

COMMON GFSI SCHEME REQUIREMENTS AND THE IMPACT TO YOUR FACILITY

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Launched in the year 2000 following a number of food safety crises, the Global Food Safety Initiative (GFSI) provides a platform for collaboration between some of the world's leading food safety experts from the retail, manufacturing, food service, academia and government sectors.

As such, the GFSI is a voluntary, customer-driven initiative designed to supplement food safety regulations from the FDA, USDA and other regulatory bodies, as well as industry-driven improvements backed by trade organizations such as the American Meat Institute (AMI), American Institute of Baking (AIB), etc. GFSI certification enables companies at all levels of the food production process to be benchmarked and approved under one or more approved schemes. The goal of this certification is two-fold: Increase consumer confidence in the safety of the food coming to the table, and streamline the number of audits required by different agencies. Under GFSI, one inspection, once per year, can satisfy multiple needs.

In all, approximately a dozen different programs or schemes are recognized by GFSI, including International Featured Standards (IFS), Safe Quality Food Institute (SQF), ISO 22002 and BRC. Some are specific to a country, while others are specific to an industry (e.g., the Global Aquaculture Alliance Seafood Processing Standard), while some, such as Food Safety System Certification (FSSC) and SQF, are more broad-based and cover a variety of food industry segments.

GFSI schemes are all organized in a similar manner, with differences primarily in the level of detail provided, and where emphasis is placed. In general, the major sections of schemes can be divided into three main parts:

- Audit protocol, which details the prep work necessary for the audit, some of the logistics of the audit, and what to do before, during, and after the audit.
- Requirements for Accreditation Bodies, which gives instructions to companies or agencies that want to be certified by the scheme as an auditor.

- Audit Requirements, which are those items that must be in place to achieve certification. These requirements, while not specifically stated as facility design issues, typically will impact the design, maintenance and operation of a food processing plant. For example, one of the GFSI schemes requires "protective clothing for personnel, contractors and visitors." At first glance, this may seem simple, but to provide the protective clothing may necessitate having a locker room, donning and doffing areas, and other employee welfare spaces.

SCHEMES IN GENERAL

All of the GFSI-recognized schemes have the same goals: to achieve safe, quality food products by creating a sanitary design standard for site, building, equipment, and utility systems, developing standardized processes, and ensuring the highest levels of employee welfare and personal hygiene. GFSI has created an umbrella structure for each scheme to work under but each has taken a slightly different approach on how they accomplish GFSI's goals. This paper looks at three of the most widely used schemes: IFS, SQF, and FSSC 22000 (ISO 22002). Each scheme follows the general structure of GFSI (with some variation and subtle differences), and can be broken down into the following requirements:

1. Air Quality
2. Building Construction
3. Employee Welfare
4. Laboratories
5. Maintenance
6. Pest Control
7. Sanitation
8. Security
9. Site
10. Utilities
11. Warehousing
12. Waste Disposal
13. Water Supply
14. Zones of Control

Requirement 1: Air Quality

HVAC systems must provide the proper filtration, temperature control, humidity control, and room pressurization for each area of the facility as required for safe food production. HVAC controls are closely linked to the Zones of Control requirement (see Requirement #14).

This means facilities should have:

- HVAC equipment and ductwork that is constructed with cleanable materials and has access doors throughout the system to allow for easy cleaning of the equipment and duct work.
- HVAC equipment design that prevents condensation build up in the ductwork, HVAC equipment or in the process room.
- Temperature, humidity and filtration requirements defined for each area within the facility.
- An overall facility strategy for temperature, humidity and room pressurization control.
- Controls, instrumentation, and maintenance programs in place to verify the overall facility HVAC program is operating as designed.

Requirement 2: Building Construction

Buildings shall be designed and constructed to ensure safe food production. Building surfaces shall be smooth, impervious, cleanable, and minimize accumulation of dirt. Wall floor junctions should be sealed and not have any harborage points. Floors must be cleanable and designed so that there is no standing water. If regular wet cleaning is required, the floors must be sloped to floor drains. Drains should be cleanable and not introduce hazards in another area. Lighting shall be adequate and protected from breakage. Openings (doors, windows, etc.) must not introduce contamination risk.

This means facilities should have:

- Easily cleanable walls, floors and ceilings made of monolithic, sealed, inert surfaces, having no voids and crevices that could harbor bacteria.
- Canted or curved joints that are sealed (no cracks) and are easy to maintain.
- Floors that have a resinous coating or acid-proof brick or tile top layer. Warehouses should have sealed concrete floors to keep dust down.
- Sloped floors and positive drainage in wet process areas, with stainless steel floor, trench, and hub drains.
- Walkable ceilings or drop ceilings in process spaces to hide overhead bar joists and beams. If an exposed roof deck is desired, use a concrete roof deck versus bar joists and beams.
- Canted window ledges, Lexan panels, stainless steel or fiberglass frames, window screens (if windows can open).
- Monolithic plastic or stainless doors that seal and have an automatic closer. The door should be placed in a stainless steel frame.

- Shatter shields, shatter-proof lenses on lighting fixtures.
- Lighting levels in process areas of 50-75 foot candles.

A Word About Cleanability

Each scheme requires items to be cleanable – floors, walls, equipment, and utility piping – but what does cleanable mean? 3-A SSI, an independent, not-for-profit corporation dedicated to advancing hygienic equipment design for the food, beverage, and pharmaceutical industries, defines cleanable as: “The suitability of materials of construction, design and fabrication required to assure that the equipment can be freed from soil (unwanted organic residue or inorganic matter).” The AMI states that “food equipment must be constructed to ensure effective and efficient cleaning over the life of the equipment. The equipment should be designed as to prevent bacterial ingress, survival, growth and reproduction on both product and non-product contact surfaces of the equipment.”

In both cases, the emphasis is on two areas: the material of construction and the design of the construction. Materials must be able to resist corrosion or degradation when exposed to repeated washings with harsh cleaning chemicals like acids or alkaline detergents. Generally, stainless steel is used as much as possible but there are plastics (polypropylene, PVC), resinous, and fiberglass materials that are resistant to chemical degradation.

Construction must be such that access for cleaning is easily accomplished and that there is no possibility for ponding water or soil to be trapped in an inaccessible area. For equipment, this means access doors can be opened and/or removed without tools, minimal horizontal surfaces, self-draining vessels, and installations that allow for complete 360° cleaning. Building construction requires minimal horizontal pipe runs, sloped curbs and sealed wall, floor, and ceiling joints.

Keep this definition in mind when the word “cleanable” is used throughout this report.

Requirement 3: Employee Welfare

Personnel hygiene facilities shall be available to ensure that the degree of personal hygiene required by the organization can be maintained. Adequate hand washing facilities and changing facilities should be provided. Toilets should not open directly to production spaces. Clothing worn by staff engaged in handling food should be maintained, stored, laundered and worn so as not to present a contamination risk to products. No jewelry or watches should be visible in the production areas. Employees shall not have any open wounds, infectious diseases, etc., that could contaminate the food products.

This means facilities should have:

- Locker rooms and personal storage spaces for employees.
- Toilet room with vestibule between the room and the process floor.
- Break rooms, with lunch storage (e.g., refrigerators) and vending machines.
- Hygiene areas located prior to entering production spaces; a vestibule with hand sinks, boot wash, donning and doffing areas, and Personal Protective Equipment (PPE) storage.
- First aid room, nurse's station, and first aid kit.
- Laundry room, clean and dirty uniform storage areas, visitor PPE storage, hair and beard net station.
- Hand sinks at entrances to process area. Sinks to include contact-free fittings, hand disinfectant, signs highlighting hand hygiene requirements. Waste containers also should be provided.
- Boot wash equipment and boot storage and drying areas, where applicable.
- A separate sanitary drain system for the employee welfare areas that is not connected to the process drain system.

Requirement 4: Laboratories

Quality Assurance (QA) and Quality Control (QC) labs should be located separate from food processing areas. Access to these areas should be limited and waste and drainage separated from process systems. Provide signage to identify laboratory.

This means facilities should have:

- QA & QC labs that are physically separated from production areas by vestibules or access corridors.
- Card access control where required to limit access, if required.
- Drains that are separate from those of the process areas.

Requirement 5: Maintenance

The methods and responsibility for the maintenance and repair of plant, equipment and buildings shall be documented, planned and carried out in a manner that minimizes the risk of product, packaging or equipment contamination.

This means facilities should have:

- Satellite maintenance shops to prevent crossing zones of control.
- Separate Raw and Ready To Eat (RTE) maintenance shops, if required by company policy.
- Easy access to the roof and utility areas.

Requirement 6: Pest Control

External doors, windows or ventilation openings shall be designed to minimize the potential for entry of pests. The methods and responsibility for integrated pest management shall be documented and effectively implemented. Doors, including overhead dock doors in food handling areas, shall be fly-proofed.

This means facilities should have:

- A rat run around building and in rooms on an exterior wall. Bait stations at every door.
- Insect electrocutors at strategic locations.
- Exterior lighting located away from the building instead of on the building to minimize insect infiltration.
- Automatic or self-closing doors.
- Screens on doors that will stay open. *Note:* Some facilities are choosing to add screens to overhead doors, which tend to get left open during high temperatures, creating a potential contamination source.
- A contract with qualified pest control firm.
- Landscaping located away from the building to minimize bird and rodent infestation.

Requirement 7: Sanitation

Provisions should be made for the effective cleaning of processing equipment and utensils. Cleaning chemicals shall be clearly labeled, used and stored appropriately to avoid contamination. Sanitation personnel PPE should be stored separately from the process personnel PPE.

This means facilities should have:

- A sanitation personnel locker room, donning and doffing area, equipment storage room and meeting room.
- A secured hazardous chemical storage area for tank, tote and drum storage.
- A secured hazardous chemical dispensing area and dispensing plan.
- A facility hazardous chemical spill containment plan.
- An empty drum rinsing and storage area.

Requirement 8: Security

Potentially sensitive areas within the establishment should be identified, mapped, and subjected to access control. Where feasible, access should be physically restricted by use of locks, electronic card key or alternative systems.

This means facilities should have:

- Guard shacks, gates, fencing, security personnel, and a truck inspection area.
- A facility security control plan.

Requirement 9: Site

The facility premises should be such that adjacent and adjoining buildings, operations and land use do not compromise the safe and hygienic operation of the facility. The grounds and area surrounding the premises must be maintained to minimize dust and be kept free of waste or accumulated debris so as not to attract pests and vermin. Access to the site shall be controlled.

This means facilities should have:

- Paving and other hard surfaces are maintained to avoid holes where standing water can form.
- Paving and grounds that drain adequately to prevent standing water.
- Landscaping located away from the building to minimize bird and rodent infestation.
- Exterior lighting located away from the building instead of on the building to minimize insect infiltration.
- The grass cut and landscaping trimmed to minimize rodent and pest infiltration.
- An understanding of local winds and nearby odor generation and their impact on your process.
- A guard shacks, gates, fencing, and security personnel to control access to the site.
- The site boundaries clearly identified.
- The location of the premises be such that adjacent buildings and land use do not interfere with safe and hygienic operations.

Requirement 10: Utilities

Compressed air, steam, water and other utility systems must be constructed and maintained so as to prevent food contamination. Air compressors shall use a food grade oil or be oilless. Boiler chemicals should be approved by the FDA. Ducting, conduit, and pipes must be designed and constructed so as to allow ease of cleaning.

This means facilities should have:

- Duct and pipe material in process spaces designed and constructed to withstand cleaning and avoid rusting or corroding.

- Separate areas for duct and pipe runs outside of the process areas, if possible.
- Separate utility spaces from process spaces.
- Utility chemicals (boiler water treatment, air compressor oils, etc.) stored in a separate chemical storage room from the sanitation chemicals.

Requirement 11: Warehousing

Facilities used to store ingredients, packaging and products must provide protection from dust, condensation, waste and other sources of contamination. Storage areas need to be designed to allow segregation of raw materials, Work In Progress (WIP) and finished products. All materials and products should be stored off the floor and with sufficient space to allow inspection and pest control activities to be carried out. Freezing, chilling and cold storage rooms should be fitted with temperature monitoring equipment. Loading and unloading docks need to be designed to protect the product during loading and unloading. Rooms used for the storage of dry goods shall be located away from wet areas and constructed to protect the product from contamination and deterioration. Hazardous chemicals must be stored separately and so as not to present a hazard to staff, product, packaging, or product handling equipment.

This means facilities should have:

- Separate packing supplies, raw material and ingredient storage areas, including inside of ambient warehouses, freezers, and coolers.
- Coolers, freezers, ambient storage warehouse racking that are well maintained and easy to clean around and under.
- Staging area near the docks that allow for the inspection of incoming raw ingredients and quality control checks for finished products.
- A storage strategy that allows for the separation of allergens in the storage racks.
- A secure area for quarantined product.

Requirement 12: Waste Disposal

Waste collection rooms and containers (including compactors) must be designed to minimize pest attraction. Systems should be in place to ensure that waste materials are identified, collected, removed and disposed of in a manner which prevents contamination of products or production areas.

This means facilities should have:

- Separate raw and RTE trash rooms, if possible.

- Separate room for trash and recycling remote from production areas.
- A system to ensure that liquid waste is captured and sent to the process waste system and does not drain into the stormwater system.
- Separate HVAC for the Raw and RTE spaces, if possible.
- Separate employee welfare areas for Raw and RTE, if possible.
- Higher room pressurization for RTE than Raw areas to prevent bacteria migration and contamination of the RTE product.
- An overall facility pressurization scheme.

Requirement 13: Water Supply

The delivery of water within the premises must ensure potable water is not contaminated. Non-potable water shall have a separate supply system that is labeled and not connected to the potable water system. Take measures to prevent non-potable water refluxing into the potable system. It is recommended that water that can come into contact with the product should flow through pipes that can be disinfected. Facilities for storage, distribution and temperature control of the water need to be designed to meet specified water quality requirements. Water that will come in contact with food must comply with recognized potable water microbiological and quality standards as required.

This means facilities should have:

- A connection to a municipal system, with backflow preventers.
- A water cleaning and chlorinating system if using well or reclaimed water or other source.
- Backflow prevention, and separate piping system for non-potable water.
- A hot water system capable of meeting sanitation needs (e.g., direct-fired heaters).

Requirement 14: Zones of Control

The process flow, from receipt of goods to dispatch, must be in place to avoid contamination of raw materials, packaging, semi-processed and finished products. The building should provide physical separation of raw ingredients from ready to eat (RTE) process areas. Measures to prevent physical, allergen and microbiological contamination must be provided. Thawing of the product shall be undertaken in equipment and rooms appropriate for the purpose. Dry ingredients and packaging must be received and stored separately from frozen and chilled raw materials to ensure there is no cross contamination. Unprocessed raw materials need to be received and segregated to prevent cross-contamination.

This means facilities should have:

- Separate raw and RTE spaces.
- Separation of the raw material warehouse from the process space.

TAKE A PROACTIVE APPROACH

Remember, this article is intended to be a summary of all GFSI schemes, and as such, is not a guarantee that following the information provided will result in certification. The wording in each of the schemes is open to interpretation, and auditors will have different views of how the standard should be read. Fortunately, those facilities that follow current Good Manufacturing Practices should be ahead of the game for the GFSI audit process.

At the same time, GFSI schemes continue to upgrade their requirements. These upgrades raise the bar with every version, and also grow the expectations by retailers, customers and regulatory agencies alike. Food processors must conduct due diligence to stay up or ahead of these ever increasing standards. Success requires a proactive approach. Aim for continuous improvement versus continuous evaluation. Constantly look at things such as pavement maintenance programs, room pressurization strategies, and other forward-thinking ideas to achieve and retain food-safe designations.

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