
**Reusable packaging system design -
Specifications and recommendations**

Part 7:
**Third-party washing, sanitization & handling of
foodware**

Version 1.1
October 2022



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Foreword

PR3 is a public-private partnership between corporate, government and NGO stakeholders that has created a standard for the design of reusable packaging systems and is testing it in collaborative demonstration projects. PR3's goal is to transform disconnected, proprietary, and small-scale reuse models into shared interoperable public-private systems. The standard is meant to integrate, de-risk, and support reuse initiatives globally.

PR3 founding partners, funders and advisors include Break Free from Plastic, Cisco, City of Seattle, Nestle, Plastic Solutions Fund, and The Ellen MacArthur Foundation.

This document was prepared by PR3 with input from its partners. It represents the views of PR3 only and does not indicate the views of any of PR3's partners.

This is a working draft document and is subject to change.

A list and links to all parts in the PR3 Reusable Packaging System Design standard can be found on the PR3 website, see <https://www.resolve.ngo/site-pr3standards.htm>

Any feedback or questions on this document should be directed to PR3 Technical Director Claudette Juska at cjuska@resolv-advisor.org.

Introduction

Single-use packaging is a critical threat to human health and the environment. Reuse has the greatest potential to dramatically reduce plastic production and greenhouse gas emissions, as well as reduce system costs, compared to other packaging waste interventions, according to Pew Charitable Trusts.

As reusable packaging systems have emerged in recent years, they have been designed independently and are mostly small-scale, disconnected, and proprietary. They each operate within their own systems for collection and reverse logistics. As more enter the market, they will sow confusion, inconvenience, and inefficiencies for companies, workers, and consumers, and bump up against each other – literally - in their quest for scale.

PR3 has now developed the Reusable Packaging System Design standard with the goal of transforming these hundreds of disconnected reuse systems into a shared and interoperable public-private system - one that is more convenient and affordable and has the ability to truly scale.

This document represents the component of the standard that focuses on *washing, sanitizing, and safe handling* of reusable foodware containers. These processes are of utmost importance to the system, ensuring that single-use packaging can be replaced without negatively impacting public health.

This document provides detailed instructions for service providers to avoid cross-contamination and prevent disease transmission. It not only provides standard protocols and best practices for washing and sanitizing, but importantly, also includes guidance on how providers should safely handle containers during collection and distribution. These are areas where current regulation has not yet caught up with the market, leaving gaps in guidance in many jurisdictions globally.

The intended users of this document are third-party service providers that collect, wash, sanitize and/or distribute foodware for refilling. The document has been written to help ensure that only essential contact points occur throughout the system, and it provides instructions to cover all the contact points that a third-party provider would encounter during collection, washing and distribution.

This document does not remove the need for third-party providers to develop specific Standard Operating Procedures (SOPs) and Hazard Analysis and Critical Control Point (HACCP) based on their specific operations and governing regulations.

This document has a special emphasis on U.S. regulations, including FDA and EPA guidelines. This is an intentional starting point for this standard because the first implementation will be in Seattle, Washington. This document will evolve through future versions to incorporate additional viewpoints and an ultimate focus on global best practices.

This document is one of multiple parts that together make up the Reusable Packaging System Design Standard. Other parts include collection points, containers, incentives, labeling, reverse logistics and washing. A list and links to all parts in the standard can be found on the PR3 website, see <https://www.resolve.ngo/pr3.htm>.

Reusable packaging system design – Specifications and recommendations

Part 7:

Third-party washing, sanitization & handling of foodware

1 Scope

This document specifies minimum requirements and recommendations for washing, rinsing, sanitization, and drying of foodware containers. It also provides requirements and recommendations for the hygienic handling processes for these containers during their collection and distribution.

It is applicable to foodware containers that meet [Part 2: Containers](#) and are intended to be serviced by third-party providers for washing and logistics.

This document is not intended for packaging containers or products in the manufactured consumer goods industry, such as bottled water, soda, or condiments, etc., though certain clauses in this document might be applicable to that industry.

This document does not preempt or supersede any industry, local, state, regional or national standards.

2 Normative References

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document.

PR3-P01 – Reusable Packaging System Design Standard – Part 01: Collection points

PR3-P02 – Reusable Packaging System Design Standard – Part 02: Containers

PR3-P03 – Reusable Packaging System Design Standard – Part 03: Digital

PR3-P05 – Reusable Packaging System Design Standard – Part 05: Labeling & education

PR3-P07 – Reusable Packaging System Design Standard – Part 06: Reverse logistics

3 Terms and Definitions

For the purposes of this document, the terms and definitions given in PR3's [Glossary of Terms](#) and the following apply.

In all clauses, the following verbal forms are used:

- Requirements are indicated by "SHALL" or "SHALL NOT"
- Recommendations indicated by "SHOULD" or "SHOULD NOT"
- Permission is indicated by "MAY" or "MAY NOT"

3.1

reusable foodware container

foodware

container

food or beverage packaging that meets [Part 2: Containers](#) and is filled at the point-of-sale, such as coffee cups in café or clamshell food containers in a restaurant

3.2

provider

third-party reuse system service provider/operator of reusable containers

Note 1 to entry: services may include container washing, collecting, distributing, digital tracking, etc.

3.3

employee

person employed by a provider

3.4

vendor

food and or beverage establishment, event venue, campus cafeteria, or other food and or beverage participant in the third-party reuse system

3.5

vendor employee

shall be referred to as such

3.6

non-food-contact surfaces

surfaces of equipment that include access panels, table legs, shelves, carts, equipment housing and controls, cabinetry, the 'outside' surfaces of drying racks, return collection bins, etc.

3.7

distribution bin

storage container

clean NSF and FDA food-grade approved, sealed distribution and storage containers that carry only clean containers

3.8

collection bin

enclosed receptacle that holds dirty containers during the collection and transportation of dirty reusable containers

3.9

collection point

housing unit that contains a collection bin and meets [Part 1: Collection points](#)

3.10

Standard Operating Procedure (SOP)

established or prescribed methods to be followed routinely for the performance of designated operations or in designated situations

3.11

Hazard Analysis Critical Control Point (HACCP)

management system used globally in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement, and handling, to manufacturing, distribution and consumption of the finished product.

4 Training

4.1 Washing, collection, and distribution employees

Washing staff SHALL be trained and certified as required by local regulation to handle, wash, sanitize and store food-contact items safely and hygienically. Examples of possible training programs include the Food Handlers Card as is required in many countries such as [Singapore](#) and the [USA](#).

Collection and distribution staff SHALL be trained and certified as required by local regulation and receive additional instruction on how to handle clean and dirty reusable containers and collection and distribution bins safely and hygienically. Guidance provided below in section 9.

Employees SHALL be trained to follow the provider's SOP developed according to local regulations and guidance along with [HACCP principals](#).

4.2 Vendor employees

Vendor employees SHALL be trained to handle containers with the same safe handling protocols as single-use containers and/or in-house containers.

Providers SHALL review safe handling procedures with vendors based on vendor SOPs.

Vendor employees SHALL be trained *not* to handle used containers in the system, but instead, direct customers to return used containers to a collection point.

5 Employee health and personal hygiene

The following applies to all stages within a reuse ecosystem. For more detail reference [FDA Employee Health and Personal Hygiene Handbook](#).

5.1 Employee health

Employees and managers share responsibility in ensuring proper protocols are followed to reduce the risk of cross-contamination from illness. If employees are experiencing any of the below symptoms, or other illnesses that would put others at risk or keep them from performing their job duties, they SHALL be advised to take all precautions and contact their supervisor.

Employees SHALL report any illness to the manager on duty.

Employees SHALL report the information in a manner that allows a direct supervisor to reduce the risk of foodborne disease transmission, including providing necessary additional information, such as date of onset of symptoms and an illness, or of a diagnosis without symptoms if the employee has any of the following:

- Vomiting
- Diarrhea
- Jaundice
- Sore throat with fever, or
- A lesion containing pus such as a boil or infected wound that is open or draining and is:
 - On the hands or wrists, unless an impermeable cover such as a finger cot or stall protects the lesion and a single use glove is worn over the impermeable cover,
 - On exposed portions of the arms, unless the lesion is protected by an impermeable cover, or

- On other parts of the body, unless the lesion is covered by a dry, durable, tight-fitting bandage.
- Has an illness diagnosed by a health practitioner due to:
 - Norovirus
 - Hepatitis A virus
 - Shigella E. Coli
 - Salmonella typhi 7
 - SARS-CoV-2

A direct supervisor SHALL notify the regulatory authority when a foodservice employee is:

- Jaundiced, or
- Diagnosed with an illness due to a pathogen as specified by their local governing health authority.

A direct supervisor SHALL work with the regulatory authority to determine if the foodservice employee should be excluded or restricted from or within the establishment.

A direct supervisor SHALL work with the regulatory authority to determine if/when the employee should be reinstated to duty in the establishment.

5.2 Hand washing

Handwashing is the act of cleansing hands by applying soap and water, rubbing them together vigorously, rinsing them with clean water, and thoroughly drying them. This process gets rid of dirt and contaminants. Every handwashing stage is important and effectively contributes to soil removal and reduction of microorganisms that can cause illness. Proper hand washing reduces the spread of fecal-oral pathogens from the hands of a food employee to foods. Handwashing can also help reduce the transmission of other pathogens from environmental sources. The fingernails and surrounding areas are often the most contaminated parts of the hand and are also the most difficult part of the hand to get clean.

5.2.1 Facilities that service reusable containers

Facilities SHALL post handwashing signs or posters in a language understood by all foodservice staff near all handwashing sinks, in food preparation areas, and restrooms.

Facilities SHALL use designated handwashing sinks for hand washing only. Do not use food preparation, utility, and dishwashing sinks for handwashing.

Facilities SHALL provide warm running water, soap, and a means to dry hands.

Facilities SHALL provide a waste container at each handwashing sink or near the door in restrooms.

Facilities SHALL keep handwashing sinks accessible anytime employees are present.

5.2.2 Employees that service reusable containers

Employees that handle and/or fill clean foodware SHALL wash hands:

Note: workers that handle and/or fill clean foodware should not also handle used or dirty foodware, per requirements in Section 9 below.

- Before starting work
- During food preparation
- When moving from one food preparation area to another
- Before putting on or changing gloves
- After using the restroom
- After sneezing, coughing, or using a handkerchief or tissue
- After touching hair, face, or body
- After touching clothing, shoes, or aprons.
- After smoking, eating, drinking, or chewing gum or tobacco
- After handling raw meats, poultry, or fish
- After any cleanup activity such as sweeping, mopping, or wiping counters
- After handling chemicals that could affect food safety
- After touching dirty dishes, equipment, or utensils
- After handling trash
- After handling money
- After any time the hands may become contaminated

5.2.3 Handwashing steps

Employees SHALL clean hands and exposed portions of arms, including surrogate prosthetic devices for hands and arms, for at least 20 seconds according to the method in Table 1.

Table 1 - Handwashing method

Step 1	Rinse under clean, warm running water;
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Step 2	Apply soap and rub all surfaces of the hands and fingers together vigorously with friction for at least 10 to 15 seconds, giving particular attention to the area under the fingernails, between the fingers/fingertips, and surfaces of the hands, arms, and surrogate prosthetic devices;
Step 3	Rinse thoroughly with clean, warm running water; and
Step 4	Thoroughly dry the hands and exposed portions of arms with single-use paper toweling, a heated-air hand-drying device, or a clean, unused towel from a continuous towel system that supplies the user with a clean towel. Avoid recontamination of hands and arms by using a clean barrier, such as a paper towel, when turning off hand sink faucets or touching the handle of a restroom door.

5.2.3 Corrective action for improper handwashing

Employers SHALL retrain any employee found not following the facility's handwashing SOP.

Employers SHALL ask employees that are observed not washing their hands at the appropriate times or using the proper procedure to wash their hands immediately and re-train on proper handwashing.

5.3 Hand sanitizers

Employees SHALL follow FDA recommendations when using hand sanitizers. These recommendations are as follows:

- Employees SHOULD use hand sanitizers only after hands have been properly washed and dried.
- The hand sanitizer SHOULD be an alcohol-based hand sanitizer that contains at least 60% alcohol.

5.4 Gloves

5.4.1 Glove requirements

Whenever wearing gloves is indicated, employees SHALL follow these procedures:

- Change or replace them as often as handwashing is required to reduce the risk of contamination.
- Discarded when damaged or soiled
- Change gloves after coughing, sneezing, or touching their hair or face
- Wash and/or sanitize hands between glove changes

5.4.2 Glove placement and removal

Employees SHALL follow the standard procedures outlined by Future Learn and the Ebola Communication Network, including Figure 1 for glove placement and Figure 2 for glove removal.

Figure 1 – Glove placement



Figure 2 – Glove removal



1 With both hands gloved, grasp the outside of one glove at the top of your wrist, being careful not to touch your bare skin.



2 Peel off this first glove, peeling away from your body and from wrist to fingertips, turning the glove inside out.



3 Hold the glove you just removed in your gloved hand.



4 With your ungloved hand, peel off the second glove by inserting your fingers inside the glove at the top of your wrist.

5.4.3 Corrective action for improper glove usage

Employers SHALL retrain any employee found not following the facility's gloves SOP.

Employers SHALL ask employees that are observed not using gloves at the appropriate times or not using the proper procedure to don or remove gloves to replace their gloves immediately and re-train on proper use of gloves.

6 Machine warewashing

Providers of hand foodware washing and sanitization services SHALL apply the below clauses to develop step-by-step procedures that are specific to the provider's equipment.

Note: Proper operation of mechanical warewashing equipment, including dishwashing machines, ensures effective cleaning and sanitization, thereby preventing contamination of reusable containers by ineffectively cleaned and sanitized equipment. Proper procedures also serve to prevent recontamination of clean equipment.

To help protect employees' skin from heat burns and chemical cleansers, latex or neoprene dishwashing gloves and waterproof dishwasher aprons SHOULD be available for use.

Equipment such as a dish table MAY be used to give employees a designated place to rest soiled dishes waiting to be cleaned.

6.1 Machine warewashing specifications

6.1.1 Machine manufacturer instructions

Warewashing machine SHALL have an affixed data plate that provides vital, detailed instructions about the proper operation of the machine including wash, rinse, and sanitizing cycle times, temperatures, and pressures.

Warewashing machine and its auxiliary components SHALL be operated in accordance with the machine's data plate and other manufacturer instructions.

6.1.2 Machine data plate

A warewashing machine SHALL be provided with an easily accessible and readable data plate affixed to the machine by the manufacturer that indicates the machine's design and operation specifics including the following.

Data plate SHALL include temperatures required for washing, rinsing, and sanitizing

Data plate SHALL include the pressure required for the freshwater sanitizing rinse, unless the machine is designed to use only a pumped sanitizing rinse

Data plate SHALL include the conveyor speed for conveyor machines

Data plate SHALL include the cycle time for stationary rack machines

Data plate or SOPs SHALL include information on the type of containers/materials that can be washed in the machine. For example, plastics might not be recommended for high temperature washing.

6.2 Machine warewashing procedures

6.2.1 Precleaning

If necessary for effective cleaning, foodware SHOULD be pre-flushed, pre-soaked or pre-scrubbed.

Food debris on foodware SHOULD be scraped over a waste disposal unit or garbage receptacle or removed in a warewashing machine with a prewash cycle.

6.2.1.1 Scraping

Nylon pads and brushes SHALL be used.

Abrasive cleansers and pads SHALL NOT be used, as they can scratch food-contact surfaces and reduce the ability for foodware to be effectively cleaned and sanitized.

Metal scouring pads SHALL NOT be used, as their deterioration can result in contamination of food by foreign matter, i.e. metal fragments.

6.2.1.2 Machine prewash cycles

Soiled items to be cleaned in a warewashing machine SHALL be loaded into racks, trays, or baskets or onto conveyors in a position that:

- exposes the items to the unobstructed spray from all cycles;
- allows the items to drain; and
- is not overloaded so that each item is effectively cleaned or sanitized.

6.2.2 Washing

6.2.2.1 Wash solution

Machine manufacturer label instructions for detergent and cleaning chemicals SHALL be followed to avoid risk of chemical burns, or chemical residues finding their way into food, and to ensure materials are washed properly.

Note: There are different types of detergents for different types of dishwashing machines, the surfaces to be cleaned, the soil type, and the local water conditions.

6.2.2.2 Wash temperature

Machine manufacturer's wash temperature specifications SHALL be followed.

Note: Temperatures vary according to the specific equipment being used.

Generally, in spray-type warewashing machines that use chemicals to sanitize, the temperature of the wash solution SHOULD NOT be less than 120°F/49°C.

Generally, in spray-type warewashing machines that use hot water to sanitize, the temperature of the wash solution SHOULD NOT be less than:

- For a stationary rack, single-temperature machine, 165°F/74°C.
- For a stationary rack, dual-temperature machine, 150°F/66°C
- For a single-tank, conveyor, dual-temperature machine, 160°F/71°C
- For a multi-tank, conveyor, multi-temperature machine, 150°F/66°C

6.2.3 Sanitization

Note: The technical definition of “sanitization” is the application of cumulative heat or chemicals on cleaned food-contact surfaces that, when evaluated for efficacy, is sufficient to yield a reduction of 5 logs of representative disease microorganisms of public health importance. In lay terms, this means reducing the number of microorganisms on a surface by 99.999%. This is considered a safe level.

Note: Effective sanitization of equipment is dependent upon *both*:

1. sanitizing solution concentration and;
2. contact time with food-contact surfaces.

6.2.3.1 Machines that use chemicals to sanitize

A chemical sanitizing solution SHALL not sanitize a soiled dish; therefore, conveyor speed or cycle times during the wash and rinse steps are also critical to sanitization.

A chemical sanitizer used in a sanitizing solution for a warewashing machine SHALL be used in accordance with the U.S. EPA-registered label use instructions and must be used as follows.

In jurisdictions outside the U.S., the equivalent regulatory body’s guidelines SHALL be followed.

In jurisdictions where no guidelines exist, U.S. EPA guidelines SHOULD be followed.

6.2.3.1.1 Use of chlorine sanitizing solution

Note: Chlorine (sodium hypochlorite, active ingredient) is typically used for foodservice low temperature, chemical sanitizing in warewashing machines.

A chlorine solution SHALL have a minimum temperature based on the concentration and pH of the solution as listed in the chart:

Concentration Range (mg/L)	25-49	50-99	100
pH 8-10	120 °F/49°C	100°F/38 °C	55°F/13°C
pH 8 or less	120 °F/49°C	75°F/24°C	55°F/13°C

Concentration of the sanitizing solution SHALL be accurately determined by using a chlorine test kit at least daily and logged accordingly.

Instructions for use of test kits SHALL be posted in a conspicuous location in the warewashing machine area where concentrations are normally checked.

Corrective Action: Service provider SHALL calibrate the dispenser if the concentration is not at least 50ppm to 100ppm.

Foodware SHALL NOT be used if calibration is incorrect and has not been adjusted.

Foodware items from sanitization cycles that do not meet the concentration requirements SHALL NOT be distributed for use

Note: Routinely checking sanitizer concentration is one of the most important behaviors, in addition to ensuring warewashing machine is operating per the parameters on its data plate.

SOP's SHALL delineate corrective actions when warewashing machine is not operating correctly.

6.2.3.1.2 Use of iodine sanitizing solution

Note: Iodine is typically used for chemical sanitizing in single rack warewashing machines, which is the type of machine often used in bars.

An iodine sanitizing solution SHALL have a:

- Minimum temperature of 20°C (68°F),
- pH of 5.0 or less or a pH no higher than the level for which the manufacturer specifies the solution is effective, and
- Concentration between 12.5 mg/L and 25 mg/L

Concentration of the sanitizing solution SHALL be accurately determined by using a chlorine test kit at least daily and logged accordingly.

Instructions for use of test kits SHALL be posted in a conspicuous location in the warewashing machine area where concentrations are normally checked

Foodware items from sanitization cycles that do not meet the concentration requirements SHALL NOT be distributed for use.

6.2.3.1.3 Sanitizing solution contact time

A chemical sanitizing solution SHALL contact an item long enough for sanitization to occur; that is, long enough for the number of microorganisms on the surface to be reduced to a safe level.

Contact times SHALL be consistent with those on EPA-registered label use instructions by providing a contact time of:

- At least 10 seconds for a chlorine solution, or

- At least 7 seconds for a chlorine solution of 50 mg/L that has a pH of 10 or less and a temperature of at least 100 o F or a pH of 8 or less and a temperature of at least 75 o F (24 o C), or
- At least 30 seconds for other chemical sanitizing solutions.

In jurisdictions outside the U.S., the equivalent regulatory body's guidelines SHALL be followed.

In jurisdictions where no guidelines exist, U.S. EPA guidelines SHOULD be followed.

6.2.3.2 Machines that use hot water to sanitize

6.2.3.2.1 Hot water temperature

If hot water is used for sanitizing in a warewashing machine (i.e., instead of a chemical sanitizing solution), the temperature of the fresh hot water sanitizing rinse as it enters the manifold may not be more than 194°F/90°C, or less than:

- 180°F/82°C for most machines.
- For a stationary rack, single-temperature machine, 165°F/74°C.

Note: The maximum temperature of 194°F/90°C specified above does not apply to high-temperature and pressure systems with wand-type, hand-held spraying devices used for in-place cleaning and sanitizing of equipment.

A surface temperature of 160°F/71°C as measured by an irreversible registering temperature indicator SHALL be achieved.

Note: This is accomplished by using thermal tabs/decals that stick on foodware and register the temperature of the item (should be at least 160 deg. F). Thermal tabs do not measure water temperature.

Temperature of the hot water sanitizing final rinse SHALL be checked and logged at least daily at the machine gauge.

Operators SHALL contact their equipment maintenance/service partner if temperatures are not as prescribed.

Foodware items from sanitization cycles that do meet the temperature requirements SHALL NOT be distributed for use.

6.2.3.2.2 Hot water pressure

The flow pressure of the fresh hot-water sanitizing rinse in a warewashing machine SHALL NOT be less than 15 psi (pounds per square inch)/100 kp (kilopascals) as measured in the water line immediately downstream or upstream from the fresh hot-water sanitizing rinse control valve.

The flow pressure of the fresh hot-water sanitizing rinse in a warewashing machine SHALL NOT be more than 25 psi/170 kpa as measured in the water line immediately downstream or upstream from the fresh hot-water sanitizing rinse control valve.

The final rinse water pressure gauge SHOULD be checked daily for proper pressure, as prescribed.

6.2.4 Rinse aid

A rinse water additive SHALL be provided in all mechanical warewashing applications, with the exception of some under-counter dish machines.

In the case of under-counter machines, a pre-existing factory installed chemical pump designed for a rinse additive SHALL be present. As well, there SHALL be sufficient space near the machine to place the rinse additive dispenser or container of product.

6.2.5 Drying

After cleaning and sanitizing, containers SHALL be air-dried or adequately drained before contact with food and before being stacked or stored.

Containers SHALL NOT be cloth dried.

Note: Towel-drying of cleaned and sanitized equipment and utensils may result in recontamination of food contact surfaces.

Containers that have been air-dried MAY be polished with cloths that are maintained clean and dry.

6.3 Machine warewashing maintenance

6.3.1 Solutions maintained clean

Wash detergents and cleaners, chemical sanitizers and rinse aids SHALL be maintained and clean so that effective cleaning and sanitizing will occur.

6.3.2 Gauges

All temperature and pressure gauges SHALL be maintained in good repair and be accurate within the intended range of use.

7 Manual warewashing

Providers of manual foodware washing and sanitization services SHALL apply the below clauses to develop step-by-step procedures that are specific to the provider's equipment.

To help protect employees' skin from heat burns and chemical cleansers, latex or neoprene dishwashing gloves and waterproof dishwasher aprons SHOULD be available for use.

Equipment such as a dish table MAY be used to give employees a designated place to rest soiled dishes waiting to be cleaned.

7.1 Manual warewashing specifications

To properly execute the three-compartment dishwashing process, operators SHALL first prepare the area and the dishes to be washed.

Three-compartment sinks MAY also be used to wash wiping cloths, clean produce, and thaw food.

Three-compartment sinks SHALL NOT be used as a mop sink, for hand washing, or to wash maintenance tools.

To prevent possible cross-contamination, separate handwashing sinks and mop sinks SHALL be provided for employees to wash their hands and rinse off maintenance equipment.

Posting accessories such as handwashing signs and timers in the kitchen SHOULD help clearly indicate which sinks are for hand washing to eliminate confusion.

If wiping cloths are washed in the three-compartment sink, each basin SHALL be emptied, washed, and sanitized before and after use.

Regardless for which purposes the sink has been used, each section of the three-bay sink SHOULD be thoroughly cleaned and sanitized before each dishwashing session

Each section of the three-bay sink SHOULD be completely emptied and cleaned every 4 hours.

Foodware SHOULD be prepped before it is washed.

Excess food SHALL be scraped off into a trash can or food waste disposal.

If using a four-section sink, the first section MAY be used during this prep period, either to house the food waste disposal or as an area to soak dishes to make removing caked-on food easier.

Operators SHALL check local health codes and regulations when setting up warewashing stations.

Note: The three-compartment sink procedures for manual warewashing revolve around three main steps: wash, rinse, and sanitize. Check your local health authority as each step has specific guidelines (ex. U.S. [FDA](#)) for sanitizer temperature and other variables, but the correct order of a three-compartment sink system never changes. Additional steps – such as scraping, pre-rinsing, and drying– should also be followed according to relevant regulation. Three-compartment sinks should be constructed with integral drain boards to facilitate air drying.

7.2 Manual warewashing procedures

7.2.1 Precleaning

Food debris on foodware SHOULD be scraped over a waste disposal unit or garbage receptacle.

Nylon pads and brushes SHALL be used.

Metal scouring pads SHALL NOT be used, as their deterioration can result in contamination of food by foreign matter, i.e. metal fragments.

Some operations feature a pre-rinse faucet that MAY be used to quickly rinse the foodware as well.

7.2.2 Washing

NOTE: It's critical to note that washing dishes only makes them visibly clean; it is vital to complete the sanitization process below.

Foodware SHALL be scrubbed in the first sink compartment using warm, soapy water.

The first compartment in a three-bay sink SHOULD be filled with a solution of water and one of the following:

- soap,
- detergent,
- acid or alkaline cleaner,
- degreaser, or
- an abrasive cleaner.

Depending on local health codes, the water's minimum temperature SHOULD be between 95 and 120 degrees Fahrenheit.

A thermometer SHALL be kept nearby to ensure the water is at the correct temperature.

Depending on the container types and needs, a combination of glass brushes, sponges and scrubbers, dish cloths, and scrub brushes MAY be necessary.

7.2.3 Rinse

Soapy residue SHALL be removed from foodware by immersing in clean, hot water in the second sink basin or by spraying with clean, hot water in the second sink basin.

NOTE: The second section in a three-compartment sink is always dedicated to rinsing.

The required temperature of the rinse water MAY vary slightly between local health codes, but is generally a minimum of 110 degrees Fahrenheit.

To ensure sanitary operation when immersing foodware, water in the rinse basin SHALL be drained and replaced with fresh water when it:

- cools down below 110 degrees Fahrenheit,
- becomes visibly soapy or cloudy, or
- once every 4 hours during regular sink cleaning.

7.2.4 Sanitizing

NOTE: This third step in the three-sink method is arguably the most important.

NOTE: The technical definition of “sanitization” is the application of cumulative heat or chemicals on cleaned food-contact surfaces that, when evaluated for efficacy, is sufficient to yield a reduction of 5 logs of representative disease microorganisms of public health importance. In lay terms, this means reducing the number of microorganisms on a surface by 99.999%. This is considered a safe level.

Foodware SHALL be soaked in the third sink for sanitization.

The third sink SHALL contain a chemical sanitizing solution or hot water.

Foodware SHALL be fully immersed in the chemical sanitizing solution or hot water for the required period of time.

7.2.4.1 Using a chemical sanitizing solution

A U.S. EPA-approved chemical sanitizer SHOULD be used.

NOTE: Chemical sanitizers usually come in dissolvable tablets or a chlorine solution.

In jurisdictions outside the U.S., the equivalent regulatory body’s guidelines SHALL be followed.

In jurisdictions where no guidelines exist, U.S. EPA guidelines SHOULD be followed.

Chemical sanitizer manufacturer instructions SHALL be followed, as well as local health codes, to determine necessary concentration and temperature for the solution.

Chlorine type sanitizer MAY be used per manufacturer instructions.

Chlorine test strips MAY be used to confirm if the correct concentration has been achieved.

Quaternary ammonium type sanitizer MAY be used per manufacturer instructions.

Quaternary ammonium test strips MAY be used to confirm if the correct concentration has been achieved.

Corrective Action: If test strips indicate the proper sanitizing concentration has not been achieved, foodware SHALL be resanitized and concentrations SHALL be adjusted.

In most cases, each foodware item SHOULD soak from 7 to 30 seconds to be completely sanitized.

7.2.4.2.1 Using hot water to sanitize

Third sink SHALL have a sanitizing sink heater installed.

Water in the third sink SHALL stay at or above 171 degrees Fahrenheit.

NOTE: These heaters are made to be mounted underneath the sink and constantly circulate water to ensure it stays at or above 171 degrees Fahrenheit, the minimum sanitizing temperature. The size of the sink compartment is needed to determine which sanitizing sink heater is appropriate.

Since the water in a hot water sanitizing system is kept at temperatures hot enough to burn skin, the sink SHALL be outfitted with a rack or basket for operators to comfortably lower and lift items in and out of the hot water.

Items that are too large to be fully submerged the sink SHALL be sanitized in a warewashing machine.

7.2.5 Drying

After washing and sanitizing, containers SHALL be air-dried or adequately drained before contact with food or before being stacked or stored.

Foodware SHALL be placed on a self-draining rack or drainboard to dry.

Foodware SHALL NOT be cloth dried.

NOTE: Towel-drying of cleaned and sanitized equipment and utensils may result in recontamination of food contact surfaces. Many regulatory body agencies' (ex. U.S. FDA) warewashing guidelines require that foodware must always air dry and is never to be dried with towels. For this reason, operators will likely need a drainboard on the sink.

Drainboards SHALL be self-draining to prevent the accumulation of water.

If the drainboard is not large enough to enable all cleaned items to dry, then drainage shelves SHALL be used to provide adequate drying space.

Drainage shelves SHALL be self-draining to prevent accumulation of water.

Foodware that has been air-dried MAY be polished with cloths that are maintained clean and dry.

8 Foodware storage and inspection

Each foodware container SHALL be inspected prior to placing it in storage or packing for redistribution to ensure foodware does not have dents, cracks, or other damage that would render it unsafe for additional use.

Inspections MAY be done by employees or by machines.

Foodware SHALL NOT be stacked or stored until completely dry.

Foodware SHALL be stored, transported and distributed in enclosed containers that have lids to protect from dirt, dust and other potential contaminants.

Storage/distribution containers SHOULD be NSF and FDA food-grade approved, sealed distribution and storage containers.

Storage/distribution containers SHALL only carry clean foodware.

In the case that storage/distribution containers are also used as collections bins, they SHALL be washed and sanitized between each use and clearly labeled as "clean" or "used."

Placeholder for inclusion of washing/sanitization requirements for storage/distribution containers.

9 Foodware handling during distribution and collection

Third-party employees SHOULD have food-handler certificates and receive additional training for safe container handling during collection and distribution.

Handling procedures SHALL be printed and kept in all vehicles, sorting, storage and washing facilities for reference.

Distribution vehicles (trucks, vans, pedicabs, bikes, etc.) SHALL have separated and designated dirty and clean areas.

Vehicles MAY be used solely for distribution of clean containers or solely for collection of dirty containers.

Vehicle operators that switch between collecting used foodware and distributing clean foodware SHALL wash and sanitize vehicle storage areas between uses.

Vehicle operators SHOULD seek further advice from local authorities on local requirements.

Boxes of clean, latex gloves SHALL be available in vehicles, at or near each collection point, and at the sorting, washing and warehousing facilities where employees drop off used foodware or pick up clean foodware.

Employees SHALL use gloves to handle any used foodware or collection bins.

Employees SHALL wash hands and replace gloves if switching between collection and distribution roles; as detailed below.

If a glove rips while handling dirty foodware, employee SHALL immediately wash hands and clean and sanitize any surfaces touched on the way to washing hands.

If any clean foodware comes in contact with a dirty glove, ripped glove, or is dropped, or placed on an unsanitary surface, it SHALL be returned to a washing facility for re-washing and sanitization.

9.1 Foodware handling during distribution

Clean foodware SHALL be stored and transported in FDA, NSF and/or other governing body agency approved, sealed storage/distribution containers.

In the case that collections bins and storage/distribution containers are interchangeable, they SHALL be washed and sanitized between each use and clearly labeled as “clean” or “used.”

9.1.1 Picking up clean foodware for distribution

Employees SHALL follow the below steps in order.

- 9.1.1.1 Employee SHALL wash hands according to Section 5.2.3.
- 9.1.1.2 Employee SHALL don gloves following the glove placement procedure from Section 5.4.2
- 9.1.1.3 Employee SHALL collect cleaned, sanitized foodware that is packed and sealed in a distribution/storage container(s) from the warewashing provider.
- 9.1.1.4 Employee SHALL place distribution/storage container(s) into the designated clean section of the distribution vehicle(s).

9.1.2 Distributing clean foodware

Employees SHALL follow the below steps in order.

- 9.1.2.1 Employee SHALL distribute clean containers in sealed distribution/storage containers to vendors back of house.
- 9.1.2.2 Employee SHALL give storage/distribution container(s) directly to vendor employees or place it in designated areas in the back of house or behind the counter, away from customers and potential contamination until used.

9.2 Foodware handling during collection

Collection bins SHALL be cleaned and sanitized with an FDA or other local governing body-approved sanitizing solution for nonfood-contact surface each time it is emptied by an employee.

Collection bins SHALL be cleaned and sanitized each time before being reused at a collection point.

Collection bins SHALL be fitted with a lid that seals the bin during collection.

NOTE: Nonfood-contact surfaces of equipment must be kept free of an accumulation of dust, dirt, food residue, and other debris. Timely cleaning and sanitizing prevent the growth of microorganisms on both food-contact surfaces of equipment and non-food contact surfaces. Additionally, proper cleaning frequency prevents the development of slime, mold, or other soil and related microorganisms on food-contact surfaces and equipment.

Collection bins SHOULD be maintained by third-party employees, even if they are located within the vendor's space.

9.2.1 Collecting dirty bins from collection points

Employees SHALL follow the below steps in order.

- 9.2.1.1 When directly in front of the collection point, employee SHALL don gloves following the glove placement procedure from Section 5.4.2
- 9.2.1.2 Employee SHALL open the collection point housing unit and seal collection bin with lid.
- 9.2.1.3 Employee SHALL place the sealed collection bin into the designated dirty section of the collection/distribution vehicle.
- 9.2.1.4 Employee SHALL follow procedure for sanitizing the collection point housing unit per PR3 Standard Part 1: Collection Points.
- 9.2.1.5 Employee SHALL repeat steps 2-4 above if multiple collection point housing units are in the same location.
- 9.2.1.6 Employee SHALL remove gloves according to the procedure in 5.4.2 and properly dispose of gloves in a nearby trash can and wash hands thoroughly according to Section 5.2.3.

9.2.2 Inserting clean collection bins into collection points

Employees SHALL follow the below steps in order.

- 9.2.2.1 Employee SHALL place a new pair of clean gloves following the glove placement procedure from Section 5.4.2

Note: If employees are simultaneously picking up soiled utensils and delivering clean ones then handwashing becomes increasingly important. A SOP will be needed based on availability of handwashing (e.g. sinks with all the necessary components). Generally, gloves are not a substitute for handwashing and neither is hand sanitizer.
- 9.2.2.2 Employee SHALL place sanitized collection bin from collection/distribution vehicle into collection point housing unit.
- 9.2.2.3 Employee SHALL repeat step 2 above if multiple additional collection point housing units are in the same location.
- 9.2.2.4 Employee SHALL remove gloves according to the procedure in 5.4.2 and properly dispose of gloves in a nearby trash can and wash hands thoroughly according to Section 5.2.3.

9.2.3 Returning dirty foodware to sorting or washing facility

Employees SHALL follow the below steps in order.

- 9.2.3.1 Employee SHALL don gloves following the glove placement procedure from Section 5.4.2.
- 9.2.3.2 Employee SHALL unload dirty reusable containers and receptacles for sorting and/or washing/sanitizing.

10 Record keeping

Operators SHALL keep and retain records relating to measures put in place to control hazards in an appropriate manner and for an appropriate period, commensurate with the nature and size of operations.

Record-keeping protocols SHALL be included at each appropriate stage and included in operators SOP's.

Operators SHALL make relevant information contained in these records available to the competent authority and receiving vendor on request.

Annex A

(Informative)

Support Resources

Food Standards Agency UK “Safer Food Better Business - Caterers”

<https://www.food.gov.uk/sites/default/files/media/document/sfbb-caterers-pack-fixed.pdf>

Employee Health and Personal Hygiene Handbook (U.S.A. FDA):

<https://www.fda.gov/media/77065/download>

Singapore Food Agency’s “Food Handlers Handbook”

[https://www.sfa.gov.sg/docs/default-source/our-services/food-handler's-handbook-\(english\).pdf](https://www.sfa.gov.sg/docs/default-source/our-services/food-handler's-handbook-(english).pdf)

A Guide to the Food Safety Code (Australia)

<https://www.foodstandards.gov.au/publications/Documents/Safe%20Food%20Australia/Appendix%206%20-%20Cleaning%20and%20sanitising%20surfaces%20and%20utensils.pdf>

Best Practices for Retail Food Stores, Restaurants, and Food Pick-Up/Delivery Services During the COVID-19 Pandemic (U.S.A.):

<https://www.fda.gov/food/food-safety-during-emergencies/best-practices-retail-food-stores-restaurants-and-food-pick-up-delivery-services-during-covid-19>

Bibliography

The Pew Charitable Trusts' report, *Breaking the Plastic Wave*, quantifies the potential for reuse to reduce plastic pollution at reduced costs. See Figure 17 on page 41:
https://www.pewtrusts.org/-/media/assets/2020/07/breakingtheplasticwave_report.pdf

The majority of these guidelines were adopted from US FDA 2017 Food Code

U.S.A. 2017 FDA Food Code, U.S. Department of Health and Human Services, Public Health Service, Food and Drug Administration, located here:
<https://www.fda.gov/downloads/Food/GuidanceRegulation/RetailFoodProtection/FoodCode/UCM595140.pdf>

Additional food safety regulations, programs and guidance were cross referenced and incorporated from:

The Government of the Hong Kong Special Administrative Region, Center for Food Safety
https://www.cfs.gov.hk/english/programme/programme_haccp/programme_haccp_basics.html

European Union Regulation (ED) No 852/2004 of the European Parliament and of the Council of 29 April 2004 on the Hygiene of Foodstuffs
<https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32004R0852&from=EN#d1e623-1-1>

United Kingdom Food Standards Agency
<https://www.food.gov.uk/business-guidance>

Singapore Standard SS583:2013 for Guidelines on Food Safety Management for Food Service Establishments
<https://www.sfa.gov.sg/food-retail>

Australia Food Standards Code Chapter 3
<https://www.legislation.gov.au/Series/F2008B00575>
<https://www.legislation.gov.au/Series/F2008B00575>
<https://www.legislation.gov.au/Series/F2008B00576>
<https://www.legislation.gov.au/Series/F2008B00577>
<https://www.legislation.gov.au/Details/F2011C00592>