

3-A[®] Accepted Practices for Instantizing Systems, Number 608-02

Formulated by
International Association of Food Industry Suppliers (IAFIS)
International Association for Food Protection (IAFP)
United States Public Health Service (USPHS)
The Dairy Industry Committee (DIC)
United States Department of Agriculture – Dairy Programs (USDA)

It is the purpose of the IAFIS, IAFP, USPHS, DIC, and USDA in connection with the development of the 3-A Sanitary Standards Program to allow and encourage full freedom for inventive genius or new developments. Instantizing systems specifications heretofore or hereafter developed which so differ in design, materials, and fabrication or otherwise as not to conform to the following standards but which, in the fabricator's opinion, are equivalent or better, may be submitted for the joint consideration of the IAFIS, IAFP, USPHS, DIC, and USDA at any time. The 3-A Sanitary Standards and 3-A Accepted Practices provide hygienic criteria applicable to equipment and systems used to produce, process, and package milk, milk products, and other perishable foods or comestibles. Standard English is the official language of 3-A Sanitary Standards and 3-A Accepted Practices.

A SCOPE

A1 These 3-A Accepted Practices shall pertain to the sanitary aspects of equipment in instantizing systems and include all equipment necessary for instantizing dry milk and dry milk products beginning with the equipment which receives the product to be instantized and terminating at the point the product is discharged to either the packaging system or storage. The instantizing systems include equipment used for moving and cleaning the air, heating and/or cooling air, conveying the product, moistening the product, additional drying of the product, removing the instantized product from the air and cooling the product.

A2 In order to conform to these 3-A Accepted Practices, equipment in instantizing systems shall comply with the following criteria for design, material, fabrication, processing air and moistening medium¹.

B DEFINITIONS

B1 *Product:* Shall mean dry milk, dry milk products and fluid milk products.

B2 *Instantizing:* Shall mean the processes whereby dry milk and dry milk products are moistened, redried and cooled in such a manner to substantially improve its dispersion and reliquifying characteristics.

B3 *Moistening Medium:* Shall mean the moisture from steam or water or fluid milk or fluid milk product used to moisten the dry milk or dry milk product during the instantizing process.

B4 *Safe Water:* Shall mean water from a supply properly located, protected and operated and shall be of a safe sanitary quality. The water shall meet the standards prescribed in the National Interim Primary Drinking Water Regulations of the Environmental Protection Agency Office of Water Supply--EPA-570/9-76--3.

B5 *Processing Air:* Shall mean air prepared by filtration which is intended to be used in contact with the product for such purposes as heating, cooling, drying or conveying or will be used for sealing a bearing or similar purposes.

B6 *Air to be Heated and Heated Air:* Shall mean processing air to be heated or which has been heated to at least 240°F (116°C).

B7 *Air not to be Heated:* Shall mean processing air which either will not be heated or will be heated to a temperature less than 240°F (116°C).

B8 *Product Contact Surfaces:* Shall mean all surfaces which are exposed to the product and surfaces from which liquids and/or solids may drain, drop, or be drawn into the product.

B9 *Air Contact Surfaces:*

¹ Use current revisions or editions of all referenced documents cited herein.

- B9.1 Air contact surfaces, for air to be heated, shall mean all surfaces prior to coming in contact with the product, commencing at the discharge of the final air inlet filter(s) and ending at the first downstream product contact surface.
- B9.2 Air contact surfaces for air not to be heated shall mean all surfaces prior to coming in contact with the product, commencing at the discharge of the final air filter(s) and ending at the first downstream product contact surface.
- B9.3 Exhaust air contact surfaces shall mean the surfaces of the air ducts, plenum chamber(s), if provided, and appurtenances from the final product contact surface through the exhaust system.
- B10 *Nonproduct Contact Surfaces:* Shall mean all other exposed surfaces.
- B11 *Mechanical Cleaning or Mechanically Cleaned:* Shall denote cleaning, solely by circulation and/or flowing chemical detergent solutions and water rinses onto and over the surfaces to be cleaned, by mechanical means.

C MATERIALS

- C1 The materials of product contact surfaces of equipment included in the instantizing system for which there are 3-A Sanitary Standards or 3-A Accepted Practices shall comply with the material criteria of the applicable Standards or Accepted Practices.
- C2 All other product contact surfaces shall be of stainless steel of the American Iron and Steel Institute (AISI) 300 Series² or corresponding Alloy Cast Institute (ACI) types³ (See Appendix, Section G1), or metal which under conditions of intended use is at least as corrosion resistant as stainless steel of the foregoing types, and is nontoxic and nonabsorbent, except that:
- C2.1 Plastic materials may be used for sight and/or light glasses, bearings, bushings, supports, short pieces of

²The data for this series are contained in the *AISI Steel Products Manual, Stainless & Heat Resisting Steels*, Table 2-1. Available from the American Iron and Steel Society, 186 Thorn Hill Road, Warrendale, PA 15086 (724) 776-1535.

³Steel Founders Society of America, Cast Metal Federation Building, 455 State Street, Des Plaines, IL 60016 (708) 299-9160.

transparent tubing for observation purposes, short flexible connectors, scraper blades and sealing applications. These materials shall conform to the applicable provisions of the 3-A Sanitary Standards for Multiple-Use Plastic Materials Used as Product Contact Surfaces for Dairy Equipment, Number 20-.

- C2.2 Rubber and rubber-like materials may be used for scraper blades, short flexible connectors and sealing applications. These materials shall comply with 3-A Sanitary Standards for Multiple-Use Rubber and Rubber-Like Materials Used as Product Contact Surfaces in Dairy Equipment, Number 18-.
- C2.3 Cotton, wool, linen, silk or synthetic fibers may be used for filtering and/or screening surfaces or entrainment separators, and for short flexible connectors in dry product areas. These materials shall be nontoxic, relatively insoluble in water, easily cleanable, and shall not impart particulate matter or flavor to the product.
- C2.4 Welded areas and the deposited weld material shall be substantially as corrosion-resistant as the parent material.
- C2.5 Aluminum alloys conforming to the Aluminum Association⁴ designated 5052 and 6061 may be used as product contact surfaces for dry product in vibrating trays in after-dryers.
- C2.6 Product contact surfaces for dry product in dust collecting equipment shall conform to the applicable provisions of the 3-A Sanitary Standards for Bag Collectors for Dry Milk and Dry Milk Products, Number 40-.
- C2.7 Heat resistant glass⁵ may be used in sight and/or light ports.
- C3 Air contact surfaces for air to be heated, except for those of flexible connectors, heating coils, fans, burners and dampers, shall be of a corrosion-resistant metal that maintains its original surface

⁴Aluminum Association, 900 19th St., NW, Suite 300, Washington, DC 20006. Ph: 202-862-5100; Fax: 202-862-5164.

⁵Glass of a borosilicate type with a coefficient of expansion between 30°C and 300°C between 3.0 and 3.5 parts per million per degree Celsius.

characteristics under the environment of intended use, or is rendered corrosion resistant by a coating of corrosion-resistant material other than paint. If the portion of the plenum chamber at the inlet to the instantizing chamber is subject to washing, it shall be made of stainless steel.

C4 Air contact surfaces for air not to be heated shall meet the material requirements of a product contact surface.

C5 Filter media for intake air shall consist of one or more of the following: fiberglass with a downstream backing dense enough to prevent fiberglass break off from passing through, cotton flannel, wool flannel, spun metal, activated carbon, activated alumina, nonwoven fabric, absorbent cotton fiber, or other suitable materials, which under conditions of intended use, are nontoxic and nonshedding and which do not release toxic volatiles or other contaminants to the air, or volatiles which may impart any flavor or odor to the product. Chemical bonding materials contained in the media shall be nontoxic, nonvolatile and insoluble under all conditions of use. Disposable media shall not be cleaned and re-used. Note: Electronic air cleaners use electrostatic precipitation principles to collect particulate matter and therefore are not included in the preceding list of acceptable filter media. This does not preclude their use in instantizing systems upstream from the filter.

C6 Nonproduct contact surfaces shall be of corrosion-resistant material or material that is rendered corrosion resistant. If coated, the coating used shall adhere. Nonproduct contact surfaces shall be relatively nonabsorbent, durable, and cleanable. Parts removable for cleaning having both product contact and nonproduct contact surfaces shall not be painted.

D FABRICATION

D1 The fabrication criteria of equipment included in the instantizing system for which there are 3-A Sanitary Standards or 3-A Accepted Practices shall be those of the applicable Standards or Accepted Practices.

D2 All other equipment shall conform to the following fabrication criteria.

D2.1 All product contact surfaces shall have a finish at least as smooth as a No. 4 ground finish on stainless steel sheets and be free of imperfections such as pits, folds, and crevices in the final fabricated form. (See

Appendix, Section H.) Seam welds shall be smooth and pit free. Where grinding and polishing are required, such areas shall be at least as smooth as a ground finish obtained with 80 grit silicon carbide. Intricate fabricated and/or machined components shall be as smooth as a ground finish obtained with 80 grit silicon carbide, with welds pit free. If stainless steel sheets with a No. 2B finish are used, they shall be selected so as to be free of imperfections such as pits, folds and crevices in the fabricated form. Joints shall be smooth and shall be fabricated in a manner that the product contact surface is self-draining or self-purging. Permanent joints in metallic product contact surfaces shall be continuously welded.

D2.2 Product contact surfaces shall be easily accessible for thorough cleaning, either when in an assembled position or when removed. Parts that must be removed for cleaning shall be readily removable and easily dismantled, except (1) that high pressure liquid product lines and such parts as fan wheels, air lock valves, fluidizer valves, conveying mechanisms, and similar parts need only be readily accessible for cleaning, and (2) centrifugal atomizers and air dispenser cones need only be removable for cleaning.

D2.2.1 If no other means of easy access for cleaning is available, panels or doors shall be provided. They shall be constructed in a manner that will prevent the entrance of unfiltered air, and shall use hinges, wing nuts, latches and similar easy opening devices to allow easy access without special tools.

D2.3 Product contact surfaces intended for regular wet cleaning shall be self-draining or self-purging except for normal clingage, and except where self-draining is not feasible, other drying methods, including air drying, may be used.

D2.4 Internal angles of less than 135° on product contact surfaces shall have minimum radii of 1/4 in. (6.35 mm) except:

D2.4.1 Smaller radii may be used when they are required for essential functional reasons such as those in internal parts of mechanical collectors, collector systems, air lock blades, air distribution devices, filter frames, and rotary airlock endplates. In no case shall such radii be less than 1/32 in. (0.794 mm).