

3-A[®] Sanitary Standards for Italian-Type Pasta Filata Style Cheese Moulders, Number 71-01

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. Italian-type pasta filata style cheese moulder 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. Standard English is the official language of 3-A Sanitary Standards and 3-A Accepted Practices.

A SCOPE

A1 These standards cover the sanitary aspects of Italian-type pasta filata style cheese moulders, including but not limited to mozzarella, string and provolone cheeses. The equipment shall begin at the point where the cooked and stretched cheese is introduced and shall terminate at the point where the cheese is discharged into transfer moulds, discharged from integral moulds, or discharged through an extruder. The equipment may include individual or combined equipment sections that act as receiving-transition units, salt application devices, receiving reservoirs, integral moulds or extruder pieces. These standards also cover Italian cheese moulders which cool moulded cheese by indirect methods.

A2 In order to conform to these 3-A Sanitary Standards, Italian-type pasta filata style cheese moulders shall conform to the following design, material, and fabrication criteria.¹

B DEFINITIONS

B1 *Product*: Shall mean cheese derived from milk and milk products.

B2 *Italian-Type Pasta Filata Style Cheese Moulders (referred to hereafter as a cheese moulder)*: Shall mean a process unit or vessel in which heated

Italian cheese is manipulated to impart dimensional characteristics to the product.

B3 *Solutions*: Shall mean water and/or those homogeneous mixtures of cleaning agents and/or sanitizers and water used for flushing, cleaning, rinsing, and sanitizing

B4 Surfaces

B4.1 *Product Contact Surfaces*: Shall mean all surfaces which are exposed to the product and surfaces from which liquids may drain, drop, diffuse or be drawn into the product.

B4.2 *Nonproduct Contact Surfaces*: Shall mean all other exposed surfaces.

B5 Cleaning

B5.1 *Mechanical Cleaning or Mechanically Cleaned*: Shall mean soil removal by impingement, circulation or flowing chemical detergent solutions and water rinses onto and over the surfaces to be cleaned by mechanical means in equipment or systems specifically designed for this purpose.

B5.2 *Manual (COP) Cleaning*: Shall mean soil removal when the equipment is partially or totally disassembled. Soil removal is effected with chemical solutions and water rinses with the assistance of one or a combination of brushes, nonmetallic scouring pads and scrapers, high or

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

low pressure hoses and tank(s) which may be fitted with recirculating pump(s), and with all cleaning aids manipulated by hand.

B6 Surface Modification²

B6.1 *Surface Treatments*: Shall mean a process whereby chemical compositions or mechanical properties of the existing surface are altered. There is no appreciable, typically less than 1 µm, build-up of new material or removal of existing material.

B6.1.1 Surface treatments include:

1. Mechanical (shot peening³, polishing)
2. Thermal (surface hardening laser, electron beam)
3. Diffusion (carburizing, nitriding)
4. Chemical (etching, oxidation)
5. Electropolishing

B6.2 *Coatings*: Shall mean the results of a process where a different material is deposited to create a new surface. There is appreciable, typically more than 1 µm, build-up of new material.

B6.2.1 Coating processes include:

1. Chemical (conversion coatings)
2. Electrodeposition⁴
3. Spraying (pneumatic, flame, plasma, arc spray)

B7 *Soil*: Shall mean the presence of unwanted organic residue or inorganic matter, with or without microorganisms, including food residue, in or on the equipment.

B8 *Sanitizing or Sanitization*: Shall mean a process applied to a cleaned surface which is capable of reducing the numbers of the most resistant human pathogens by at least 5 log cycles (99.999%) by applying hot water or steam or by applying an EPA registered sanitizer according to label

directions. Sanitizing may be effected by mechanical or manual methods.

B9 *Easily or Readily Removable*: Shall mean quickly separated from the equipment with the use of simple hand tools if necessary.

B10 *Easily or Readily Accessible*: Shall mean a location which can be safely reached by an employee from the floor, platform, or other permanent work area.

B11 *Inspectable*: Shall mean all product contact surfaces can be made available for close visual observation.

B12 *Simple Hand Tools*: Shall mean implements normally used by operating and cleaning personnel such as a screwdriver, wrench or hammer.

B13 *Nontoxic Materials*: Shall mean those substances which under the conditions of their use are in compliance with applicable requirements of the Food, Drug and Cosmetic Act of 1938, as amended.

B14 *Corrosion Resistant*: Shall mean the surface has the property to maintain its original surface characteristics for its predicted service period when exposed to the conditions encountered in the environment of intended use including expected contact with product and cleaning or sanitizing compounds or solutions.

C MATERIALS

C1 Metals

C1.1 Product contact surfaces shall be of stainless steel of the American Iron and Steel Institute (AISI) 300 Series⁵ or corresponding Alloy Cast Institute⁶ (ACI) types (See Appendix, Section E.), 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:

C1.1.1 Auger components, baffles, chutes, discharge ports, hoppers, integral mould components, knives, moulder bodies and shuttle plates made of the materials provided for in C1.1 may have their

² Additional information on surface modification is contained in *Advance Materials and Processes*, Volume 137(1); *Coatings and Coating Practices* by H. Herman, *Surface Modification* by F. A. Smidt. ASM International, Materials Park, OH 44073 (216) 338-5151.

³ MIL-5-13165C-7, Military Specification: *Shot Peening of Metal Parts*. Available from Standardization, Document Order Desk (Department of Navy), 700 Robbins Avenue, Building 4, Section D, Philadelphia, PA 19111-5094 (215) 697-2167.

⁴ Federal Specification #QQ-C-320B for Chromium Plating (Electrodeposited), with Amendment 4. Federal Specification #QQ-N-290A for Nickel Plating (Electrodeposited). Available from the General Services Administration, Federal Supply Services Bureau, Specification Section, 470 East L'Enfant Plaza, Suite 8100, Washington, DC 20407 (202) 755-0325.

⁵ The data for this series are contained in the *AISI Steel Products Manual, Stainless & Heat Resisting Steels*, Table 2-1. Available from the Iron and Steel Society, 186 Thorn Hill Road, PA 15086 (724) 776-1535.

⁶ Steel Founders Society of America, Cast Metal Federation Building, 455 State Street, Des Plaines, IL 60016 (708) 993-6100.

product contact surfaces modified by surface treatment or coating(s).

- C1.1.2 Auger drive shafts and knives may also be made of stainless steel of the AISI 400 Series that is made as corrosion resistant as AISI 300 Series by surface treatment or coating(s) or made of nontoxic, nonabsorbent metal that is as corrosion resistant, under the conditions of intended use, as stainless steel of the AISI 300 Series.

C2 Nonmetals

- C2.1 Rubber and rubber-like materials may be used for seals, gaskets, guide rails, extruder or discharge ports, curtains, plungers, plunger coatings, hoses, pneumatic discharge components, and parts having the same functional purposes.

- C2.1.1 Rubber and rubber-like materials when used for the above-specified application(s) shall conform to the applicable provisions of the 3-A Sanitary Standards for Multiple-Use Rubber and Rubber-Like Materials Used as Product Contact Surfaces in Dairy Equipment, Number 18-.

- C2.2 Plastic materials may be used for baffles, caps, chutes, discharge ports, extruder ports, gaskets, guide rails, integral mould components, knives, spray devices and spray device components, seals, curtains, bearings, bushings, conveyors, sprockets, plungers, hoses, pneumatic discharge components, slip sheets, and parts having the same functional purposes.

- C2.2.1 Plastic materials also may be used as coatings for hoppers, hopper components, augers, auger troughs, moulds, mould components and cut-off devices and parts having the same functional purposes.

- C2.2.2 Plastic materials when used for the above-specified application(s) 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-.

- C2.3 Rubber and rubber-like materials and plastic materials having product contact surfaces shall be of such composition as to retain their surface and conformational characteristics when exposed to the conditions encountered in the environment of intended use and in cleaning and bactericidal treatment.

- C2.4 The final bond and residual adhesive, if used, on bonded rubber and rubber-like materials and bonded plastic materials shall be nontoxic.⁷

C3 Nonproduct Contact Surfaces

- C3.1 All nonproduct contact surfaces shall be of corrosion-resistant material or material that is rendered corrosion resistant. If coated, the coating used shall adhere. All 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 Surface Texture

- D1.1 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 F), except that:

- D1.1.1 Product contact and nonproduct contact surfaces may be modified to an R_a 125 $\mu\text{in.}$ (3.2 μm) finish through shot peening on augers, auger troughs, auger components, auger supports, fill necks, discharge ports, hoppers, bodies, baffles, dividers, frames, moulds and mould components, knives, chutes, and eject plungers.

D2 Permanent Joints

- D2.1 All permanent joints in metallic product contact surfaces shall be continuously welded, except that:

- D2.1.1 In such cases where welding is impractical, press-fitting or shrink-fitting may be employed where necessary for essential functional reasons such as bearings. (See Appendix, Section G.)

- D2.2 Product contact surfaces joined by welding, press-fitting and shrink-fitting shall have product contact surface texture which is in compliance with D1.1.

⁷ 21 CFR 175 - Indirect Food Additives: Adhesives and Components of Coatings. Document for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 (202) 512-1800.