refrigerated

OO-I-2795

MILITARY INTERESTS:

Military Coordinating Activity

Navy - YD

Custodian

Navy - YD

Review Activities

Navy - MC

DLA - GS

User Activity

Navy - MS

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FSS

PREPARING ACTIVITY:

Navy - YD

(Project 4110-0462)

Orders for this publication are to be placed with General Services Administration, acting as an agent for the Superintendent of Documents. See section 2 of this specification to obtain extra copies and other documents referenced herein.