



Principles of

Home Food Preservation

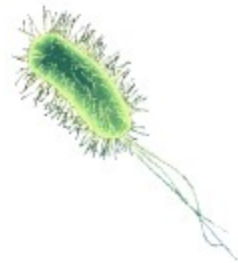
Preservation by Canning

- Canning
 - Boiling water canning
 - Pressure canning
 - Pickling
 - Jams & Jellies



Why foods spoil

- Yeast
- Molds
- Bacteria
- Enzymes



Home Canning Safety

What makes food spoil?
Bacteria, molds, yeast, enzymes



What makes people sick?

- Bacteria
- Improper canning can result in botulism poisoning, which causes illness and sometimes death.
- Improper storage and handling of canned food

What should home canners know?

- Few bacteria thrive in acids.
- Use heat to process all home-canned foods:
 - *high-acid foods in a boiling-water canner*
 - *low-acid foods in a pressure canner*

Image provided by National Consumer Products Company, Inc. for use in Ball brand and Bear Brand home canning products.



Safe Canning

- Processing temperature
- Processing time
- Sealed lid



Determining Safe Processing

- Acid level
- Container & size
- Preparation method
- Consistency of food
- Altitude
- Research



Acid Level

- pH 4.6. or lower = acid food = BWC processing
- pH above 4.6 = low acid food = pressure processing
- Why? – botulism!



High Acid Foods

- pH 4.6 or lower
- Use **Boiling water canner**
- Temperature reaches 200-212°F
- Tomatoes, jams, fruits, BBQ sauce,



Low Acid Foods

- pH above 4.6.
- Use **Pressure canner**
- Temperature reaches 240-250°F
- Vegetables, meat, poultry, seafoods, milk, soups, etc.



Containers

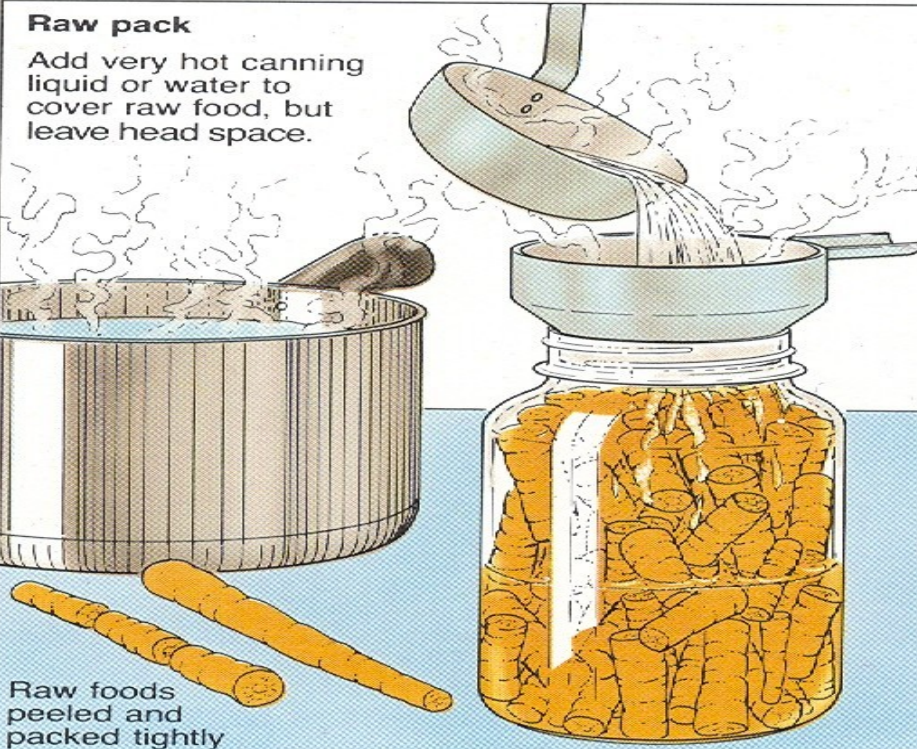
- Mason jars best choice
- 4, 8, 16, and 32 oz. common
- 64 oz. only for juice
- Mayo jars okay
- 2-piece metal lids



Raw Pack & Hot Pack

Raw pack

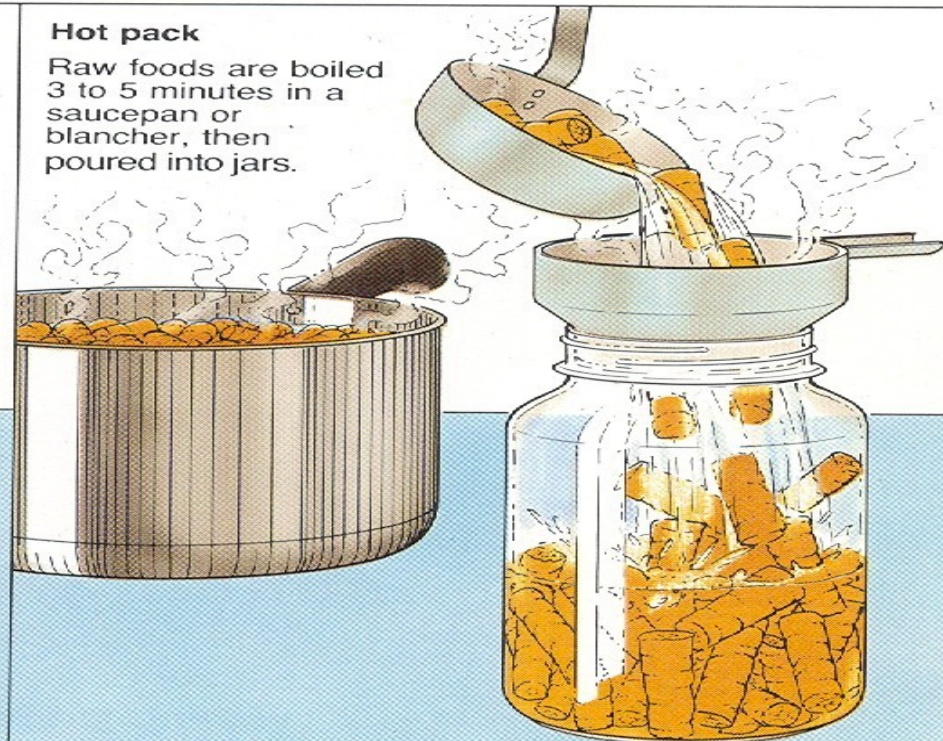
Add very hot canning liquid or water to cover raw food, but leave head space.



Raw foods
peeled and
packed tightly

Hot pack

Raw foods are boiled 3 to 5 minutes in a saucepan or blancher, then poured into jars.



Raw Pack & Hot Pack

Raw pack

Add very hot canning liquid or water to cover raw food, but leave head space.

Disadvantages:

- Floating food
- Air bubbles
- Discoloration over time

Raw foods peeled and packed tightly

Hot pack

Raw foods are boiled 3 to 5 minutes in a saucepan or blancher, then poured into jars.

Disadvantage:

- Texture loss

2 Piece Metal Lids

- Always use new lids
- Hand tighten
- Too loose (leaks)
- Too tight (no vacuum)



Sealing

- Remove air bubbles
- Wipe rim
- Preheat lid (soften sealing compound)
- Attach lid
- After processing hear seal “pop”
remove screw band

1. Add salt, if desired



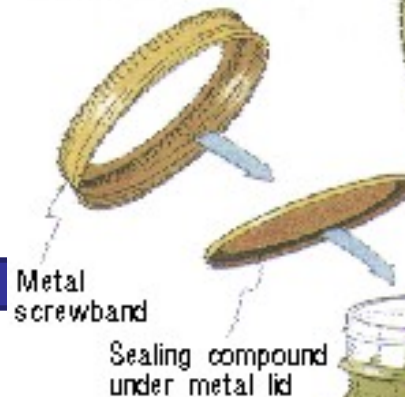
2. Remove air bubbles with plastic utensil



3. Wipe upper rim of jar completely for a good seal



4. Assemble lid



5. Remove screwband for reuse after processing and jar has cooled



Consistency of Food

- Affects heat penetration
- Liquid always required
- Some foods with different density cannot be canned
 - cubes vs slices
 - no added thickeners



Altitude

- Affects temperature reached when boiling
- It is temp. reached and not the action of boiling that kills microorganisms
- Higher altitudes need longer boiling water time or higher pressures in pressure canner
- Always use tested recipe/process

Altitude (in feet)	Temperature when water boils
10,000	194°F
8,000	197°F
6,000	201°F
4,000	204°F
2,000	208°F
0 (Sea Level)	212°F

When to can

- Low quality foods make low quality canned food
- Always preserve the freshest foods (within hours of harvest)
- Before canning: Some fruits may be allowed to fully ripen off the vine. Some meats may be refrigerated for 1-2 days



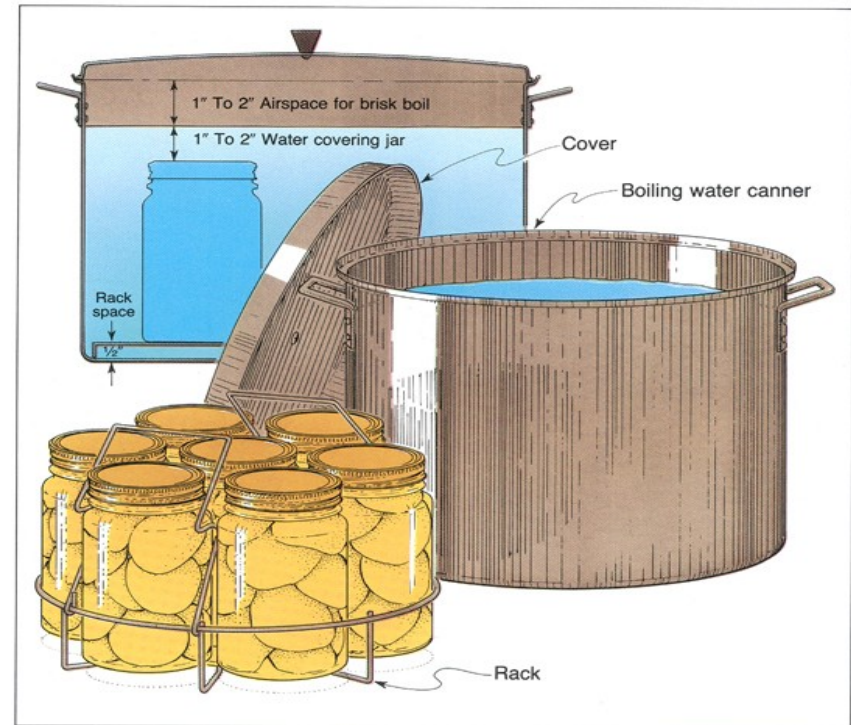
Preparing Jars

- Wash jars before every use in clean soapy water
- Rinse well
- Sterilize jars and lids in boiling water for 10 min only when boiling water canning



Boiling Water Canner

- Aluminum or porcelain-covered steel
- Flat bottom
- Not more than 2" wider than burner
- Jar rack or bottom rack needed



Boiling Water Canning

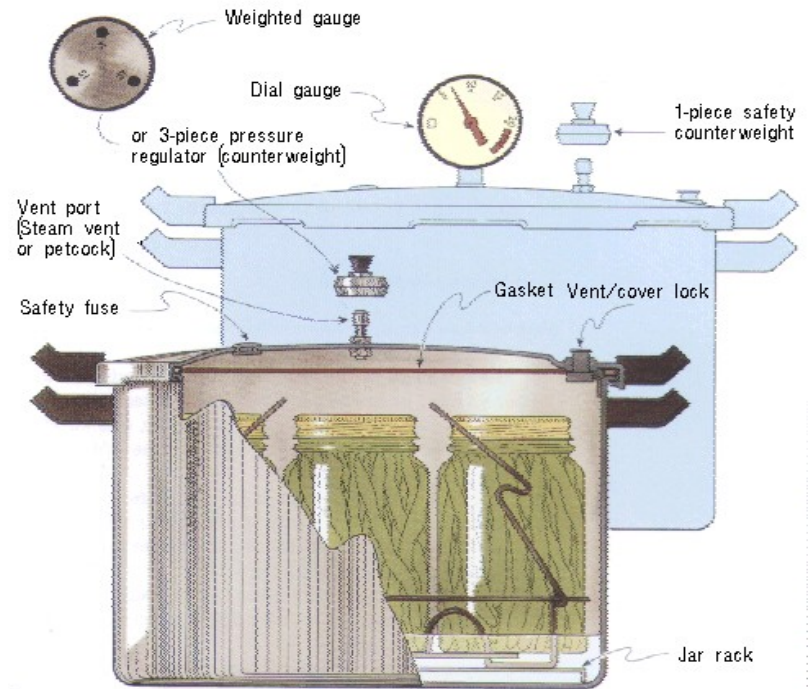
1. Fill canner halfway with water.
2. Preheat to 140°F for raw pack and 180°F for hot packed foods.
3. Load filled jars with lids into rack and then lower into water.
4. Add more boiling water to cover jars at least 1 inch.
5. Turn heat to highest setting until water boils vigorously.
6. Start timer once water boils vigorously.

Boiling Water Canning

1. Cover and turn down heat until gently boiling.
 2. Add more boiling water as needed.
 3. When time is up turn off heat and remove lid.
 4. Remove from canner and set on a towel at least 1 inch apart to cool.
 5. After lids seal (pop) remove screw bands.
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Pressure Canner

- Aluminum or steel
- Lid with gasket
- Flat or concave bottom
- Weighted or dial gauge (check dial gauge annually)
- Pressure safety valve
- Jar rack



Pressure Canning

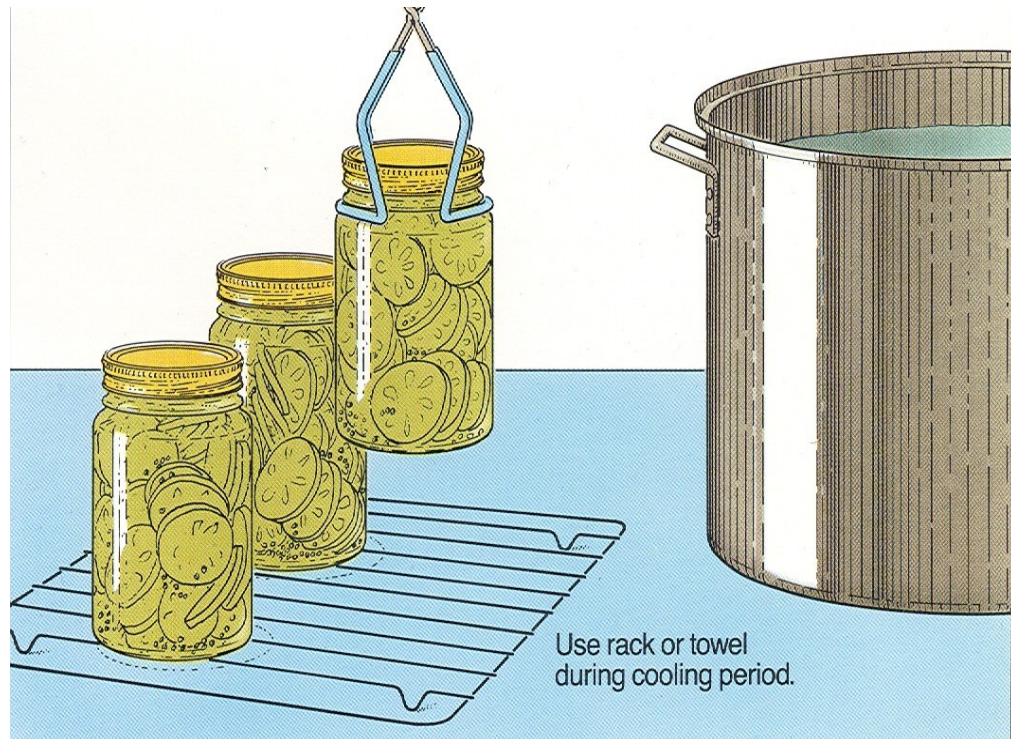
1. Put 2-3 inches of water in canner, lower rack of filled and lidded jars into canner and fasten cover securely.
2. Heat until steam escapes from vent port.
3. Let steam vent for 10 minutes, then place weight on vent port or close petcock. Allow to pressurize.
4. Begin to time when recommended pressure is reached.
5. Adjust heat to regulate a steady pressure on gauge.

Pressure Canning

1. If pressure drops below required amount, reset time to zero.
2. When time is completed, turn off heat and let the canner depressurize. DO NOT force-cool the canner-may result in food spoilage.
3. After canner is depressurized, remove the weight from the vent. Wait 2 minutes, remove lid and avoid steam.
4. Remove jars and place on towel or rack to cool.

Cooling Jars

- Do **NOT** retighten lids
- Cool at room temp.
12-24 hours on a rack
or a towel



Testing Seals



Reprocessing

- If any jar fails to seal or is suspected of not being fully and properly processed it **MUST** be --immediately refrigerated, then reprocessed (full time with new jars or lids within 24 hours) or eaten



Storing Canned Foods

- Remove screw band
- Label and date jar
- Do not allow to freeze or overheat
- Shelf life: 12-18 mos. boiling water canned & 18-24 mos. for pressure canned



**Clean
Cool
Dark
Dry**

Spoilage of Canned Foods

- Check for swollen lid or seal breakage.
- When opening look, smell, and listen for anything unusual:
 - off smells
 - spurting liquid

