

Judging Canned Fruits and Fruit Juices

Headspace for fruits should be $\frac{1}{2}$ inch. Apple juice, grape juice and fruit purees use $\frac{1}{4}$ inch headspace.

Canned fruit should meet all of the general characteristics for container, pack, appearance of contents and attractiveness. Although the variety of fruits that are canned include many textures, shapes and colors, there is general information that can be applied to each, as well as some specific considerations for some fruits. The consistency of syrup in a jar of canned fruit may vary depending on ingredients and their proportions. Heavier sugar syrups will be thicker and sometimes have a little color compared to light sugar syrups. Regardless of consistency or color, syrup should be clear. If fruit has caused syrup to be colored, the color should be the natural color of the fruit. Artificial coloring is discouraged and should not be allowed in entry guidelines.

Desirable General Characteristics for Fruits

Size and Shape	Uniform pieces of same to similar size and shape; clean-cut edges.
Pack	Attractive; neat; space well used. Good proportion of solids to liquids. Liquid covers all product with $\frac{1}{2}$ inch headspace. No floating fruit. Fancy packs are generally discouraged; however, the most efficient use of space for many halved fruits is placing them in the jar in overlapping layers with the core or pit side down. Although some may initially think of this as a fancy pack, it is acceptable and desirable as an efficient pack for rounded or large halves of fruit.
Texture	Fruit pieces have appearance of being well-ripened and not overripe, firm yet tender. Shape well preserved, free of mushiness.
Color	Natural coloring; no artificial coloring; uniform. Free from bruises, brown spots, mold, or discoloration; no undue bleaching or darkening.
Liquid	Clear, bright. Suitable consistency of syrup for product. No sediment, cloudiness, or bubbles. No foreign matter.
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.

Desirable General Characteristics for Fruit Juices

Pack	¼ inch headspace in all jar sizes.
Clarity	Bright and clear. No cloudiness. No sediment, pulp or crystals. No foreign matter.
Color	Natural coloring; no artificial coloring; uniform. No discoloration such as would be associated with excessive heating or oxidative browning during preparation and storage.
Consistency	Suitable consistency or thickness characteristic of the natural fruit juice. Flows freely, not too thick as if concentrated or heavily sugared. No appearance of being thinned with water.
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.

Common Problems

Probable Causes

Fruit soft and mushy	Over-ripe product. Overcooking.
Fruit looks hard	Under-ripe product.
Darkened fruit	Surface darkening from air in headspace when fruit is not completely covered by liquid. Too much air left in headspace from under- or no processing. Too much air trapped in pack from use of raw pack. Overprocessing can cause darkening throughout the jar.
Floating of fruit	Fruit was packed too loosely. Syrup is too heavy. Raw pack was used and air in the fruit tissue itself could not all be exhausted during processing. Over-ripe fruit.
Jar underfilled	Raw pack was used; fruit shrunk during processing. Jar was not packed with proper attention to detail.

Common Problems

Probable Causes

Sediment in bottom of jar

Over-ripe fruit.
Hard water.

Bubbles

Small amount: from moving or shaking jar.
Occasional bubble trapped among halves or large pieces.
Larger amounts: trapped air from raw packs or excessive tightening of ring bands.
Bubbles rising through the product (syrup) can indicate fermentation is taking place and the jar should be disqualified.

Judging Criteria for Individual Fruits

Apples

No seeds, core or peel. Canned as slices or sauce. Only hot pack is recommended. Raw packs trap an excessive amount of air, fruit floats, and browning is common over time from both these problems.

Apple Juice

Clear and bright. Characteristic of fresh juice; not overly browned from high heat. No cloudiness. No sediment, pulp or crystals. No foreign matter.

Apricots

May be peeled or the skin left on. Canned as halves or slices. Skin with dark spots should be removed. Fruit should be firm without signs of mushiness.

Berries

Uniform color to all the berries. No stems. Pack should be full with good solids-to-liquid ratio. Liquid should be bright and clear although it may be colored by the fruit pigments. No sediment or signs of fermentation bubbling. No floating of fruit above liquid.

Cherries

Pack should be full with good solids-to-liquid ratio. Liquid should be bright and clear although it may be colored by the fruit pigments. No floating of fruit above liquid. If pitted, cuts or holes are neat and not destructive of the fruit's shape. No stem-end discoloration or discoloration where cut or pitted. If canned unpitted, skins have been pricked to prevent splitting.

Judging Criteria for Individual Fruits

Figs	Canned without peeling and with small stem attached. Firm and uncracked; no signs of mushiness. Color depends on variety, but should be characteristic of optimum ripeness for variety. Only hot pack is recommended. Lemon juice (1 tablespoon per pint) or citric acid ($\frac{1}{4}$ teaspoon per pint) should have been added for safety.
Fruit Purees	Good flowing and uniform consistency; not thickened like a butter and not too thin. No evidence of scorching (black flecks, unusual darkening, and bad odor if opened). Only hot pack is recommended. Fig and tomato purees should not be canned by fruit juice canning methods.
Grape Juice	Clear and bright. Characteristic of fresh juice; no cloudiness. No sediment, pulp or crystals. No foreign matter. Grape juice is usually filtered after extraction to prevent development of crystals.
Grapefruit and Orange Sections	Firm sections with most of white tissue removed. Sections may be packed in citrus juice as well as syrup or water. Citrus juice will yield a cloudier liquid. The flavor of orange sections is best if the sections are canned with equal parts of grapefruit. Grapefruit may be canned without oranges.
Grapes	Pack should be full with good solids to liquid ratio. Liquid should be bright and clear. Fruit is tight-skinned. No floating of fruit above liquid. No stem-end discoloration.
Peaches or Nectarines	Canned as halves or slices. Peaches are peeled; nectarines are not. Pits of both are removed. Fruit should be firm without signs of mushiness or over-ripeness. No discoloration on cut edges. Color should be even and characteristic of cooked ripe fruit. No floating of fruit above liquid. Raw packs trap an excessive amount of air, fruit floats, and browning is common over time from both these problems.
Pears	Canned peeled and without cores. May be halves or quarters. Fruit white and firm, but tender with cooked appearance. No signs of mushiness. Liquid is clear and free of sediment. No floating fruit. Only hot pack is recommended.

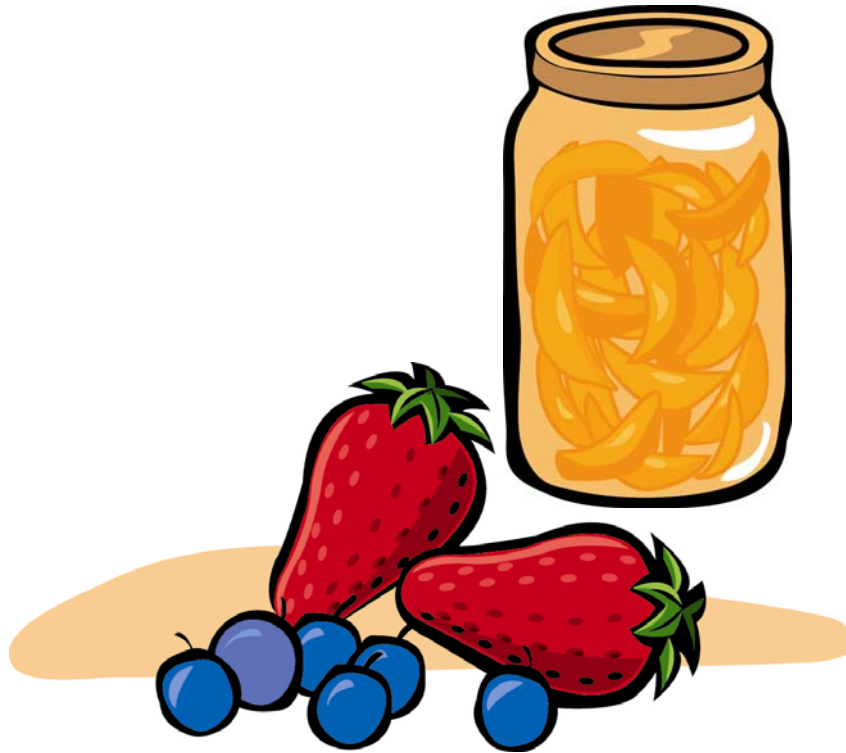
Judging Criteria for Individual Fruits

Plums

Fruit is not usually peeled. Canned whole or halved. Fruit skin on whole plums has been pricked on two sides to avoid uneven splitting. Freestone varieties may be halved; pits should be removed when plums are halved. No floating fruit. No cloudiness in liquid or sediment.

Rhubarb

Brightly colored. Even consistency. Only hot pack is recommended (stewed rhubarb). No leaves. No signs of scorching (burning) during preparation.





Fruit and Fruit Products Canning Summary Sheet for Judges USDA Recommendations*

FRUITS – BOILING WATER	Headspace	Style of Pack	Jar Size	Minutes in Boiling Water at Altitudes of			
				0 - 1,000 ft	1,001 - 3,000 ft	3,001 - 6,000 ft	Above 6,000 ft
Apple Juice	¼ inch	Hot	Pint	5	10	10	15
		Hot	Quart	5	10	10	15
		Hot	Half Gallon	10	15	15	20
Applesauce	½ inch	Hot	Pint	15	20	20	25
		Hot	Quart	20	25	30	35
Apples – Sliced	½ inch	Hot	Pint	20	25	30	35
		Hot	Quart	20	25	30	35
Apple Rings, Spiced	½ inch	Hot	Half Pint	10	15	15	20
		Hot	Pint	10	15	15	20
		Hot	Quart	-----Not Recommended-----			
Crab Apples, Spiced	½ inch	Hot	Pint	20	25	30	35
		Hot	Quart	-----Not Recommended-----			

* 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.

**FRUITS –
BOILING WATER**

	Headspace	Style of Pack	Jar Size	Minutes in Boiling Water at Altitudes of			
				0 - 1,000 ft	1,001 - 3,000 ft	3,001 - 6,000 ft	Above 6,000 ft
Apricots	½ inch	Hot	Pint	20	25	30	35
		Hot	Quart	25	30	35	40
		Raw	Pint	25	30	35	40
		Raw	Quart	30	35	40	45
Berries – Whole	½ inch	Hot	Pint	15	20	20	25
		Hot	Quart	15	25	30	35
		Raw	Pint	15	20	20	25
		Raw	Quart	20	25	30	35
Berry Syrup	½ inch	Hot	Half Pint	10	15	15	20
		Hot	Pint	10	15	15	20
		Hot	Quart	-----Not Recommended-----			
Cherries – Whole	½ inch	Hot	Pint	15	20	20	25
		Hot	Quart	20	25	30	35
		Raw	Pint	25	30	35	40
		Raw	Quart	25	30	35	40
Figs	½ inch	Hot	Pint	45	50	55	60
		Hot	Quart	50	55	60	65
Fruit Purees	¼ inch	Hot	Pint	15	20	20	25
		Hot	Quart	15	20	20	25

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FRUITS – BOILING WATER

	Headspace	Style of Pack	Jar Size	Minutes in Boiling Water at Altitudes of			
				0 - 1,000 ft	1,001 - 3,000 ft	3,001 - 6,000 ft	Above 6,000 ft
Grape Juice	¼ inch	Hot	Pint	5	10	10	15
		Hot	Quart	5	10	10	15
		Hot	Half Gallon	10	15	15	20
Grapefruit Sections or Mixed Grapefruit & Orange Sections	½ inch	Raw	Pint	10	15	15	20
		Raw	Quart	10	15	15	20
Grapes – Whole	1 inch	Hot	Pint	10	15	15	20
		Hot	Quart	10	15	15	20
		Raw	Pint	15	20	20	25
		Raw	Quart	20	25	30	35
Mixed Fruit Cocktail	½ inch	Raw	Pint & Half Pint	20	25	30	35
		Raw	Quart	-----Not Recommended-----			
Peaches & Nectarines	½ inch	Hot	Pint	20	25	30	35
		Hot	Quart	25	30	35	40
		Raw	Pint	25	30	35	40
		Raw	Quart	30	35	40	45
Pears	½ inch	Hot	Pint	20	25	30	35
		Hot	Quart	25	30	35	40
Pineapple	½ inch	Hot	Pint	15	20	20	25
		Hot	Quart	20	25	30	35

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**FRUITS –
BOILING WATER**

	Headspace	Style of Pack	Jar Size	Minutes in Boiling Water at Altitudes of			
				0 - 1,000 ft	1,001 - 3,000 ft	3,001 - 6,000 ft	Above 6,000 ft
Plums	½ inch	Hot	Pint	20	25	30	35
		Hot	Quart	25	30	35	40
		Raw	Pint	20	25	30	35
		Raw	Quart	25	30	35	40
Rhubarb – Stewed	½ inch	Hot	Pint	15	20	20	25
		Hot	Quart	15	20	20	25

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Fruit and Fruit Products Canning Summary Sheet for Judges USDA Recommendations*

FRUITS – PRESSURE	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
Applesauce	½ inch	Hot	Pint	8	5	10	6	7	8	9
		Hot	Quart	10	5	10	6	7	8	9
Apples – Sliced	½ inch	Hot	Pint &	8	5	10	6	7	8	9
		Hot	Quart	8	5	10	6	7	8	9
Apricots	½ inch	Hot &	Pint &	10	5	10	6	7	8	9
		Raw	Quart	10	5	10	6	7	8	9
Berries – Whole	½ inch	Hot	Pint &	8	5	10	6	7	8	9
		Hot	Quart	8	5	10	6	7	8	9
		Raw	Pint	8	5	10	6	7	8	9
		Raw	Quart	10	5	10	6	7	8	9
Cherries – Sour or Sweet	½ inch	Hot	Pint	8	5	10	6	7	8	9
		Hot	Quart	10	10	10	6	7	8	9
		Raw	Pint &	10	5	10	6	7	8	9
		Raw	Quart	10	5	10	6	7	8	9

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**FRUITS –
PRESSURE**

	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		
Fruit Purees	¼ inch	Hot	Pint &	8	5	10	6	7	8	9		
		Hot	Quart	8	5	10	6	7	8	9		
Grapefruit Sections	½ inch	Hot	Pint &	8	5	10	6	7	8	9		
		Hot	Quart	8	5	10	6	7	8	9		
		Raw	Pint	8	5	10	6	7	8	9		
		Raw	Quart	10	5	10	6	7	8	9		
Peaches and Nectarines	½ inch	Hot &	Pint &	10	5	10	6	7	8	9		
		Raw	Quart		5	10	6	7	8	9		
Pears	½ inch	Hot	Pint &	10	5	10	6	7	8	9		
		Hot	Quart	10	5	10	6	7	8	9		
Plums	½ inch	Hot &	Pint &	10	5	10	6	7	8	9		
		Raw	Quart	10	5	10	6	7	8	9		
Rhubarb – Stewed	½ inch	Hot	Pint &	8	5	10	6	7	8	9		
		Hot	Quart	8	5	10	6	7	8	9		

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Canned Fruits, Tomatoes and Vegetables

Characteristic	Points	
Pack Acceptable processing method used with correct altitude adjustment made; correct preparation procedures followed; correct type of pack (hot, raw) for processing method.	40	
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.	30	
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.	20	
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.	10	
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		

Canned Juices

Characteristic	Points	
Pack Acceptable processing method used with correct altitude adjustment made; hot packs used.	20	
Jar filled to appropriate headspace (¼ inch).		
Color Fresh, natural color representative of fruit or vegetable; no artificial coloring.	20	
Color uniform throughout.		
Free from bleaching or excessive darkening.		
Clarity <i>Fruit juice:</i> Bright and clear; no crystals. <i>Tomato juice:</i> Bright.	25	
Free from cloudiness, bubbling, or mold.		
Free of strings, fibers, seeds, stems, peels, cores and pits.		
Consistency Flows freely, not too thick as if concentrated or heavily sugared; characteristic of the fruit used.	20	
Free from any or excessive sediment, no foreign matter (floating food tissue, unintended seeds, peels, or other particles).		
No separation or layering.		
Container Vacuum-sealed.	15	
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 		