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16 September 1985

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**SUPERSEDING**

**MIL-STD-1162B**

**14 October 1980**

# **MILITARY STANDARD**

## **SANITARY STANDARDS**

### **FOR CHEESE**

#### **(AND RELATED CHEESE PRODUCTS)**

#### **PLANTS**



**20071005328**

35

DEPARTMENT OF DEFENSE  
Washington, D.C. 20310-2300

Sanitary Standards for Cheese (And Related Cheese Products) Plants

MIL-STD 1162C

1. This Military Standard is approved for use by all Departments and Agencies of the Department of Defense.
2. The proponent agency of this regulation is the Office of the Surgeon General. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) direct to Commandant, Academy of Health Sciences, US Army ATTN: HSHA-IVS, Fort Sam Houston, TX 78234 or use DD Form 1426 (Standardization Document Improvement Proposal) which is self-addressed appearing at the end of this document.

**REPORT DOCUMENTATION PAGE**

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Appendix	Cheese (And Related Cheese Products) Plant Sanitary Compliance Checklist
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1.1 Purpose. This standard establishes the general sanitary requirements for cheese (and related cheese products) plants.

1.2 Application. This standard is applicable to all types of plants supplying, processing, or storing cheese and related cheese products destined for Armed Forces procurement. Compliance with this standard is mandatory for the listing of plants in the Directory of Sanitarily Approved Food Establishments for Armed Forces Procurement as provided in AR 40-657/NAVSUPINST 4355.4/AFR 161-32/MCO P10110.31.

1.3 Objectives. This standard is intended to insure clean, wholesome food products that are free from chemical, microbiological, and physical contaminants and to prevent the transmission of foodborne disease to members of the Armed Forces.

1.4 Limitations. This standard will not be used to determine the capability of an establishment to produce or furnish products or services which are in compliance with specifications or other purchase descriptions.

## 2. REFERENCED DOCUMENTS

2.1 Issues of documents. The following documents of the issue in effect on date of invitation for bids or request for proposal, form a part of this standard to the extent specified herein.

### LAWS AND REGULATIONS

#### Environmental Protection Agency

Code of Federal Regulations (CFR), Title 40, Protection of the Environment

(Application for copies should be addressed to Superintendent of Public Documents, US Government Printing Office, Washington, DC 20402.)

#### US Department of Agriculture (USDA)

Code of Federal Regulations (CFR), Title 7, Agriculture, and Regulations Promulgated Thereunder

List of Proprietary Substances and Nonfood Compounds Authorized for Use Under USDA Inspection and Grading Programs

(Application for copies should be addressed to Superintendent of Public Documents, US Government Printing Office, Washington, DC 20402.)

General Specifications for Dairy Plants Approved for USDA Inspection and Grading Service

(Application for copies should be addressed to the Dairy Division, Agricultural Marketing Service (AMS), USDA, Washington, DC 20250.)

Brucellosis Eradication, Uniform Methods and Rules, Animal and Plant Health Inspection Service, US Department of Agriculture, Publication 91-1

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Uniform Methods and Rules--Bovine Tuberculosis Eradication, Uniform Methods and Rules for the Establishment and Maintenance of Tuberculosis-Free Accredited Herds of Cattle, Modified Accredited Areas, and Areas Accredited Free of Bovine Tuberculosis in the Domestic Bovine

(Application for copies should be addressed to the Veterinary Services, Animal and Plant Health Services, US Department of Agriculture, Federal Center Building, Hyattsville, MD 20782.)

US Department of Health and Human Services (HHS)

Code of Federal Regulations (CFR), Title 21, Food and Drugs

Grade "A" Pasteurized Milk Ordinance, US Public Health Service (USPHS), Food and Drug Administration Publication 229

(Application for copies should be addressed to the Superintendent of Public Documents, US Government Printing Office, Washington, DC 20402.)

2.2 Other publications. The following documents form a part of this standard to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply:

American Public Health Association (APHA)

Standard Methods for the Examination of Dairy Products

(Application for copies should be addressed to the American Public Health Association, Inc., 1015 18th St., N.W., Washington, DC 20036.)

Association of Official Analytical Chemists (AOAC)

Official Methods of Analysis of the Association of Official Analytical Chemists

(Application for copies should be addressed to the AOAC, 1111 North 19th Street, Suite 210, Arlington, VA 22209.)

Illuminating Engineering Society (IES)

IES Lighting Handbook

(Application for copies should be addressed to Illuminating Engineering Society, 40 United Engineering Center, 345 East 47th Street, New York, NY 10017.)

International Association of Milk, Food and Environmental Sanitarians, Inc.

3-A Sanitary Standards

(Application for copies of particular standards pertaining to dairy equipment should be addressed to the Journal of Food Protection, PO Box 701, Ames, IA 50010.)

National Sanitation Foundation (NSF)

NSF Standard #37 for Air Curtains  
NSF Standard C-6 for Continuous Cloth Towel Dispensers

(Application for copies should be addressed to the National Sanitation Foundation, PO Box 1468, Ann Arbor, MI 48106.)

U.S. Pharmacopeia

U.S. Pharmacopeia

(Application for copies should be addressed to the Mack Publishing Co., 20th and Northhamptom Streets, Easton, PA 18042.)

(Technical society and technical association specifications and standards are generally available for reference from libraries. They are also distributed among technical groups and using Federal agencies.)

3. DEFINITIONS

3.1 General.

3.1.1 Adequate. Methods which are needed to accomplish the intended purpose in keeping with accepted public health practices.

3.1.2 Adulterated. Adulterated shall mean the condition of a food (a) if it bears or contains any poisonous or deleterious substance in a quantity which may render it injurious to health; (b) if it bears or contains added poisonous or deleterious substance for which no safe tolerance has been officially established, or in excess of such tolerance if one has been established; (c) if it consists in whole or part of any filthy, putrid, or decomposed substance, or if it is otherwise unfit for human consumption; (d) if it has been processed, prepared, packed, or held under insanitary conditions, whereby it may have become contaminated with filth, or whereby it may have been rendered injurious to health; (e) if it is in whole or in part the product of a diseased animal; or (f) if its container is composed in whole, or in part, of any poisonous or deleterious substance which may render the contents injurious to health.

3.1.3 Clean-In-Place (C-I-P) pipelines. C-I-P pipelines are rigid pipelines which have welded joints or have sanitary cleaned-in-place connections or joints of such design as to form a substantially smooth, flush interior surface.

3.1.4 Contamination. Contamination shall be the act or process of exposing the product to an adulterant or unwholesome material.

3.1.5 Culinary steam. Culinary steam is steam that is used with product.

3.1.6 Food. Any raw, cooked, or processed edible substance, ice, beverage, or ingredient used or intended for use or sale in whole or in part for human consumption.

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3.1.7 Keil unit. That amount of catalase activity that will decompose 1 gm of 100% hydrogen peroxide within 10 minutes at 77°F (25°C).

3.1.8 Pasteurization (pasteurized). "Pasteurized" when used to describe a dairy product means that every particle of product shall have been heated in properly operated equipment to one of the temperatures specified in the table of this paragraph and held continuously at or above that temperature for at least the specified time (or other time/temperature relationship which has been demonstrated to be equivalent thereto in microbial destruction):

<u>Temperature</u>	<u>Time</u>
145°F (62.8°C) <sup>1/</sup>	30 minutes
161°F (71.7°C) <sup>1/</sup>	15 seconds
191°F (88.3°C)	1.0 second
194°F (90.0°C)	0.5 second
201°F (93.9°C)	0.1 second
204°F (95.6°C)	0.05 second
212°F (100.0°C)	0.01 second

<sup>1/</sup>If the dairy ingredient has a fat content of 10 percent or more, or if it contains added sweeteners, the specified temperature shall be increased by 5°F (2.7°C).

3.1.9 Plant. The building or buildings or parts thereof, used for or in connection with the manufacturing, processing, packaging, labeling, or holding of human food.

3.1.10 Processing. Processing is any step in the manufacture or preparation of a product into its final form.

3.1.11 Production area. The room or area in which processing occurs.

3.1.12 Product area. The production area and all other areas where the product, ingredients, and packaging materials are handled or stored.

3.1.13 Product zone (food contact surface). The surface of any equipment or other material that contacts the product or ingredients during processing.

3.1.14 Sanitize. Means adequate treatment of clean product zones by a process that is effective in destroying vegetative cells of pathogenic bacteria and in substantially reducing numbers of other microorganisms. Such treatment shall not adversely affect the product and shall be safe for the consumer.

3.1.15 Wholesome. That characteristic possessed by a food product that is conducive to good health and well being in the consumer.

## 3.2 Dairy ingredients.

3.2.1 Butter. The food product, usually known as butter and which is made exclusively from milk or cream or both, with or without common salt, with or without additional coloring matter; and containing not less than 80 percent by weight of milkfat, all tolerances having been allowed for.

3.2.2 Cheese. The fresh or matured product obtained by draining after coagulation of milk, cream, skimmed or partly skimmed milk, or a combination of some or

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all of these products and including any cheese that conforms to the "Requirements for Specific Standardized Cheese and Related Cheese Products," as contained in CFR, Title 21, Food and Drugs.

3.2.3 Cream. Cream is the sweet, fatty liquid separated from milk, with or without the addition of milk or skim milk containing not less than 18 percent milkfat.

3.2.4 Milk. The whole lacteal secretion, practically free from colostrum, obtained by the complete milking of one or more healthy cows.

3.2.5 Nonfat dry milk. The pasteurized product resulting from the removal of fat and water from milk, and contains the lactose, milk proteins, and milk minerals in the same relative proportions as in the fresh milk from which made.

### 3.3 Related cheese products.

3.3.1 Process cheese. Process cheese is a mixture of fresh and aged natural cheese that has been pasteurized and may have added flavors. A cheese made by melting various types of cheese together and adding butter, milk, or cream.

3.3.2 Process cheese food. Process cheese food is similar to process cheese but may have added nonfat dry milk, whey solids, and water.

3.3.3 Process cheese spread. Process cheese spread is similar to process cheese food but with higher moisture and lower milkfat content.

3.3.4 Whey. The liquid portion of milk separated from solid portion (curd) by action of rennet or lactic acid.

3.3.5 Milkfat from whey. The fat obtained from the separation of cheese whey.

## 4. GENERAL REQUIREMENTS

4.1 Sanitary compliance rating (SCR). Establishments that attain an SCR of 90 or more shall be recommended for listing in the Directory of Sanitarily Approved Food Establishments for Armed Forces Procurement (the "Directory"), provided no critical defects, determined in accordance with 4.2.1, are recorded. When a critical defect is recorded, an SCR shall not be computed and the plant shall not be recommended for listing or retention in the Directory. Even though a critical defect is noted, the inspection of the plant will be completed noting all deficiencies.

4.2 Plant sanitary compliance checklist. The sanitary requirements are set forth in this military standard and itemized as sanitation defects in column 1 of the checklist (DD Form 2364 (Cheese (and Related Cheese Products) Plant Sanitary Compliance Checklist)). The individual defects are given assigned points in column 2 of the checklist, with some being designated as critical.

4.2.1 Recording of defects. The inspector designates as critical or numerically rates the observed sanitation defects. The numerical rating shall be within the numerical range of the assigned defects points in column 2 and recorded in column 3. Any defect entry and related defect points that are not applicable to the plant shall be deleted by lining out the nonapplicable defect and assigned defect points. These assigned defect points shall not be included when totaling

column 2. In instances where the inspector considers a defect to be of such magnitude as to constitute a serious health hazard, the numerical rating shall be deleted in column 2 and the word "critical" shall be recorded in columns 2 and 3. Defects which are designated as critical in the checklist may not be downgraded or assigned defect points. Numerical and critical defects shall be explained in the remarks section in sufficient detail so as to clearly describe the condition which resulted in the disrating. Also, any other deficiencies observed and considered by the inspector to be of sufficient importance to affect the SCR shall be explained in this section.

4.2.2 Computation of the sanitary compliance rating. If a critical defect is recorded, an SCR shall not be computed. If no critical defects are found, columns 2 and 3 are totaled and the SCR shall be computed using the following formula:

$$\frac{\text{Net total of column 2} - \text{Net total of column 3}}{\text{Net total of column 2}} \times 100 = \text{SCR}$$

The SCR assigned will be rounded to the nearest whole percent.

4.2.3 Checklist reproduction. DD Form 2364 will be locally reproduced on 8 1/2" x 11" paper. A copy for local reproduction purposes is located at the back of this MIL STD.

## 5. DETAILED REQUIREMENTS

5.1 Premises. The premises shall present a clean and orderly appearance. They shall be well drained, free of environmental conditions and/or materials that are a nuisance or a hazard to sanitation. The area shall be free of weeds, debris, and unused equipment and materials. The area shall be free of waste materials that are stored or handled in such a manner as to be a potential health hazard. The presence of any harborage, attractant and/or breeding area for insects, rodents, or birds shall not be permitted. If the plant grounds are bordered by grounds not under the plant operator's control, care must be exercised in the plant by inspection, extermination, or other means to effect exclusion of pests, dirt, and other filth that may be a source of food contamination. The approaches to receiving and shipping docks shall be kept clean and maintained to minimize dust.

5.1.1 Bulk unloading facilities. Facilities used for bulk unloading from tankers shall be constructed of smooth concrete or equally impervious material, with the floor properly sloped to drain, and equipped with trapped drains of sufficient size. Lighting and ventilation shall be adequate. Tank manholes shall be protected against contamination from dust, insects, rodents, birds, and falling debris. Facilities shall be provided for adequate washing and sanitizing of tanks, bins, piping, pumps, and other items of equipment used in bulk receiving operations. All pipe passes, door or window entrances to the plant proper shall be protected by screening, quick-acting, self-closing doors, air curtains, or otherwise approved rodent and insect-proof closures.

5.2 Raw materials. All raw materials must be obtained from approved sources as required by AR 40-657/NAVSUPINST 4355.4/AFR 161-32/MCO P10110.31. All raw materials must meet USDA, USPHS, and CFR requirements, standards, and specifications. Raw materials shall have a fresh appearance and odor, and be free of adulteration and contamination when received at the plant. They shall show no evidence of insanitary condition or deterioration. The raw materials shall be processed, stored, and delivered under sanitary conditions. Plants shall have a quality control program for

testing and examining raw materials as described in paragraphs 5.2.1 and 5.13. The raw milk used in the plants shall comply with all the quality requirements specified in the General Specifications for Dairy Plants Approved for USDA Inspection and Grading Service. The milk shall be drawn from cows in herds accredited as tuberculosis-free and certified brucellosis-free by the US Department of Agriculture or the Army Veterinary Service, or herds that have passed an annual tuberculosis test and meet USDA requirements for an individually certified herd, or from cows in herds located in: (a) A Modified Accredited Tuberculosis Area in accordance with USDA Uniform Methods and Rules - Bovine Tuberculosis Eradication; and (b) either, (1) a certified Brucellosis-Free area or (2) modified certified Brucellosis area; or (c) an area in the process of being certified or accredited under the provisions of the Animal and Plant Health Inspection Service Publication 91-1, or by the Army Veterinary Service. The milk shall be practically free from colostrum, fresh, wholesome, and normal in appearance and odor and shall be subject to inspection by the procuring agency or duly authorized representative.

#### 5.2.1 Raw milk.

5.2.1.1 Basis for classification. Raw milk for manufacturing purposes, from all producers, shall be based on the following: organoleptic examination (appearance and odor), quality control tests for sediment content, and bacterial estimate. In addition, milk from cows treated with antibiotics shall be excluded for such period of time as is necessary to have the milk free from antibiotics. All milk received from producers shall not exceed Federal Food and Drugs established limits for pesticide residues. Producers shall be promptly notified of any shipment or portion thereof of their milk that fails to meet any of these quality specifications.

5.2.1.2 Organoleptic examination (appearance and odor). The appearance and odor of acceptable raw milk shall be normal, fresh, and sweet. The milk shall be free from objectionable feed and other off-odors that would adversely affect the finished product, and it shall not show any abnormal condition (including, but not limited to curdled, ropy, bloody, or mastitic condition), as indicated by sight, odor, or other test procedures.

5.2.1.3 Quality control tests. The raw milk supply shall comply with the minimum bacterial and sediment requirements for acceptable milk set forth in the General Specifications for Dairy Plants Approved for USDA Inspection and Grading Service.

5.2.2 Calcium chloride. Calcium chloride, when used, shall meet the requirements of the Food Chemicals Codex.

5.2.3 Catalase. The catalase preparation shall be a stable, buffered solution, neutral in pH, having a potency of not less than 100 Keil units per milliliter. The source of the catalase, its application and usage shall be as specified in the "Definitions and Standards of Identity for Cheese and Cheese Products," CFR, Title 21, Food and Drug Administration.

5.2.4 Cheese cultures. Harmless microbial cultures used in the development of acid and flavor components in cheese shall have a pleasing and desirable taste and odor and shall have the ability to actively produce the desired results in the cheese during the manufacturing process.

5.2.5 Color. Coloring, when used, shall be Annatto or any cheese or butter color which meets the requirements of the Food and Drug Administration.

5.2.6 Hydrogen peroxide. The solution shall comply with the specification of the U.S. Pharmacopeia, except that it may exceed the concentration specified therein and it does not contain added preservatives. Application and usage shall be as specified in the "Definitions and Standards of Identity for Cheese and Cheese Products," Food and Drug Administration.

5.2.7 Rennet, pepsin, other milk clotting enzymes, and flavor enzymes. Enzyme preparations used in the manufacture of cheese shall be safe and suitable.

5.2.8 Salt. The salt shall be free-flowing, white, refined sodium chloride and shall meet the requirements of the Food Chemicals Codex.

5.2.9 Single-service articles and packaging materials. Single-service articles and packaging materials shall be free of contamination and maintained in sanitary boxes, cartons, tubes, or otherwise protected and handled in a sanitary manner.

5.3 Construction of building. The building shall be large enough to accommodate the operation without hampering sanitary practices. Floors, walls, and ceilings shall be constructed of materials that can readily be kept clean, sanitary, and in good repair. An unnecessary clutter of wiring, pipes, hangers, ducts, etc., shall be avoided. Ceilings shall be free of peeling paint (painted ceilings shall be avoided) and condensates. The exterior openings, including doors, windows, conveyor openings, pipe openings, and vents, shall be clean and in good repair. Where practicable, exterior openings shall be equipped with screens or other effective means (for example, air curtains, overlapping plastic strips) to prevent the entrance of insects, birds, and/or other animals. When the screening of openings is impracticable, such as in receiving areas, flying insect entry shall be controlled by properly positioned air curtains or overlapping plastic strips large enough to cover the total door opening. Air curtains shall comply with NSF Standard No. 37 for Air Curtains for Entranceways in Food Establishments. Screen doors shall open outward and be self-closing. Rooms in the processing areas shall not open directly into barns, stables, living quarters, toilets, garages, or maintenance shops.

5.3.1 Rooms. Plant design shall be such as to provide separate rooms or well-defined and separate areas, as applicable, for milk receiving, processing, cheese making, drying, paraffining and boxing, rindless cheese wrapping area, cutting and packaging, coolers or curing rooms, and brine operation. A separate starter room or properly designed starter tanks shall be provided where applicable.

5.4 Lighting. Each room shall have sufficient natural or artificial lighting for the purpose for which it is to be used. Lighting intensities shall conform to the intensities established in the latest edition of the Illuminating Engineering Society Lighting Handbook (IESLH). Lights in the processing areas shall be equipped with protective shields or shall be of such construction that they will not shatter if broken.

5.5 Ventilation and humidity. Humidity shall be regulated in conjunction with ventilation or air movement to control condensation, objectionable odors, and

mold growth on ceilings and walls in all areas. Air for ventilation shall be adequately filtered as appropriate to prevent contamination. Ventilation systems shall be kept clean and maintained in good repair.

5.5.1 Make room. Rooms in which cheese is manufactured shall be of adequate size, and the equipment adequately spaced to permit movement around the equipment for proper cleaning and satisfactory working conditions. The rooms shall be provided with adequate filtered air ventilation. When applicable, the mold count should be not more than 15 colonies per plate during a 15 minute exposure.

5.5.2 Starter facility. The starter facility shall have satisfactory air movement techniques provided for the propagation and handling of starter cultures. All necessary precautions shall be taken to prevent contamination of the facility, equipment, and the air therein. The air shall be filtered and be provided so as to obtain outward movement of air from the room to minimize contamination.

5.5.3 Cutting and packaging rooms. The rooms shall be well lighted, ventilated, and provided with filtered air. Air movement shall be outward to minimize the entrance of unfiltered air into the cutting and packaging rooms.

5.6 Water supply. The water supply shall be readily accessible, of a sufficient quantity, and have an acceptable sanitary quality, as established in the National Interim Primary Drinking Water Regulations or military service regulations. The water heater shall be of such capacity so as to be able to furnish an undiminished supply of hot water for a complete food plant cleaning procedure at all times throughout a working day. There shall be mixing valves at all scullery sinks and hose connections. There shall be no cross-connection between potable and nonpotable lines. There shall be protection against possible back-siphonage. There shall be effective protection of wells from contamination by surface drainage or floods. Bacteriological examination and water test results shall be maintained at the plant to show that the water supply has been approved by Federal, state or local health authorities within the past six months.\* Within the Continental United States (CONUS), Hawaii, and Alaska, a water supply approved by a Federal, state, or local health authority will be considered potable, and certification of potability will normally not be required. Nonpotable water outlets, if present, shall be located and identified by color code and labeled nonpotable so as to preclude the use of nonpotable water for other than the purposes designated. The color code used shall be readily identifiable, prominently displayed, and clearly understood by plant personnel.\*\*

\*If Federal, state, or local health authorities do not have such evidence of water potability, applicable military regulations covering potable water supplies will be followed to approve the water supply(ies).

\*\*The use of nonpotable water is permitted for the flushing of urinals and commodes, for boilers, and for such other similar uses provided it does not directly, nor indirectly, contact the ingredients, product, packaging materials, general product area, or personnel handling the product.

5.7 Ice. Ice, if used, shall be made from a supply of potable water which meets the requirements of paragraphs 5.2 and/or 5.6. It shall be manufactured, handled, stored, and used in a sanitary manner.

5.8 Disposal of wastes. Liquid wastes shall be conveyed to a public sewer through inclosed piping or shall be disposed of in another sanitary sewage system approved by local/state health authorities. Floor drains shall be functional and properly trapped. Dry and product waste shall be placed in suitable covered receptacles conveniently located throughout the plant and premises. All waste shall be collected and disposed of at frequent intervals in a sanitary manner to prevent insect and rodent attraction and development of objectionable odors.

5.9 Toilet, dressing room, and handwashing facilities. A sufficient number of sanitary toilets or privies shall be provided. Employee toilet facilities required:

<u>Persons of same sex</u>	<u>Toilet bowls required</u>
1-15 inclusive	1
16-35 inclusive	2
36-55 inclusive	*3
56-80 inclusive	*4
For up to each additional 30 persons in excess of 80	*1

\*Urinals may be substituted for toilet bowls but only to the extent of one-third of the total number of bowls stated.

Toilet rooms shall be conveniently located, constructed of materials which can be easily and satisfactorily cleaned, adequately lighted, and separately vented to the outside. They shall be constructed so that they do not open directly into rooms or areas where components or products are processed or stored. The doors shall be tight-fitting and self-closing. A sign directing employees to wash their hands before returning to work shall be conspicuously posted in all toilet rooms. Handwashing signs will be multilingual, as appropriate. Handwashing facilities, with running water at a suitable temperature for handwashing, soap (liquid or powder), soap dispenser, and sanitary single-service towels, clean, individual sections of continuous cloth toweling or hot air blower-type hand dryers will be conveniently located in the toilet rooms and throughout the processing areas. Continuous cloth towel dispensers shall comply with the cloth towel dispensers, NSF Standard No. C-6 for Continuous Cloth Towel Dispensers. Toilets, dressing rooms, and handwashing facilities will be maintained in a clean, orderly manner. Toilets/dressing rooms shall not be used for storage of cleaning equipment. Privies shall be separate from the processing building, and of a sanitary type, location, and construction. Each employee shall be furnished a locker or other suitable facility, and lockers and dressing rooms shall be kept clean and orderly.

5.10 Construction and repair of equipment and utensils. Equipment and utensils shall be designed, constructed, and used so as to preclude the adulteration of food with toxic lubricants, fuel, metal fragments, contaminated water, and any other contaminant. Lubricants used on contact surfaces of moving parts to pumps, product handling and processing equipment shall be edible and should be used sparingly. The only lubricants authorized for use are those listed in the USDA publication, "List of Proprietary Substances and Nonfood Compounds Authorized for Use Under USDA Inspection and Grading Programs."

5.10.1 Equipment and utensils. All equipment and utensils shall be designed and be of such material and workmanship so as to be smooth, easily cleanable, and durable. The food contact surfaces of such equipment shall, in addition, be easily accessible for cleaning, nontoxic, corrosion-resistant and consist of nonabsorbent material. Food contact surfaces and solder shall be corrosive-resistant and shall not contain antimony, bismuth, cadmium, lead, zinc, and/or other toxic materials. Solder on the food contact surface shall be hard solder of such formulation so as to be nontoxic under use conditions. Equipment shall be so located as to provide adequate space for cleaning, maintenance, and inspection. Nonmetallic parts other than glass having product contact surfaces shall comply with 3-A Sanitary Standards for Plastic or Rubber and Rubber-Like Materials. Equipment and utensils used for cleaning shall be in an acceptable condition, such as not rusty, pitted, or corroded. All equipment and piping shall be kept in good repair, free from cracks, and corroded surfaces. New or rearranged equipment, shall be set away from any wall or spaced in such a manner as to facilitate proper cleaning and to maintain good housekeeping. All parts or interior surfaces of equipment, pipes (except certain piping cleaned-in-place) or fittings, including valves and connections, shall be accessible for inspection. Milk and dairy product pumps shall be of a sanitary type and easily dismantled for cleaning or shall be of specially approved construction to allow effective cleaning in place (C-I-P). All C-I-P systems shall comply with the 3-A Accepted Practices for Permanently Installed Sanitary Product-Pipelines and Cleaning Systems.

5.10.1.1 Automatic curd filler. The automatic curd filler shall be constructed of stainless steel or other equally corrosion-resistant metal. This equipment shall be of sufficient size to handle the volume of curd and constructed and controlled so as to accurately weigh the amount of curd as it fills. The curd filler shall be constructed so that it can be satisfactorily cleaned.

5.10.1.2 Automatic curd maker. The automatic curd making system shall be constructed of stainless steel or of materials approved in the 3-A Sanitary Standards for Plastic or Rubber and Rubber-Like Materials. All areas shall be free from cracks and rough surfaces and constructed so they can be easily cleaned.

5.10.1.3 Automatic salter. The automatic salter shall be constructed of stainless steel or other equally corrosion-resistant metal. This equipment shall be constructed to equally distribute the salt throughout the curd. It shall be designed to accurately weigh the amount of salt added. The automatic salter shall be constructed so that it can be satisfactorily cleaned. The salting system shall provide for adequate absorption of the salt in the curd. Water and steam used to moisten the curd prior to salting shall be potable water or culinary steam.

5.10.1.4 Brine tanks. Brine tanks shall be constructed of suitable nontoxic material and shall be resistant to corrosion, pitting, or flaking. The brine tanks shall be operated so as to assure the brine is clean, well circulated, and of the proper strength and temperature for the variety of cheese being made.

5.10.1.5 Can washers. Can washers shall have sufficient capacity and ability to discharge a clean dry can and cover and shall be kept properly timed in accordance with the instructions by the manufacturer. They shall be equipped with proper temperature controls on the wash and rinse tanks and the following additional devices: prerinse jet, wash tank solution feeder, can sanitizing attachment, forced

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air vapor exhaust, and removable air filter on drying chamber. The water and steam lines supplying the washer shall maintain a reasonably uniform pressure and if necessary be equipped with pressure regulating valves. The steam pressure to the can washer shall be not less than 80 pounds and the temperature of the wash and final rinse solution shall be automatically controlled and not exceed 140°F (60°C).

5.10.1.6 Cheese vats, starter vats, tanks, and drain tables. The vats, tanks, and drain tables used for making cheese shall be of metal construction with adequate jacket capacity for uniform heating. The inner liner shall be minimum 16 gauge stainless steel or other equally corrosion-resistant metal properly pitched from side to center and from rear to front for adequate drainage. The liner shall be smooth, free from excessive dents or creases, and shall extend over the edge of the outer jacket. The outer jacket shall be constructed of stainless steel or other metal which can be kept clean and sanitary. The junction of the liner and outer jackets shall be constructed so as to prevent milk or cheese from entering the inner jacket. The vat, tank, and/or drain table shall be equipped with a suitable sanitary outlet valve. Effective valves shall be provided and properly maintained to control the application of heat to this equipment. If this equipment is provided with removable cloth covers, they shall be clean.

5.10.1.7 Cheese vacuumizing chamber. The vacuum chamber shall be satisfactorily constructed and maintained so that the product is not contaminated with rust or flaking paint. An inner liner of stainless steel or other corrosion-resistant material shall be provided.

5.10.1.8 Coil or dome-type batch pasteurizers. Coil or dome-type batch pasteurizers shall be stainless steel lined and if the coil is not stainless steel or other equally noncorrosive metal, it shall be properly tinned over the entire surface. Sanitary seal assemblies at the shaft ends of coil vats shall be of the removable type, except that existing equipment not provided with this type gland will be acceptable if the packing glands are maintained and operated without adverse effects. New or replacement units shall be provided with removable packing glands. Agitators in dome-type pasteurizers shall be stainless steel except that any nonmetallic parts shall comply with 3-A Sanitary Standards for Plastic or Rubber and Rubber-Like Materials, as applicable. Each pasteurizer used for heating product at a temperature of 5°F (2.7°C) or more above the minimum pasteurization temperature need not have the air-space heater. It shall be equipped with an air-space thermometer to insure a temperature at least 5°F (2.7°C) above that required for pasteurization of the product. There shall be adequate means of controlling the temperature of the heating medium. Batch pasteurizers shall have temperature indicating and recording devices.

5.10.1.9 Conveyor for moving and draining block or barrel cheese. The conveyor shall be constructed so that it will not contaminate the cheese and can be easily cleaned. It shall be installed so that the press drippings will not cause an environmental problem.

5.10.1.10 Cookers. The cookers shall be the steam jacketed or direct steam type. They shall be constructed of stainless steel or other equally corrosion-resistant

material. All product contact surfaces shall be readily accessible for cleaning. Each cooker shall be equipped with an indicating thermometer, and shall be equipped with a temperature recording device. The recording thermometer stem may be placed in the cooker if satisfactory time charts are obtained. If not, the stem shall be placed in the hotwell or filler hopper. Steam check valves on direct steam type cookers shall be mounted flush with cooker wall, be constructed of stainless steel, and designed to prevent the backup of product into the steam line, or the steam line shall be constructed of stainless steel pipes and fittings which can be readily cleaned. If direct steam is applied to the product, only culinary steam shall be used.

5.10.1.11 Curd conveying systems. The curd conveying system, conveying lines, and cyclone separator shall be constructed of stainless steel or other equally corrosion-resistant metal and in such manner that it can be satisfactorily cleaned. The system shall be of sufficient size to handle the volume of curd and be provided with filtered air of the quality satisfactory for the intended use. Air compressors or vacuum pumps shall not be located in the processing or packaging areas.

5.10.1.12 Curd mill and miscellaneous equipment. Knives, hand rakes, shovels, scoops, paddles, strainers, and miscellaneous equipment shall be stainless steel or of material approved in the 3-A Sanitary Standards for Plastic or Rubber and Rubber-Like Materials. The product contact surfaces of the curd mill shall be of stainless steel. All pieces of equipment shall be so constructed that they can be kept clean and free from rough or sharp edges which might scratch the equipment or remove metal particles. The wires in the curd knives shall be stainless steel, kept tight, and replaced when necessary. Racks of corrosion-resistant material shall be provided for storage of clean utensils when not in use.

5.10.1.13 Fillers. A strainer shall be installed between the cooker and the filler. The hoppers of all fillers shall be covered but the cover may have sight ports. If necessary, the hopper may have an agitator to prevent buildup on side wall. The filler valves and head shall be kept in good repair and capable of accurate measurements. Product contact surfaces shall be stainless steel or other corrosion-resistant material.

5.10.1.14 Grinders or shredders. The grinders or shredders used in the preparation of the trimmed and cleaned cheese shall be of corrosion-resistant material and of such construction as to prevent contamination of the cheese and to allow thorough cleaning of all parts and product contact surfaces.

5.10.1.15 High temperature short time (HTST) and ultra-high temperature (UHT). When pasteurization is intended or required, the HTST or UHT system shall be equipped with an approved timing pump or device, recorder-controller, automatic flow diversion valve and holding tube or its equivalent. If not a part of the existing equipment, the above listed items shall be installed on all such equipment used for pasteurization, to assure complete pasteurization. The entire facility shall comply with the 3-A Accepted Practices for the Sanitary Construction, Installation, Testing and Operation of High Temperature Short Time Pasteurizers. After the unit has been tested according to the 3-A Accepted Practices, the timing pump or device and the recorder-controller shall be sealed at the correct setting to assure pasteurization. The system shall be rechecked semiannually to assure

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continued compliance with the 3-A Accepted Practices. Sealing and rechecking of the unit shall be performed by the control authority having jurisdiction. When direct steam pasteurizers are used, the steam, prior to entering the product, shall be conducted through a steam strainer and a steam purifier equipped with a steam trap and only steam meeting the requirements for culinary steam as specified by the 3-A Accepted Practices for a Method of Producing Steam of Culinary Quality shall be used.

5.10.1.16 Hoops, forms, and followers. The hoops, forms, and followers shall be constructed of stainless steel, heavy tinned steel, or other approved materials. If tinned, they shall be kept tinned and free from rust. All hoops, forms, and followers shall be kept in good repair. Drums or other special forms used to press and store cheese shall be kept clean and sanitary.

5.10.1.17 Hoop and barrel washer. The hoop and barrel washer shall be constructed so that it can be satisfactorily cleaned. It shall also be equipped with temperature and pressure controls to insure satisfactory cleaning of the hoops or barrels. It shall be adequately vented to the outside.

5.10.1.18 Indicating thermometers.

5.10.1.18.1 Long stem indicating thermometers. Long stem indicating thermometers which are accurate within  $0.5^{\circ}\text{F}$  ( $.3^{\circ}\text{C}$ ), plus or minus, for the applicable temperature range, shall be provided for checking the temperature of pasteurization and cooling of products in vats and checking the accuracy of recording thermometers.

5.10.1.18.2 Short stem indicating thermometers. Short stem indicating thermometers which are accurate within  $0.5^{\circ}\text{F}$  ( $.3^{\circ}\text{C}$ ), plus or minus, for the applicable temperature range, shall be installed in the proper stationary position in all pasteurizers. Storage tanks where temperature readings are required shall have thermometers which are accurate within  $2^{\circ}\text{F}$  ( $1.1^{\circ}\text{C}$ ), plus or minus.

5.10.1.18.3 Air space indicating thermometers. Air space indicating thermometers, where applicable, which are accurate within  $1^{\circ}\text{F}$  ( $.6^{\circ}\text{C}$ ), plus or minus, for the proper temperature range shall also be installed above the surface of the products pasteurized in vats, to make certain that the temperature of the foam and/or air above the products pasteurized also received the required minimum temperature treatment.

5.10.1.19 Internal return tubular heat exchangers. Internal return tubular heat exchangers shall comply with the 3-A Sanitary Standards for Internal Return Tubular Heat Exchangers for Milk and Milk Products.

5.10.1.20 Mechanical agitators. The mechanical agitators shall be of sanitary construction. The carriages shall be of the enclosed type and all product contact surfaces, shields, shafts, and hubs shall be constructed of stainless steel or other equally corrosion-resistant metal. Metal blades, forks, or stirrers shall be constructed of stainless steel and of material approved in the 3-A Sanitary Standards for Plastic or Rubber and Rubber-Like Materials and shall be free from rough or sharp edges which might scratch the equipment or remove metal particles.

5.10.1.21 Milk cans. Cans used in transporting milk or cream from dairy farm to plant shall be of such construction (preferably seamless with umbrella lids) as to be easily cleaned, and shall be inspected, repaired, and replaced as necessary to exclude the use of cans and lids with open seams, cracks, rust, milkstone, or any unsanitary condition.

5.10.1.22 Monorail. The monorail shall be constructed so as to prevent foreign material from falling on the cheese or cheese containers.

5.10.1.23 Paraffin tanks. The metal tanks shall be adequate in size, have wood rather than metal racks to support the cheese, have heat controls, and an indicating thermometer. The cheese wax shall be kept clean.

5.10.1.24 Plate type heat exchangers. Plate type heat exchangers shall comply with the 3-A Sanitary Standards for Plate Type Heat Exchangers for Milk and Milk Products. All gaskets shall be tight and kept in good operating order. Plates shall be opened for inspection by the operator at sufficiently frequent intervals to determine if the equipment is clean and in satisfactory condition. A cleaning regimen shall be posted to insure proper cleaning procedures between inspection periods.

5.10.1.25 Press. The cheese press shall be constructed of stainless steel and all joints welded and all surfaces, seams, and openings readily cleanable. The pressure device shall be the continuous type. Press cloths shall be maintained in good repair and in a sanitary condition. Single service press cloths shall be used only once.

5.10.1.26 Product storage tanks or vats. Storage tanks or vats shall be fully enclosed or tightly covered and well insulated. The entire interior surface, agitator, and all parts shall be accessible for thorough cleaning and inspection. Any opening at the top of the tank or vat including the entrance of the shaft shall be suitably protected against the entrance of dust, moisture, insects, oil, or grease. The sight glasses, if used, shall be sound, clear, and in good repair. Vats which have hinged covers shall be easily cleaned and shall be so designed that moisture, or dust on the surface, cannot enter the vat when the covers are raised. If the storage tanks or vats are equipped with air agitation, the system shall be of an approved type and properly installed in accordance with the 3-A Sanitary Standards for Accepted Practices for Supplying Air Under Pressure. Storage tanks or vats intended to hold product for longer than approximately eight hours shall be equipped with adequate refrigeration and/or have adequate insulation. New or replacement storage tanks or vats shall comply with the appropriate 3-A Sanitary Standards for Storage Tanks for Milk and Milk Products, or 3-A Sanitary Standards for Silo-Type Storage Tanks for Milk and Milk Products and shall be equipped with thermometers in good operating order.

5.10.1.27 Pumps. All pumps used for milk and dairy products shall be of the sanitary type and shall be constructed to meet 3-A Sanitary Standards. Unless pumps are specifically designed for effective cleaning in place, they shall be disassembled and thoroughly cleaned after each day's use.

5.10.1.28 Recording thermometers. Recording thermometers that are accurate within  $1^{\circ}\text{F}$  ( $.6^{\circ}\text{C}$ ), plus or minus, for the applicable temperature range, shall be used on each heat treating, pasteurizing, or thermal processing unit to record the heating process. Additional use of recording thermometers accurate within  $2^{\circ}\text{F}$  ( $1.1^{\circ}\text{C}$ ), plus or minus, may be required where a record of temperature or time of cooling and holding is of significant importance. Recorder charts shall be marked to show date and plant identification, reading of the indicating thermometer at a particular referenced reading point on the recording chart, amount, name of product, product temperature at the "cut-in" and "cut-out" function, record of the period in which flow diversion valve is in forward-flow position, and signature or initials of operator.

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5.10.1.29 Rindless cheese wrapping equipment. The equipment used to heat seal the wrapper applied to rindless cheese shall have square interior corners, reasonably smooth interior surfaces and controls that provide uniform pressure and heat equally to all surfaces. The equipment used to apply shrinkable wrapping material to rindless cheese shall operate to maintain the natural intended shape of the cheese in an acceptable manner, reasonably smooth surfaces on the cheese, and tightly adhere the wrapper to the surface of the cheese.

5.10.1.30 Separators. All product contact surfaces of separators shall be free from rust and pits and insofar as practicable, shall be of stainless steel or other equally noncorrosive metals.

5.10.1.31 Surface coolers. Surface coolers shall be equipped with hinged or removable covers for the protection of the product. The edges of the fins shall be so designed as to divert condensate on nonproduct contact surfaces away from product contact surfaces. All gaskets or swivel connections shall be leak proof.

5.10.1.32 Vacuumizing equipment. The vacuum chamber, as used for flavor control, shall be made of stainless steel or other equally corrosion-resistant metal. The unit shall be constructed to facilitate cleaning and all product contact surfaces shall be accessible for inspection. Vacuum chambers located on the pasteurized side of the unit shall be isolated by means of a vacuum breaker and a positive activated check valve on the discharge side. If direct steam is used for heating, the vacuum chamber shall also be equipped with a ratio controller to regulate the composition when applicable to the finished product. Only steam which meets the requirements for culinary steam shall be used. The incoming steam supply shall be regulated by an automatic solenoid valve which will cut off the steam supply in the event the flow diversion valve of the pasteurizer is not in the forward flow position. Condensers when used shall be equipped with a water level control and an automatic safety shut-off valve.

5.10.1.33 Washing machine. When used, the washing machine for cheese cloths and bandages shall be of commercial quality and size; or of sufficient size to handle the applicable load. It shall be equipped with temperature and water level controls.

5.10.1.34 Weigh cans and receiving tanks. Weigh cans and receiving tanks shall comply with the 3-A Sanitary Standards for Weigh Cans and Receiving Tanks for Raw Milk and shall be easily accessible for cleaning both inside and outside and shall be elevated above the floor and protected sufficiently with the necessary covers or baffles to prevent contamination from splash, condensate, and drippage. Where necessary to provide easy access for cleaning of floors and adjacent wall areas, the receiving tank shall be equipped with wheels or casters to allow easy removal.

5.11 Cleaning and sanitizing treatment. The methods used for cleaning and sanitizing shall be such that the product shall not be contaminated or adulterated. All products shall be moved sufficiently far away or otherwise protected prior to the start of cleaning to avoid contamination or adulteration by splashing. All multiple-service containers, equipment, and utensils used in handling, processing, storing, or transporting of exposed product shall be disassembled, as applicable,

cleaned thoroughly, and sanitized after use. Chemicals used in cleaning and sanitizing treatments shall be properly labeled and stored. Cleaning and sanitizing chemicals shall be used in accordance with (IAW) the manufacturer's recommendation. The only chemical compounds authorized for use are those listed in the USDA publication, "List of Proprietary Substances and Nonfood Compounds Authorized for Use Under USDA Inspection and Grading Programs." When chemical sanitizers are used, a test kit or other device that accurately measures the correct concentration of the solution shall be provided and used. If water is to be used as the sanitizer, it must be not less than 170°F (77°C). All rooms and areas used to receive, process, or store components or the finished product shall be maintained in a clean, sanitary manner so as to preclude the possibility of microbiological, chemical, or physical contamination. The equipment, sanitary piping, and utensils used in receiving and processing of the milk, and the manufacturing and handling of the product, shall be maintained in a sanitary condition. Sanitary seal assemblies shall be removable on all agitators, pumps, and vats and shall be inspected at regular intervals and kept clean. Unless other provisions are recommended in the following supplement sections, all equipment not designed for C-I-P cleaning or mechanical cleaning shall be disassembled after each day's use for thorough cleaning. Dairy cleaners, detergents, wetting agents, sanitizing agents, or other similar materials which will not contaminate or adversely affect the product may be used as stated in the Grade "A" Pasteurized Milk Ordinance. Steel wool or metal sponges shall not be used in the cleaning of any dairy equipment or utensils. Product contact surfaces shall be subjected to an effective sanitizing treatment prior to use except where dry cleaning is permitted. Utensils and portable equipment used in processing and manufacturing operations shall be stored above the floor in clean, dry locations and in a self-draining position on racks constructed of impervious corrosion-resistant material.

5.11.1 C-I-P or mechanical cleaning systems. C-I-P or mechanical cleaning systems shall be used only on equipment and pipeline systems which have been designed, engineered, and installed for that purpose. When such cleaning is used, careful attention shall be given to the proper procedures to assure satisfactory cleaning. All C-I-P installations and cleaning procedures shall be in accordance with 3-A Accepted Practices for Permanently Installed Sanitary Product-Pipelines and Cleaning Systems. Because of the possibilities of corrosion, the recommendations of the cleaning compound manufacturer should be followed with respect to time, temperature, and concentration of specific acid or alkaline solutions and bactericides. Such cleaning operation shall be preceded by a thorough rinse at approximately 110-115°F (43-46°C) continuously discarding the water. Following the circulation of the cleaning solution, the equipment and lines shall be thoroughly rinsed with lukewarm water and checks should be made for effectiveness of cleaning. All caps, plugs, special fittings, valve seats, cross ends, pumps, and tee ends shall be opened or removed and brushed clean. All nonpasteurized product contact surfaces shall be sanitized. Immediately prior to starting the product flow, the pasteurized product contact surfaces shall be given sanitizing treatment.

5.11.2 Milk cans. Milk cans and lids shall be cleaned, sanitized, and dried before returning to producers. Inspection, repair, or replacement of cans and lids shall be adequate to exclude from use cans and lids showing open seams, cracks, rust condition, milkstone, or any unsanitary condition.

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5.11.3 Can washers. Can washers shall be maintained in a clean and satisfactory operating condition and kept free from accumulation of scale or debris which will adversely affect the efficiency of the washer. Only washing compounds which are compatible with the water for effective cleaning should be used. The can washer should be checked regularly during the run for proper operation. At the end of the day, the wash and rinse tanks should be drained and cleaned, jets and strainers cleaned, air filters checked and changed or cleaned if needed, and checks should be made for proper adjustment and condition of mechanical parts.

5.11.4 Milk transport tanks. A covered or enclosed wash dock and cleaning and sanitizing facilities shall be available to all plants that receive or ship milk in tanks. Milk transport tanks, sanitary piping, fittings, and pumps shall be cleaned and sanitized at least once each day after use; provided that, if they are not to be used immediately after emptying a load of milk, they shall be washed promptly after use and given bactericidal treatment immediately before use. After being washed and sanitized, each tank should be identified by a tag attached to the outlet valve, bearing the following information: plant and specific location where cleaned, date and time of day of washing and sanitizing, and the name of person who washed and name of person who sanitized the tank. The tag shall not be removed until the tank is again washed and sanitized.

5.11.5 Building. All windows, glass, partitions, and skylights shall be washed as often as necessary to keep them clean. Cracked or broken glass shall be replaced promptly. The walls, ceilings, and doors shall be washed periodically and kept free from soil and unsightly conditions. The shelves and ledges shall be wiped or vacuumed as often as necessary to keep them free from dust and debris. The material picked up by the vacuum cleaners shall be disposed of in sealed containers which will prevent contamination or insect infestation from the waste material. Processing rooms shall be kept free from equipment and materials not regularly used.

5.12 Methods. Methods used in the processing, handling, and storage shall be conducted in a sanitary manner so as to prevent contamination or adulteration, and not contribute to deterioration of the product from a public health standpoint.

5.12.1 Cheese from pasteurized milk. If the cheese is labeled as pasteurized, the milk shall be pasteurized by subjecting every particle of milk to a minimum temperature of 161°F (71.7°C) for not less than 15 seconds or by any other approved combination of temperature and time treatment. If the milk is held more than two hours between the time of pasteurization and setting, it shall be cooled to 45°F (7.2°C) or lower until time of setting.

5.12.2 Cheese from unpasteurized milk. If the cheese is labeled as "heat treated," "unpasteurized," "raw milk," or "for manufacturing," the milk may be raw or heated at temperatures below pasteurization. Cheese made from unpasteurized milk shall be cured for a period of 60 days at a temperature not less than 35°F (1.7°C). If the milk is held more than two hours between time of receipt or heat treatment and settling, it shall be cooled to 45°F (7.2°C) or lower until time of setting.

5.12.3 Make schedule. A uniform schedule shall be established and followed as closely as possible for the various steps of setting, cutting, cooking, draining the whey, and milling the curd to promote a uniform quality of cheese.

12.4 Records. Starter and make records should be kept at least three months.

5.12.5 Whey handling. Adequate sanitary facilities shall be provided for the handling of whey. If outside, necessary precautions shall be taken to minimize flies, insects, and development of objectionable odors. Whey or whey products intended for human food shall at all times be handled in a sanitary manner. Milkfat from whey should not be more than four days old when shipped.

5.12.6 Cooking the batch for related cheese products. Each batch of cheese within the cooker, including optional ingredients, shall be thoroughly commingled and contents pasteurized at a temperature of at least 158°F (70°C), and held at that temperature for not less than 30 seconds or any other equally effective approved combination of time and temperature. Care shall be taken to prevent the entrance of cheese particles or ingredients after the cooker batch of cheese has reached the final heating temperature. After holding for the required period of time, the hot cheese shall be emptied from the cooker as quickly as possible.

5.12.7 Filling related cheese products containers. Hot fluid cheese from the cookers may be held in hotwells or hoppers to assure a constant and even supply of processed cheese to the filler or slice former. Filler valves shall effectively measure the desired amount of product into the container in a sanitary manner and shall cut off sharply without drip or drag of cheese across the opening.

5.12.8 Closing and sealing containers. Pouches, liners, or containers having product contact surfaces, after filling shall be folded or closed and sealed in a sanitary manner, preferably by mechanical manner, so as to assure against contamination.

5.12.9 Cooling packaged related cheese products. After the containers are filled, they shall be stacked, or cased and stacked, in such a manner as to prevent breaking of seals due to excessive bulging and to allow immediate progressive cooling of the individual containers of cheese. As a minimum, the cheese should be cooled to a temperature of 100°F (37.8°C) or lower within 24 hours after filling. The temperature of the cheese shall be reduced further before being shipped or if storage is intended.

5.12.10 Steam supply. Steam shall be supplied in sufficient volume and pressure for satisfactory operation of each applicable piece of equipment. Culinary steam used in direct contact with milk or dairy products shall be free from harmful substances or extraneous material and only those boiler water additives which meet the requirements of 21 CFR 121.1088 shall be used, or a secondary steam generator shall be used in which soft water is converted to steam and no boiler compounds are used. Steam traps, strainers and condensate traps shall be used wherever applicable to insure a satisfactory and safe steam supply.

5.13 Public health controls. When applicable, means shall be provided to assure adequate public health control of the raw materials and finished product. The means shall include physical, chemical, and microbiological examinations and/or tests necessary to establish that product has not been adulterated or contaminated. Evidence that all necessary examinations and/or tests have been performed and records of such examinations shall be on file and made available to the military inspector.

16 September 1985

5.13.1 Official test methods.

5.13.1.1 Chemical. Chemical analysis shall be made in accordance with methods described in the latest edition of Official Methods of Analysis of the Association of Official Analytical Chemists, the Official and Tentative Methods of the American Oil Chemists Society, or any other methods giving equivalent results. However, in the case of dispute, the official method will prevail.

5.13.1.2 Microbiological. Microbiological determinations shall be made in accordance with methods described or suggested in the latest edition of Standard Methods for the Examination of Dairy Products.

5.14 Cooling and refrigeration. Cooler rooms shall be free from objectionable odors and from mold. They also shall be maintained in a sanitary condition. The coolers and freezers shall be capable of maintaining temperature and humidity necessary for the preservation of the foods being stored or processed.

5.15 Storing and storage facilities. Storage facilities shall be provided for storing raw materials, packing and packaging materials, and finished products. They shall be clean, sanitary, and in good repair. Storing methods which minimize deterioration and prevent contamination shall be used. Shelves, cabinets, and dunnage or pallets shall be used where necessary to protect materials from contamination.

5.16 Control of insects, birds, and animals. Insects, birds, and animals shall be excluded from the plant. Effective measures for the control of insects, birds, and/or other animals shall be maintained at all times. Operations or procedures which produce rodent harborages or insect breeding areas are prohibited. Insecticides and rodenticides, if used, shall be only those which appear in the USDA publication, "List of Proprietary Substances and Nonfood Compounds Authorized for Use Under USDA Inspection and Grading Programs." These products shall be used IAW labeled directions and shall be handled and stored in a safe manner.

5.17 Vehicles and transportation facilities. Vehicles and transportation facilities shall be constructed and operated to protect contents from contamination and deterioration. They shall be kept clean and in good repair.

5.18 Cleanliness and health of personnel.

5.18.1 Cleanliness. All employees shall wash their hands before beginning work and upon returning to work after using toilet facilities, eating, smoking, or otherwise soiling their hands. They shall keep their hands clean and follow acceptable hygienic practices while on duty. Eating, expectorating, or use of tobacco in any form shall be prohibited in each room and compartment where any food products or supplies are prepared, stored, or otherwise handled. With the exception of plain wedding bands or emergency medical bracelets, employees shall not wear any jewelry or fingernail polish while working in the plant. All persons engaged in receiving, testing, processing, manufacturing, packaging, or handling food products shall wear clean, white, or light-colored washable or disposable outer garments that are suitable for the work being performed. Hair nets, caps, beard nets, or other effective hair restraints to effectively cover hair shall be worn so as to prevent contamination of food and food contact surfaces. Employee's personal effects shall not be stored in production areas.

5.18.2 Health. No person afflicted with, or a carrier of, a communicable disease shall be permitted in any room or compartment where products are prepared, manufactured, or otherwise handled. No person who has a discharging or infected wound, sore, or lesion on hands, arms, or other exposed portion of the body shall work in any processing rooms or in any capacity resulting in contact with the processing or handling of products, containers, or equipment. Where health authorities require health certificates, they shall be kept on file at the plant office. Plant personnel shall receive appropriate training in proper food handling techniques and food protection principles and will be cognizant of the danger of poor personal hygiene and insanitary practices.

**Custodians:**

Army-GL  
Navy - SA  
Air Force - 50

**Preparing activity:**

Army - GL  
Project No. 8910-04 37

**Review activities:**

Army-MD  
Navy - MS, SA  
Air Force - 50

Copies of this standard for military use may be requisitioned on DD 1425 (Specification and Standard Requisition) and submitted to Commanding Officer, Naval Publications and Form Center, 5801 Tabor Avenue, Philadelphia, Pennsylvania 19120. The title and identifying symbol should be stipulated when requesting copies of military standard.

# CHEESE (AND RELATED CHEESE PRODUCTS) PLANT SANITARY COMPLIANCE CHECKLIST

*(This appendix is an integral part of MIL-STD 1162C and its application is mandatory.)*

1. DATE OF INSPECTION  
(YYMMDD)

**2. PLANT INSPECTED**

a NAME	b ADDRESS
--------	-----------

**3. PLANT OWNER**

a NAME OF COMPANY OR INDIVIDUAL	b TELEPHONE NUMBER
---------------------------------	--------------------

**4. ACCOMPANYING INDIVIDUAL**

a NAME	b TITLE
--------	---------

SANITATION DEFECTS (1)	ASSIGNED DEFECT POINTS (2)	INSPECTOR'S DEFECT POINTS (3)
<b>5. PREMISES</b>		
a Not cleaned or well organized	3	
b Not well drained	3	
c Surroundings not free from nuisances or sources of contamination	5	
<b>5.1 BULK UNLOADING FACILITIES</b>		
a Not properly constructed	4	
b Inadequate lighting	3	
c Inadequate washing / sanitizing facilities	Critical	
<b>6. RAW MATERIALS</b>		
a Not obtained from approved source	Critical	
b Single-service articles and packaging materials not protected by sanitary boxes, cartons, or other means	4	
Not free of contamination or adulteration	Critical	
Shows evidence of unsanitary conditions or deterioration	5	
Not delivered, stored, nor processed under sanitary conditions	Critical	
f Milk not from area meeting requirements of modified accredited tuberculosis-free area or modified certified Brucellosis area	Critical	
g Does not meet minimum bacterial and sediment requirements	Critical	
<b>7. CONSTRUCTION OF BUILDING</b>		
a Not large enough to accommodate the operation without hampering sanitary practices	4	
b Rooms not separate when required	4	
c Walls, floors, ceilings not in good repair or not constructed of materials that can easily be kept clean and sanitary	4	
d Unnecessary clutter of wiring, pipes, hangers, ducts	4	
e Exterior openings not clean and in good repair	4	
f Exterior openings do not prevent the entrance of insects, rodents, or other animals	4	
g Air curtains, if used, not in compliance with NSF standards	3	
h Screen doors not outward opening and not self-closing	3	
i Processing area opens directly into living quarters, garages, or heavy maintenance shops	4	
<b>8. LIGHTING</b>		
a Insufficient lighting	4	
b Lights in processing area not equipped with shields when required	5	
<b>9. VENTILATION AND HUMIDITY</b>		
a Insufficient control of moisture and air movement	5	
b Presence of mold on walls or ceilings in processing or storage area	5	
c Accumulation of condensates in processing or storage areas	5	
e Ventilation systems not clean or in good repair	3	
d Air not filtered and not directed outward when required	5	
<b>WATER SUPPLY</b>		
Not easily accessible	4	
b Inadequate in quantity	5	
c Undiminished supply of hot water not available	5	
d Cross-connection exists between potable and nonpotable water supply or sewage	Critical	
e Potability certificate not current or available	5	

## CHEESE (AND RELATED CHEESE PRODUCTS) PLANT SANITARY COMPLIANCE CHECKLIST

SANITATION DEFECTS (1)	ASSIGNED DEFECT POINTS (2)	INSPECTOR'S DEFECT POINTS (3)
<b>10. WATER SUPPLY (Continued)</b>		
f. Potable water supply found to be nonpotable	Critical	
g. Nonpotable water outlets not identified by prominently displayed color code	5	
<b>11. ICE (IF USED)</b>		
a. Not made from potable water which meets requirements	Critical	
b. Not manufactured, handled, stored, or used in a sanitary manner	5	
<b>12. DISPOSAL OF WASTES</b>		
a. Liquid wastes not disposed of in a sanitary manner	5	
b. Floor drains not functional or properly trapped	3	
c. Waste not collected in suitable, properly covered containers and disposed of at frequent intervals and/or in a sanitary manner	4	
<b>13. TOILET, DRESSING ROOM, AND HANDWASHING FACILITIES</b>		
a. Sufficient number of toilets or privies not provided	5	
b. Toilet rooms not conveniently located or constructed of materials that are not easily cleaned	4	
c. Toilet rooms not adequately lighted	2	
d. Toilet rooms not separately vented to the outside	5	
e. Toilet rooms open directly into processing area	5	
f. Doors not self-closing and tight-fitting	3	
g. Absence of handwashing sign	3	
h. Absence of hot and cold water, soap dispenser, or appropriate hand-drying facilities, conveniently located	5	
i. Toilets, dressing rooms, and handwashing facilities not maintained in a clean, orderly fashion	4	
j. Restrooms used for storage of cleaning equipment	3	
k. Privies not separate from the processing building	Critical	
l. Privies not of sanitary type, location, and construction	5	
<b>CONSTRUCTION AND REPAIR OF EQUIPMENT AND UTENSILS</b>		
a. Product-contact surfaces not of impervious material, not smooth, nor of corrosion-resistant material	4	
b. Product-contact surfaces not of nontoxic material	Critical	
c. Not clean or not in good repair	5	
d. Not constructed so that all surfaces are readily sanitizable	5	
e. Joints not smooth or not similar to the parent metal	3	
f. Equipment with product-contact surfaces does not meet 3-A sanitary standards	5	
g. Clean-in-place system does not comply with 3-A sanitary standards	5	
h. Automatic curd fillers do not meet requirements	5	
i. Automatic curd makers do not meet requirements	5	
j. Automatic salters do not meet requirements	5	
k. Brine tanks do not meet requirements	3	
l. Can washers do not meet requirements	5	
m. Cheese vats, starter vats, and drain tables do not meet requirements	5	
n. Cheese vacuumizing chambers do not meet requirements	5	
o. Batch pasteurizers do not meet requirements	5	
p. Conveyors for moving and draining block or barrel cheese do not meet requirements	3	
q. Cookers do not meet requirements	5	
r. Curd conveying systems do not meet requirements	3	
s. Curd mills and miscellaneous equipment do not meet requirements	5	
t. Fillers do not meet requirements	5	
u. Grinders do not meet requirements	5	
v. HTST and UHT pasteurizers do not meet requirements	5	
w. Hoods, forms, and followers do not meet requirements	3	
x. Hoop and barrel washers do not meet requirements	3	
y. Indicating thermometers do not meet requirements	4	
z. Internal return tubular heat exchangers do not meet 3-A sanitary standards	4	
aa. Mechanical agitators do not meet requirements	4	
ab. Milk cans found in poor repair or in unsanitary condition	5	
ac. Monitors do not meet requirements	4	
ad. Pressure tanks do not meet requirements	4	

## CHEESE (AND RELATED CHEESE PRODUCTS) PLANT SANITARY COMPLIANCE CHECKLIST

SANITATION DEFECTS (1)	ASSIGNED DEFECT POINTS (2)	INSPECTOR'S DEFECT POINTS (3)
<b>14. CONSTRUCTION AND REPAIR OF EQUIPMENT AND UTENSILS (Continued)</b>		
ee Plate type heat exchanges do not meet requirements	4	
ff Cheese presses do not meet requirements	5	
gg Single service press cloths being used more than once	5	
hh Storage tanks or vats do not meet requirements	4	
ii Pumps do not meet requirements	3	
jj Recording thermometers do not meet requirements	5	
kk Rindless cheese wrapping equipment does not meet requirements	3	
ll Separators do not meet requirements	5	
mm Surface coolers do not meet requirements	4	
nn Vacuumizing equipment does not meet requirements	4	
oo Washing machines do not meet requirements	3	
pp Weigh cans or receiving tanks do not meet requirements	5	
<b>15. CLEANING AND SANITIZING TREATMENT</b>		
a Cleaning or sanitization methods do not prevent product contamination or adulteration	Critical	
b All products not moved away or protected prior to equipment or area cleaning to avoid contamination or adulteration	Critical	
c All multiservice containers, equipment, and utensils not cleaned and sanitized after use	5	
d Cleaning and sanitizing chemicals not properly labeled or stored	5	
e Unauthorized chemical compounds used for cleaning and sanitization	Critical	
f Water used as a sanitizer less than 170°F (77°C)	5	
g Rooms and areas not maintained in a clean, sanitary manner	5	
h Steel wool or metal sponges used to clean dairy equipment or utensils	Critical	
i C-I-P cleaning not conducted in accordance with the requirements	5	
j Milk cans and lids not cleaned, sanitized, and dried before returning to producer	5	
k Can washer not maintained in a clean, satisfactory operating condition	5	
l Milk transport tank trucks not provided with covered dock for cleaning and sanitizing tanks	3	
m Transport tanks and equipment not cleaned, sanitized, and tagged daily	5	
n Building interiors not washed or vacuumed when needed or kept free of unsightly conditions	4	
<b>16. METHODS</b>		
a Methods permit contamination / adulteration of product	Critical	
b Methods permit deterioration of product	5	
c Pasteurization not accomplished in accordance with requirements of this standard	Critical	
d Cheese not held at proper temperature	5	
e Make schedule not established and followed	4	
f Starter and make records not kept at least three months	3	
g Whey or whey products not handled in a sanitary manner	5	
h Containers improperly stacked or cased	4	
i Culinary steam not in compliance with recommended 3-A practices	5	
<b>17. PUBLIC HEALTH CONTROLS</b>		
a When applicable, examinations not performed to assure adequate public health control of the raw material and finished products	5	
b Records of examination and tests of raw materials and finished products not available	5	
c Test methods not performed according to acceptable methods	4	
<b>18. COOLING AND REFRIGERATION</b>		
a Cooler rooms not free from objectionable odors or from mold	5	
b Cooler rooms not maintained in a sanitary condition	5	
c Product not stored at proper temperature or humidity	5	
<b>19. STORING AND STORAGE FACILITIES</b>		
a Storage facilities not clean, sanitary, or in good repair	3	
b Storing methods do not minimize deterioration or contamination	5	
c Shelves, cabinets, or dunnage not used where necessary to prevent contamination or deterioration	5	
<b>20. CONTROL OF INSECTS, BIRDS, AND ANIMALS</b>		
a Presence of insects, birds, or animals in production area	Critical	
b Presence of insects, birds, or animals in nonproduction area	5	

**CHEESE (AND RELATED CHEESE PRODUCTS) PLANT SANITARY COMPLIANCE CHECKLIST**

SANITATION DEFECTS (1)	ASSIGNED DEFECT POINTS (2)	INSPECTOR'S DEFECT POINTS (3)
<b>20. CONTROL OF INSECTS, BIRDS, AND ANIMALS (Continued)</b>		
c. Effective measures for the control of insects, birds, and rodents not maintained at all times	3	
d. Rodent harborages or insect breeding places present	4	
e. Unauthorized insecticides or rodenticides used	Critical	
f. Insecticides or rodenticides not used by approved methods	5	
g. Insecticides or rodenticides are handled or stored in an unsafe manner	5	
<b>21. VEHICLE AND TRANSPORTATION FACILITIES</b>		
a. Not constructed or operated to protect contents from contamination or deterioration	Critical	
b. Not properly maintained or not clean	3	
<b>22. CLEANLINESS AND HEALTH OF PERSONNEL</b>		
a. Employees not washing hands after contamination	Critical	
b. Failure of employees to be hygienically clean	4	
c. Personnel not prohibited from eating, smoking, chewing tobacco, or expectorating in product handling areas	3	
d. Unauthorized jewelry or fingernail polish worn by plant employees	3	
e. Employees not wearing garments/hair restraints suitable for work being performed	5	
f. Storage of employees' personal effects in production rooms	3	
g. Employees affected with or a carrier of a communicable or infectious disease not excluded from product areas	Critical	
h. Plant employees having an infectious wound, sore, or lesion on hands, arms, or other exposed parts of the body not excluded from contacting ingredients, product, or product zone	Critical	
i. Prescribed medical examinations of personnel not being made and/or records of such not available	4	
j. Plant personnel not instructed in acceptable hygienic practices and proper sanitary rules of food handling	Critical	
<b>23. TOTALS</b>		
<b>24a. SANITARY COMPLIANCE RATING COMPUTATIONS</b>	<b>b. SANITARY COMPLIANCE RATING ASSIGNED</b>	<b>c. NUMBER OF CRITICAL DEFECTS</b>

**25. OTHER REGULATORY AGENCIES CONCERNED WITH SANITATION OF THIS ESTABLISHMENT** (Record the agency, date and results of last inspection)

**CHEESE (AND RELATED CHEESE PRODUCTS) PLANT SANITARY COMPLIANCE CHECKLIST**

**26. METHODOLOGY SECTION** *(Record narrative information describing the plant, premises, equipment and procedures)*

**27. REMARKS/RECOMMENDATIONS**

**28. INSPECTOR**

TYPED NAME

b TITLE

SIGNATURE

d GRADE

e DATE SIGNED (YYMMDD)

**INSTRUCTIONS:** In a continuing effort to make our standardization documents better, the DoD provides this form for use in submitting comments and suggestions for improvements. All users of military standardization documents are invited to provide suggestions. This form may be detached, folded along the lines indicated, taped along the loose edge (*DO NOT STAPLE*), and filed. In block 5, be as specific as possible about particular problem areas such as wording which required interpretation, was too rigid, restrictive, loose, ambiguous, or was incompatible, and give proposed wording changes which would alleviate the problems. Enter in block 6 any remarks not related to a specific paragraph of the document. If block 7 is filled out, an acknowledgement will be mailed to you within 30 days to let you know that your comments were received and are being considered.

**NOTE:** This form may not be used to request copies of documents, nor to request waivers, deviations, or clarification of specification requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

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# STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

(See Instructions - Reverse Side)

1. DOCUMENT NUMBER

MIL-STD-1162C

2. DOCUMENT TITLE Sanitary Standards for Cheese (and Related Cheese Products) Plants.

3a. NAME OF SUBMITTING ORGANIZATION

b. ADDRESS (Street, City, State, ZIP Code)

4. TYPE OF ORGANIZATION (Mark one)

VENDOR

USER

MANUFACTURER

OTHER (Specify): \_\_\_\_\_

5. PROBLEM AREAS

a. Paragraph Number and Wording:

b. Recommended Wording:

c. Reason/Rationale for Recommendation:

6. REMARKS

7a. NAME OF SUBMITTER (Last, First, MI) - Optional

b. WORK TELEPHONE NUMBER (Include Area Code) - Optional

c. MAILING ADDRESS (Street, City, State, ZIP Code) - Optional

8. DATE OF SUBMISSION (YYMMDD)