

# Providing Safe Containers for Food Products

## Facts for Niche-Market Food Processors

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The success of value-added products in Kansas has been due to the high quality and uniqueness of these products, filling a niche in the food market.

In order to preserve the reputation of your product line, all aspects of food process sanitation must be watched closely. A single incident with a contaminated product will most likely put your company out of business and could severely damage the entire niche-market industry as well.

Control of the quality of the food process includes employee hygiene, equipment sanitation, and proper process temperatures to control microbial hazards in the product. It also includes the container that holds the product. All safety measures are meaningless if a safe product is stored in an unsanitary container.

Although sanitizing your containers prior to filling with your product may be seen as an additional expense, it is an important step. This guide provides an outline of things to consider when handling containers destined to hold a food product.

### Discussion

Having safe, sterile containers is of concern when processing hot-fill products. These products, due to their low pH (less than 4.6), do not require cooking in a retort operation after placing in a container. Hot-fill products are typically heated in a kettle, then pumped or poured into

containers without additional cooking.

A retorted product undergoes an additional cooking step, which sterilizes the product, after filling the product into containers. A retort is equipped to cook under pressure, allowing temperatures above 212°F, and is a large version of a stove-top pressure cooker.

Examples of products requiring retorting are meat sauces (having more than 3 percent meat) and green beans (having a pH higher than 4.6).

In the retort process, the container is sterilized along with the product. While a pre-cleaning of the container to remove dust and debris is certainly desirable from an aesthetic standpoint, it is not a requirement since retorting removes the microbial hazard. In this case, the container should be clean but is not required to be sanitary prior to filling with product.

The production of glass and plastic containers uses a process that exposes the material to high temperatures capable of killing most, if not all, of the bacteria present. However, after the container has been made, it is not

necessarily handled in a way to keep it sterile for food use. Most container processes are highly mechanized, which may reduce the chances of contamination, but do not eliminate them. The process does not eliminate dust and debris from process equipment and cardboard boxes typically used to ship glass and plastic.

Additionally, smaller food processors may have empty jars and bottles stored on their shelves for a relatively long period of time before use, increasing opportunities for contamination. The concerns and practices for safe, clean containers also apply to their lids.

Container manufacturers recommend cleaning of their containers as a precaution. Most container manufacturers make every attempt to operate a clean operation and are audited regularly by some of their larger customers, but manufacturing practices vary in the industry. A cleaning step by the food processor is advocated; however, it is up to the food processor to implement cleaning practices.

Suppliers of container-washing equipment recommend at least a blast of sanitary air with the container inverted prior to filling. The air used, however, must be free of dust, moisture, and other contaminants, usually making water cleansing a more practical alternative. Keep in mind that an air blast or water rinse will not kill microbes, only remove loose particles in the container.



## Sanitizing Containers

Below is a recommended process for preparing new, unused containers and lids prior to filling with a product:

Thoroughly rinse the inside and outside with water above 180°F. for at least 30 seconds. Complete immersion of the container is simplest and best.

Invert the container and place in a clean rack to dry (or until dry enough for use).

Leave container inverted until filling. Fill container as soon as possible.

Re-sanitize containers if they have been stored for more than a day, stored upright, or exposed to contaminants such as dust.

## Suggested Equipment:

- Commercial dishwashing equipment, typical of the restaurant industry,
- Commercial blanching equipment,
- Hot water bath for immersing containers and drying racks for holding inverted containers, or
- Commercial container rinsing equipment.

### 1. Commercial dishwashing equipment:

New dishwashing units start around \$3,000 and mount under a countertop, much like a residential version. These units are designed for sanitizing restaurant dinnerware, which require a detergent wash step followed by a high-temperature water rinse. However, for unused glass and plastic containers, detergents and sanitizers are not required if water temperatures are at least 180°F. They usually come equipped with auxiliary water heaters that increase the temperature of the water to 180 to 190°F. Optional heaters can deliver proper temperatures when connected to existing hot water or cold water supplies. Units run on 208 to 240 volt electricity and require 40 to 65 amp service, depending on the auxiliary heater used. Keep

in mind that water above 150°F can cause serious burns. Therefore, use of a dedicated auxiliary heater for the washer is recommended. This method avoids creating scald hazards at a sink used by employees. Also available as an alternative are dishwashers that use lower water temperatures coupled with chemical sanitizing agents. This lowers water heater requirements but requires purchase and handling of sanitizers for this system.

## Some basic Definitions:

*Clean: free of particles and foreign material usually visible to the eye.*

A clean surface is not necessarily sanitary, especially if touched or exposed to room air for a period of time. However, a clean surface is more efficiently sanitized.

*Sanitary: material that has had microbes reduced to a safe, acceptable level.*

A sanitary surface may or may not look clean.

The smallest commercial systems hold a single rack of containers or dishes in the washing unit. Typical 20" x 20" racks can hold approximately 20 pint jars. The total cycle time of 90 seconds includes a wash at 150°F and a rinse at 180°F. Container loading and unloading will probably increase the total cycle to 3 to 5 minutes. In about an hour, 400 pint jars could be

sanitized for the filling operation. It is recommended to have several racks, so that handling of containers is limited prior to filling.

With an abundance of restaurants, used dishwashing equipment should be readily available (see listing below).

### 2. Commercial blanching equipment:

Used in the fruit and vegetable industry to blanch produce, steam-heated blanching equipment can be used to clean and sterilize containers prior to filling. A new unit costs \$3,000 to 4,000 and will require a source of steam. The blancher can be used for blanching operations as well as container cleansing, giving it dual usage.

### 3. Hot water bath:

For lower capacity operations, immersing containers and lids manually in hot water (at least 180°F) may be an alternative. Care should be taken to make sure the container is completely immersed, with no trapped air bubbles. Containers should be removed from the bath with tongs and stored inverted in a rack. Additional handling should be avoided. As the number of containers needed in a day increases, more automated methods may be required.

### 4. Commercial container rinsing equipment:

This equipment is designed for higher capacity operations requiring continuous cleaning. Units are typically installed in-line in a process, with capacities ranging from 300 to 80,000 containers per minute. Typical equipment prices start at \$60,000 to \$90,000. For new containers, this equipment inverts the container, then injects clean air, high temperature water, or steam into the container to clean them. Containers remain inverted until immediately before filling operations.

## Suppliers:

### Dishwashing Equipment

Index Restaurant Supply  
Kansas City, MO (816) 842-9122

Muckenthaler Inc. Restaurant  
Equipment and Supply  
624 SW 6th Avenue  
Topeka, KS 66603-3127  
(913) 232-0850

A-1 Used and New Equipment Co.  
10580 Evendale Dr.  
Cincinnati, OH 45241  
(800) 733-0271

Champion Industries, Inc.  
(dishwashing equip. mfr.)  
P.O. Box 4149  
Winston-Salem, NC 27115  
(910) 661-1556

### Container suppliers

Berlin / Alco Packaging  
9880 Widmer Road  
Lenexa, KS 66215-0305  
(913) 888-0440

Mid-Continent Agri-Marketing  
8909 Lenexa Drive  
Overland Park, KS 66214-3837  
(800) 547-1392

Northwestern Bottle Co.  
Lees Summit, MO  
(800) 255-4177 (816) 246-1300

Richards Packaging  
9050 Cody  
Overland Park, KS 66214  
(800) 446-4080

RYCO  
2949 Chrysler Road  
Kansas City, KS 66615  
(913) 894-2002

SFB Plastics Inc.  
Box 533  
Wichita, KS 67201 (316) 262-0400

### Container Washer Suppliers

Pneumatic Scale  
8020 Forsyth Blvd.  
St. Louis, MO 63105  
(314) 862-8000

## For More Information:

The Quick Reference Guide is an excellent source of information for food processing regulations, contacts, and suppliers.

**For a copy contact:** Extension Foods & Nutrition, Kansas State University, 244 Justin Hall, Manhattan, KS 66506-1407 (913) 532-5782. It is published by the Extension Foods and Nutrition Department at Kansas State University and funded in part by the Kansas Value-Added Center.

### Extension Specialists

These specialists are located at Kansas State University, Manhattan, KS 66506.

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Specialization:  
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Dr. Elizabeth A. E. Boyle,  
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Kansas State University  
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Specialization:  
meat processing and regulations, product development, quality assurance

Donald B. Erickson,  
Community Enterprise Development  
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Specialization:  
economic analysis, return on investment, product pricing and marketing, break-even analysis

Dr. Karen L.B. Gast,  
Post Harvesting and Marketing  
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Specialization:  
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### Regulation Issues

Kansas Department of Health and Environment  
109 SW 9th St., Suite 604  
Topeka, KS 66612 (913) 296-5600

*Brand names appearing in this publication are used for product identification. No endorsement is intended, nor is criticism of similar products mentioned. The list of contact information is subject to change and is only representative; other suitable sources may be available.*



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