

Judging Canned Vegetables

Headspace for most vegetables should be 1 inch. For shelled fresh lima beans, the headspace is greater for quart jars. For small beans, it is 1½ inches for quart jars; for large beans, it is 1¼ inches for quarts.

Canned vegetables should meet all of the general characteristics for container, pack, appearance of contents and attractiveness. Although the variety of vegetables that are canned include many textures, degrees of starchiness, shapes and colors, there is general information that can be applied to each. Specific considerations for certain types of vegetables are needed and presented in the following pages.

Desirable General Characteristics for Vegetables

Size and Shape	Uniform pieces of same to similar size and shape; clean-cut edges. For many vegetable packs, pieces should be appropriate size to serve.
Pack	Attractive; neat; space well used. Good proportion of solids to liquids. Liquid covers all product with appropriate headspace left empty. No floating of pieces. Fancy packs are generally discouraged. Vertical or horizontal layering can not only be impractical, but can interfere with intended heat penetration during the canning process. (i.e., the product may be underprocessed.)
Texture	Pieces of vegetables should hold their shape. No appearance of overcooking. Free of mushiness. Excess starchiness (peas, potatoes) can indicate vegetables chosen were too mature. Free from stringy or fibrous appearance (potatoes, sweet potatoes, carrots, winter squash, pumpkin)
Color	Natural coloring; no artificial coloring; uniform. Free from bruises, brown spots, other blemishes and signs of insect damage.
Liquid	Clear, bright. Suitable consistency of liquid for product. No sediment, cloudiness, or bubbles. No foreign matter such as stems, leaves, strings, husks.
Container	Properly labeled. Appropriate size for available recommended canning processes*. Clean, clear standard canning jar. No cracks, chips, or rust on jar. Recommended lid with good vacuum seal. Band free of rust and dents or other damage; clean and easily removed.

*Check recommended processes. Cream-style corn, mushrooms and peppers should be canned in jars no larger than pints.

Common Problems

Probable Causes

Cloudy liquid

Starch from over-ripe vegetables; sign of spoilage; hard water.
May indicate spoilage is taking place.
May result from minerals in hard water.

Vegetable pieces soft and mushy

Over-mature product.
Overcooking.

Darkened vegetable

Surface darkening from air in headspace when vegetable is not completely covered by liquid.
Too much air left in headspace from underprocessing or no processing.
Too much air trapped in pack from use of raw pack.
Overprocessing can cause darkening throughout the jar.

Sugars in sweet corn can caramelize (brown) from the heat of processing. Some varieties should not be used for canning; severely discolored corn should not be entered in competition.

Floating of vegetable

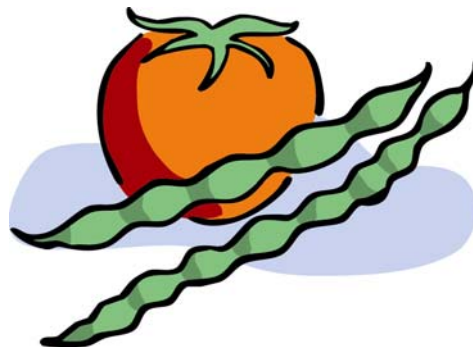
Pieces were packed too loosely.
Raw pack was used and air in the vegetable tissue itself could not all be exhausted during processing.

Jar underfilled

Raw pack was used; vegetable shrunk during processing.
Jar was not packed with proper attention to detail.

Sediment in bottom of jar

Over-mature vegetable.
Hard water.



Judging Criteria for Individual Vegetables

Asparagus	Uniform size and length of stalks (4 to 6 inches) or pieces (usually 1 inch). Tender, tight-tipped spears. Color should be bright. Tough scales should be removed. Free from woody and stringy stalks. Pieces or stalks should not have mushy texture.
Beans, Butter and Lima	Beans should be green, young and tender. Even in size and color. Free from immature beans, beans changing from green to light green or white, and starchy tough beans. Beans should not be over-packed and mashed down. Liquid should not be too cloudy from excess starchiness. Headspace for pint jars is 1 inch. Headspace for small beans in quart jars is 1¼ inches; for large beans in quart jars it is 1½ inches.
Beans, Green and Waxed	Fresh color, typical of variety; uniform in size, length, and color. One-inch length of pieces preferred, but beans may be left whole. Filled but tender pods (seeds should not be prominent in pods. Few if any free seeds that have fallen out of broken-apart pods). Variety may be flat- or round-podded but both should not be included in one jar. Free from browning of cut edges or seeds. Free of rusting or other blemishes and stems.
Beets	<u>Must</u> be canned peeled. Beets less than 2 inches in diameter may be canned whole; larger beets should be sliced or cubed. Uniform size and shape. Color should be dark, deep, and even. Brownish-red or faded color or white rings are undesirable. Liquid should be sparkling clear, red color with no cloudiness or sediment. Free from stems and roots or any traces of skin. Free from fibrous appearance (beets over 3 inches in diameter are often fibrous).
Carrots	May be canned whole if small; otherwise slice or dice. <u>Must</u> be peeled or scraped; smooth surface preferred. Diameter of slices less than 1¼ inches desired. Size and shape should be uniform throughout jar. Color may be vary pale to deep orange, depending on variety, but should be uniform. Free from root hairs, traces of peel and stems. Free from fibrous or wide, woody-looking carrot slices. Liquid should be clear, free of sediment and only contain a tint of color from the carrot.

Judging Criteria for Individual Vegetables

Corn, Cream Style	Can in pints only. Only hot pack canning is recommended. Kernels should be slightly immature, cut from cob at about center of kernel. The rest of the texture comes from scraping the cob. Color should be bright yellow and even throughout jar. Consistency should be thick and creamy, but not stiff or gelled from excessive starchiness. Free from signs of burning (scorching) while being cooked.
Corn, Whole Kernel	Slightly immature kernels should have been chosen. Kernels should be cut to about $\frac{3}{4}$ depth of kernel and retain distinct shape. Color should be bright. Jars should contain a single variety. Good proportion of corn and liquid, with liquid completely covering solids. Liquid may be slightly cloudy from starch, but there should be no excess starch or sediment. Free from silk and pieces of cob. Canning of some sweeter varieties or too immature kernels may cause browning. Exhibitor should not enter jars of varieties that brown or discolor too much when canned.
Greens – Spinach, Mustard, Turnip, etc.	Only hot pack canning is recommended. Leaves should be tender, free of tough stems and large midribs. Free from signs of insect damage, discoloration. Greens should be packed loosely in jar and have a uniform green color. Liquid should be light green and clear, free from cloudiness or sediment.
Okra	Only hot pack canning is recommended. Pods should be young and tender. Free of diseased and rust-spotted pods. Small pods may be left whole; larger ones should be sliced into 1-inch pieces. Color depends on variety. Liquid clear and free of starchy sediment.
Peas – Blackeye, Crowder or Field	Only hot pack canning is recommended. Young and tender peas of uniform size and roundness. Color should be bright and characteristic of product, uniform throughout jar. Peas should be adequately hydrated. Free from split, broken or mushy peas. Liquid fairly clear, only a slight starchy appearance is allowable. No excess starch or starchy sediment. Only one variety should be in a jar.

Judging Criteria for Individual Vegetables

Peas, Green or English

Young and tender peas of uniform size and roundness; slightly immature peas may be used. Color should be bright and evenly green with no yellow or white peas. Free from split, broken or mushy peas. Liquid fairly clear, only a slight starchy appearance is allowable. Free from excess starch or starchy sediment.

Potatoes, White

Only hot pack canning is recommended. Potatoes must be peeled. Small potatoes, 1 to 2 inches in diameter, may be packed whole; larger sizes should be cubed. Pieces throughout jar should be of uniform size. Color should be white. Texture should be firm and smooth. Free from mushiness. Any eyes should be shallow and have no color. Liquid should be fairly clear, and in potatoes, a slight starchy appearance is allowable. Free from excess starch or starchy sediment, however.

Potatoes should be covered with fresh boiling water when packed. Use of cooking water causes excess starch in the jar and a potentially unsafe product.

Pumpkin and Winter Squash

Only hot pack canning is recommended. Pieces should be peeled and cut into 1-inch cubes, **not mashed or pureed**. Color should be uniform yellow to orange color, depending on variety. Free from stringy texture or overly soft pieces. Liquid should be clear and free of starchy sediment.

There are no endorsed canning processes for mashed or pureed pumpkin and winter squash.

Soup Mix

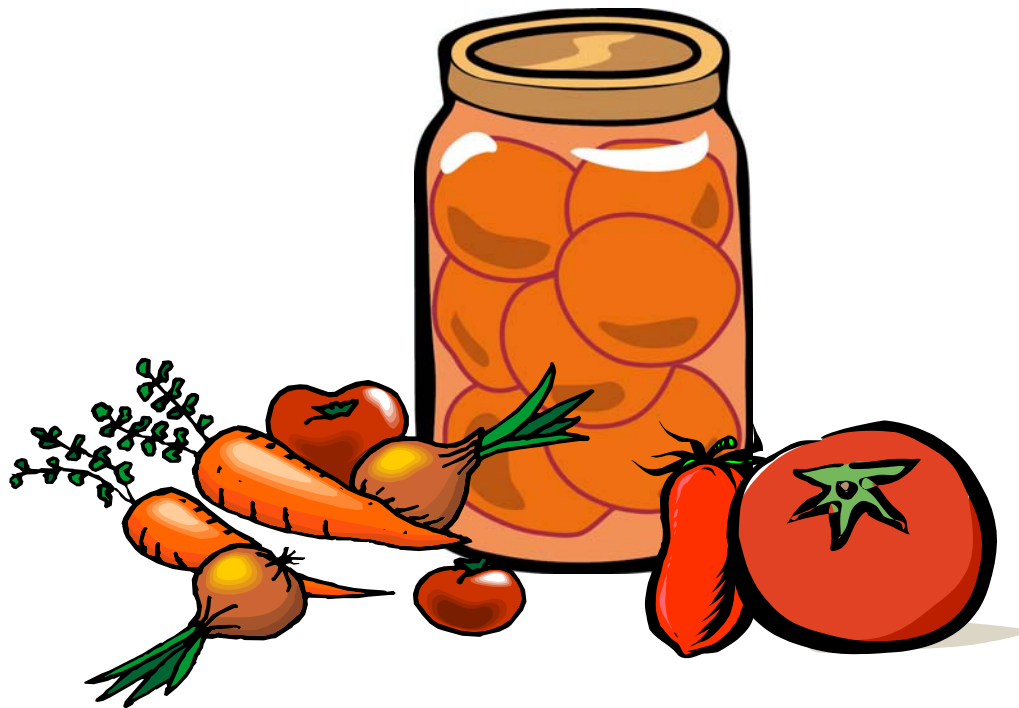
Only hot pack canning is recommended. The jar may consist of a mixture of vegetables, adequately hydrated dried beans and peas, meat, poultry, or seafood. Mix should be even throughout jar with consistent sizing of individual ingredients. Color mix should be attractive and colors should be natural and typical of the individual products. Jars should be filled with about half solids and half liquid. Free from cloudiness or starchiness. May not be thickened or contain rice, noodles, cream or milk.

Judging Criteria for Individual Vegetables

Sweet Potatoes

Only hot pack canning is recommended. Skins of sweet potatoes must be removed. Small potatoes may be canned whole. If larger, potatoes should be cut into pieces, but **never mashed or pureed**. Pieces should be uniform in size and shape. Color may vary from yellow to orange, depending on variety, but should be uniform. Liquid clear and free of starchy sediment; there may be a tint of color from the potatoes. Pack is free from pieces of skin, root hairs, or dark and discolored spots.

There are no endorsed canning processes for mashed or pureed sweet potatoes.





Pressure Canning Summary Sheet for Judges USDA Recommendations*

VEGETABLES

	Headspace	Style of Pack	Jar Size	Process Time (minutes)	Pressure (psig) at Altitudes of					
					Weighted Gauge		Dial Gauge			
					0 - 1,000 ft	Above 1,000 ft	0 - 2,000 ft	2,001 - 4,000 ft	4,001 - 6,000 ft	6,001 - 8,000 ft
Asparagus – Spears or Pieces	1 inch	Hot & Raw	Pint Quart	30	10	15	11	12	13	14
				40	10	15	11	12	13	14
Beans or Peas – Shelled and Dried	1 inch	Hot Hot	Pint Quart	75	10	15	11	12	13	14
				90	10	15	11	12	13	14
Beans, Baked	1 inch	Hot Hot	Pint Quart	65	10	15	11	12	13	14
				75	10	15	11	12	13	14
Beans, Fresh Lima – Shelled	**	Hot & Raw	Pint Quart	40	10	15	11	12	13	14
				50	10	15	11	12	13	14
				**Small beans - leave 1 inch headspace for pints and 1½ inches for quarts Large beans - leave 1 inch headspace for pints and 1¼ inches for quarts						
Beans, Snap or Italian – Pieces	1 inch	Hot & Raw	Pint Quart	20	10	15	11	12	13	14
				25	10	15	11	12	13	14

******* There are NO recommended boiling water processes for the vegetables in this table, or for any non-pickled vegetables *******

* Source: *Complete Guide to Home Canning*, Agriculture Information Bulletin No. 539, US Department of Agriculture. Revised 1994. www.homefoodpreservation.com

Developed by The University of Georgia, Athens, for the National Center for Home Food Preservation. Released by Elizabeth L. Address, Ph.D., Department of Foods and Nutrition, College of Family and Consumer Sciences. August 2003.

VEGETABLES

	Headspace	Style of Pack	Jar Size	Process Time (minutes)	Pressure (psig) at Altitudes of					
					Weighted Gauge		Dial Gauge			
					0 - 1,000 ft	Above 1,000 ft	0 - 2,000 ft	2,001 - 4,000 ft	4,001 - 6,000 ft	6,001 - 8,000 ft
Beets – Whole, Cubed, or Sliced	1 inch	Hot	Pint	30	10	15	11	12	13	14
		Hot	Quart	35	10	15	11	12	13	14
Carrots – Sliced or Diced	1 inch	Hot & Raw	Pint	25	10	15	11	12	13	14
			Quart	30	10	15	11	12	13	14
Corn – Cream Style	1 inch	Hot	Pint	85	10	15	11	12	13	14
		Hot	Quart	-----Not Recommended-----	-----Not Recommended-----					
Corn – Whole Kernel	1 inch	Hot & Raw	Pint	55	10	15	11	12	13	14
			Quart	85	10	15	11	12	13	14
Mixed Vegetables	1 inch	Hot	Pint	75	10	15	11	12	13	14
		Hot	Quart	90	10	15	11	12	13	14
Mushrooms – Whole or Sliced	1 inch	Hot	Half Pint	45	10	15	11	12	13	14
		Hot	Pint	45	10	15	11	12	13	14
		Hot	Quart	-----Not Recommended-----	-----Not Recommended-----					

******* There are NO recommended boiling water processes for the vegetables in this table, or for any non-pickled vegetables *******

* Source: *Complete Guide to Home Canning*, Agriculture Information Bulletin No. 539, US Department of Agriculture. Revised 1994. www.homefoodpreservation.com

Developed by The University of Georgia, Athens, for the National Center for Home Food Preservation. Released by Elizabeth L. Address, Ph.D., Department of Foods and Nutrition, College of Family and Consumer Sciences. August 2003.

VEGETABLES

	Headspace	Style of Pack	Jar Size	Process Time (minutes)	Pressure (psig) at Altitudes of							
					Weighted Gauge		Dial Gauge					
					0 - 1,000 ft	Above 1,000 ft	0 - 2,000 ft	2,001 - 4,000 ft	4,001 - 6,000 ft	6,001 - 8,000 ft		
Okra	1 inch	Hot	Pint	25	10	15	11	12	13	14		
		Hot	Quart	40	10	15	11	12	13	14		
Peas, Green or English – Shelled	1 inch	Hot & Raw	Pint	40	10	15	11	12	13	14		
			Quart	40	10	15	11	12	13	14		
Peppers	1 inch	Hot	Half Pint	35	10	15	11	12	13	14		
		Hot	Pint	35	10	15	11	12	13	14		
		Hot	Quart	-----Not Recommended-----	-----Not Recommended-----							
Potatoes, Sweet – Pieces or Whole	1 inch	Hot	Pint	65	10	15	11	12	13	14		
		Hot	Quart	90	10	15	11	12	13	14		
Potatoes, White – Cubed or Whole	1 inch	Hot	Pint	35	10	15	11	12	13	14		
		Hot	Quart	40	10	15	11	12	13	14		
Pumpkins and Winter Squash – Cubed	1 inch	Hot	Pint	55	10	15	11	12	13	14		
		Hot	Quart	90	10	15	11	12	13	14		
Soup Mixes	1 inch	Hot	Pint	60***	10	15	11	12	13	14		
		Hot	Quart	75***	10	15	11	12	13	14		

*** Process 100 minutes if soup contains seafood.

******* There are NO recommended boiling water processes for the vegetables in this table, or for any non-pickled vegetables *******

* Source: *Complete Guide to Home Canning*, Agriculture Information Bulletin No. 539, US Department of Agriculture. Revised 1994. www.homefoodpreservation.com

Developed by The University of Georgia, Athens, for the National Center for Home Food Preservation. Released by Elizabeth L. Address, Ph.D., Department of Foods and Nutrition, College of Family and Consumer Sciences. August 2003.

VEGETABLES

	Headspace	Style of Pack	Jar Size	Process Time (minutes)	Pressure (psig) at Altitudes of					
					Weighted Gauge		Dial Gauge			
					0 - 1,000 ft	Above 1,000 ft	0 - 2,000 ft	2,001 - 4,000 ft	4,001 - 6,000 ft	6,001 - 8,000 ft
Spinach and Other Greens	1 inch	Hot	Pint	70	10	15	11	12	13	14
		Hot	Quart	90	10	15	11	12	13	14
Squash, Winter – Cubed	1 inch	Hot	Pint	55	10	15	11	12	13	14
		Hot	Quart	90	10	15	11	12	13	14
Succotash	1 inch	Hot &	Pint	60	10	15	11	12	13	14
		Raw	Quart	85	10	15	11	12	13	14

***** There are NO recommended boiling water processes for the vegetables in the table above, or for any non-pickled vegetables *****

* Source: *Complete Guide to Home Canning*, Agriculture Information Bulletin No. 539, US Department of Agriculture. Revised 1994. www.homefoodpreservation.com

Developed by The University of Georgia, Athens, for the National Center for Home Food Preservation. Released by Elizabeth L. Address, Ph.D., Department of Foods and Nutrition, College of Family and Consumer Sciences. August 2003.

Canned Fruits, Tomatoes and Vegetables

Excellent
 Very Good
 Good
 Poor

Characteristic				
Pack				
Acceptable processing method used with correct altitude adjustment made; correct preparation procedures followed and type of pack (hot, raw) for processing method.				
Jar filled to appropriate headspace.				
Liquid covers all solids; no floating pieces.				
Good proportion of solids and liquids.				
Free of fancy packs that interfere with heat penetration.				
Quality of Product				
Pieces uniform in size and shape when appropriate.				
Fresh, natural color to foods; characteristic of cooked product.				
Pieces retain shape; firm yet tender; free of mushiness; clean cut edges to cut pieces; no split skins on beans or peas.				
Free from discoloration, blemishes, bruises, brown or black spots, insect damage, mold, or other defects.				
Free of strings, fibers, unapproved stems, peels, cores and pits.				
Characteristic of optimum maturity.				
Quality of Liquid				
Free from unnatural cloudiness or bubbling.				
Free from any or excessive sediment, floating food tissue, unintended seeds, peels, or other particles.				
Free from large amounts of trapped air.				
Container				
Vacuum-sealed.				
Clean, clear glass standard canning jar.				
Appropriate size jar for product.				
New lid and band free of rust; screwband clean, unbent and easily removed.				
Label clean, neatly placed and contains name of product, date processed, processing method and time.				
Comments				