

Pressure Canning versus Water Bath Canning



Why Canning Preserves Food

The high percentage of water in most fresh foods makes them very perishable. They spoil or lose their quality for several reasons:

- growth of undesirable microorganisms-bacteria, molds, and yeasts,
- activity of food enzymes and reactions with oxygen,
- moisture loss.

Microorganisms live and multiply quickly on the surfaces of fresh food and on the inside of bruised, insect-damaged, and diseased food.

Proper canning practices include:

- carefully selecting and washing fresh food,
- peeling some fresh foods,
- hot packing many foods,
- adding acids (lemon juice or vinegar) to some foods,
- using acceptable jars and self-sealing lids,
- processing jars in a boiling-water or pressure canner for the correct period of time.

Collectively, these practices remove oxygen; destroy enzymes; prevent the growth of undesirable bacteria, yeasts, and molds; and help form a high vacuum in jars. Good vacuums form tight seals which keep liquid in and air and microorganisms out.

Which Canning Method Should I Use for What Type of Foods

In short, the difference between pressure canning and water bath canning is that pressure canning cans **low-acid foods** while the water bath method is used to can **high-acidic foods**. A pressure canner also heats the product at a higher temperature than a water bath canner.

When done correctly, both of these canning methods are effective. It just depends on what type of food you want to can and its level of acidity. Remember, that the lower the value the more acidic it is.

Acid & Canning: pH Values of Various Foods

Reference Guide

www.adomesticwildflower.com



Above 4.5

artichokes 5.6	horseradish 5.4
asparagus 4 - 6	kale 6.4 - 6.8
bananas 4.5-5.2	leeks 5.5 - 6
beans 4.6 - 6.2	okra 5.5 - 6.4
beets 4 - 5.6	onions 5.3 - 5.8
brussel sprouts 6	papaya 5.2-5.7
cabbage 5.2 - 6.9	parsley 5.7-6
cantaloupe & melon 5.5- 7.1	parsnip 5.3
carrots 4.9 - 6.4	peas 5.8-7
cauliflower 5.6	papaya 5.2-5.7
celery 5.7 - 6	potatoes 5.3-6.1
chives 5.2 - 6.1	pumpkin 4.8-5.2
corn 6 - 7.5	radishes 5.5-6.5
cucumbers 5.1 - 5.7	spinach 5.5-7.2
dates 6.3-6.6	squash 5.5-6.2
eggplant 4.5 - 5.3	turnips 5.2-5.5
	zucchini 5.8-6.1

Below 4.5

apples 3.3 - 4	lemons 2.2 - 2.4
apricots 3.3 - 4	limes 1.8 - 2
blackberries 3.2 - 4.5	nectarines 3.9
blueberries 3.7	oranges 3 - 4
cherries 3.2 - 4.1	peaches 3.4
cranberries 2.3 - 2.5	pomegranates 3
currants (red) 2.9	quince 3.1 - 3.3
gooseberries 2.8 - 3.1	raspberries 3.2 - 3.7
grapes 3.4 - 4.5	rhubarb 3.1 - 3.4
grapefruit 3 - 3.3	strawberries 3 - 3.5
	tangerines 4

Close to 4.5

figs 4.6
pineapple 3.3 - 5.2
plums 2.8 - 4.6
prunes 3.1 - 5.4
tomatoes 3.5 - 4.9

Extras

Cocoa 6.3
Honey 3.9
Sugar 5 - 6
Vinegar 2 - 3.4

Levels of Acid or Alkalinity in Foods

Whether food should be processed in a pressure canner or boiling-water canner to control botulinum bacteria depends on the acidity of the food. Acidity may be natural, as in most fruits, or added, as in pickled food. Low-acid canned foods are not acidic enough to prevent the growth of these bacteria. Acid foods contain enough acid to block their growth or destroyed more rapidly when heated. The term "pH" is a measure of acidity; the lower its value, the more acid in the food. The acidity can be increased by adding lemon juice, citric acid, or vinegar.

Low-acid foods have pH values higher than 4.6. They include red meats, seafood, poultry, milk, and all fresh vegetables except for most tomatoes. Most mixtures of low-acid and acid foods also have pH values above 4.6 unless their recipes include enough lemon juice, citric acid, or vinegar to make them acid foods. Acid foods with a pH of 4.6 or lower include fruits, pickles, sauerkraut, jams, jellies, and marmalades.

Although tomatoes usually are an acid food, some are now known to have pH values slightly above 4.6. Figs also have pH values slightly above 4.6. Therefore, if they are to be canned as acid foods, these products need lemon juice or citric acid added. Properly acidified tomatoes and figs are acid foods and can be safely processed in a boiling-water canner.

Botulinum spores are very hard to destroy at boiling-water temperatures; the higher the canner temperature, the more easily they are destroyed. Therefore, all low-acid foods should be sterilized at temperatures of 240° to 250°F, attainable with pressure canners operated at 10 to 15 pounds per square inch of pressure as measured by a gauge. At temperatures of 240° to 250°F, the time needed to destroy bacteria in low-acid canned food ranges from 20 to 100 minutes.

Everything you need to know about canning and food preservation is online.

Everything you need to know about canning and food preservation is available in USDA's Complete Guide to Home Canning. This resource is for people canning for the first time or for experienced canners wanting to improve their canning practices. The information is based on research conducted by the National Center for Home Food Preservation in cooperation with USDA's National Institute of Food and Agriculture (NIFA).

United States Department of Agriculture – Complete Guide to Home Canning

[USDA's Complete Guide to Home Canning | National Institute of Food and Agriculture](#)

VIDEO INSTRUCTION & OTHER LINKS

The Little Country Cabin: Hot Water Bath Canning vs Pressure Canning, safely using each method. [\(2112\) Waterbath Canning vs Pressure Canning - The what, why, and how to can safely with each method. - YouTube](#)

FCS Agent, Matti Cornelius as she discusses the differences between water bath canning and pressure canning.

[\(2110\) Canning: Water Bath vs Pressure Canner - YouTube](#)

National Center for Home Food Preservation

[National Center for Home Food Preservation \(uga.edu\)](#)

Clemson University – Home and Garden: Canning at Home Info

[Canning Foods at Home | Home & Garden Information Center \(clemson.edu\)](#)