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Using, Storing, and Preserving Apples  
Michigan State University Extension Service  
Sandra L. Andrews, Food Science and Human Nutrition  
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# APPLES

## AVAILABILITY

July to November

## TRIM LOSS

About 22 percent from stemming, peeling, coring and trimming.

## YIELD

1 pound	3 medium apples 2 cups sliced
1 peck (10 to 12 pounds)	7 to 9 quarts of apples frozen 3 to 4 9-inch pies
12¼ pounds	canner load of 9 pints of apples
19 pounds	canner load of 7 quarts of apples
13½ pounds	canner load of 9 pints of applesauce

21 pounds	canner load of 7 quarts of applesauce
1 bushel (48 pounds)	30 to 36 pints of apples frozen 16 to 19 quarts of apples canned (2¾ pounds per quart) 14 to 19 quarts of apple- sauce canned (3 pounds per quart)

## RECOMMENDED VARIETIES

Jonathan, Golden Delicious, Rome and Winesap freeze well. Try Northern Spy, Jonathan and Rome for canning. Yellow Transparent, McIntosh, Jonathan, Mutsu, Golden Delicious and Winesap make excellent applesauce.

## FREEZING

Syrup pack is preferred for apples to be used for fruit cocktail or uncooked desserts. Apples packed in sugar or frozen unsweetened are good for pie making. For better quality, apple slices need to be treated to prevent darkening. Use the following instructions to prevent darkening.

*Preventing discoloration—ascorbic acid solution:* While preparing apples for freezing or canning, keep cut apple sections in ascorbic acid and cold water.

Ascorbic acid can be purchased in several forms:

Pure powdered form—seasonally available among canning supplies in supermarkets. Use 1 teaspoon per gallon of water as a treatment solution.

Vitamin C tablets—Buy 500-milligram tablets; crush and dissolve six tablets per gallon of water as a treatment solution. Also try commercially prepared mixes of ascorbic and citric acid, which are seasonally available among canning supplies in supermarkets. Sometimes citric acid powder is sold in supermarkets, but it is less effective in controlling discoloration. Be sure to follow the manufacturer's directions.

Drain apples before packing. Freeze no more than 2 pounds of food per cubic foot of freezer capacity per day.

**Sliced apples:** Select full-flavored apples that are crisp and firm, not mealy in texture. Wash, peel and core. Slice medium apples into twelfths and large apples into sixteenths, and drop immediately into ascorbic acid solution (see directions above).

Pack in one of the following ways:

*Syrup pack:* Use 50 percent syrup (1 cup water to 1 cup sugar). For a better quality frozen product, add ½ teaspoon ascorbic acid to each quart of syrup. Slice apples directly into cold syrup in a container, starting with ½ cup syrup to a pint container. Press fruit down in containers and add enough syrup to cover. Leave ½ inch headspace. Seal, label and freeze.

*Sugar pack:* Over each quart (1¼ pounds) of apple slices, sprinkle evenly ½ cup sugar and stir. Pack apples into containers and press fruit down, leaving ½ inch headspace. Seal, label and freeze.

*Unsweetened pack:* Follow directions for sugar pack, omitting sugar.

**Applesauce:** Select full-flavored apples. Wash apples, peel if desired, core and slice. To each

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quart of apple slices, add  $\frac{1}{3}$  cup water and  $\frac{1}{4}$  tea-spoon ascorbic acid; cook until tender. Cool and strain, if necessary. If desired, sweeten to taste with about  $\frac{1}{4}$  cup sugar for each quart (2 pounds) of sauce. Pack into containers, leaving  $\frac{1}{2}$  inch head-space. Seal, label and freeze.

## CANNING

**Sliced apples:** Select apples that are juicy and crispy, preferably a mixture of both sweet and tart varieties.

Wash, peel and core apples. To prevent discoloration, slice apples into water containing ascorbic acid (see directions on front). Raw-pack apples make poor quality products. Place drained slices in large sauce-pan and add 1 pint of water or very light, light or medium syrup (see following directions) per 5 pounds of sliced apples. Boil 5 minutes, stirring occasionally to prevent burning. Fill hot jars with hot slices and hot syrup or water, leaving  $\frac{1}{2}$  inch head-space. Adjust lids and process.

**Syrup:** Measure and mix quantities of sugar and water necessary to make desired syrup. Bring sugar and water mixture to a boil and pour over fruit in jars.

Measures of water and sugar

Syrup type	Approx. % sugar	For 9-pint load*		For 7-quart load	
		Cups water	Cups sugar	Cups water	Cups sugar
Very light	10	6 $\frac{1}{2}$	$\frac{3}{4}$	10 $\frac{1}{2}$	1 $\frac{1}{4}$
Light	20	5 $\frac{3}{4}$	1 $\frac{1}{2}$	9	2 $\frac{1}{4}$
Medium	30	5 $\frac{1}{4}$	2 $\frac{1}{4}$	8 $\frac{1}{4}$	3 $\frac{3}{4}$

\*This amount is also adequate for a 4-quart load.

### Sliced Apples, in a Boiling-Water Canner

Recommended Process Times

Style of pack	Jar size	Process times (in minutes) at altitudes of			
		0-1,000 ft.	1,001-3,000 ft.	3,001-6,000 ft.	Over 6,000 ft.
Hot	Pints	20	25	30	35
Hot	Quarts	20	25	30	35

### Sliced Apples, in a Dial-Gauge Pressure Canner

Recommended Process Times

Style of pack	Jar size	Process time	Canner pressure (PSI) at altitudes of			
			0-2,000 ft.	2,001-4,000 ft.	4,001-6,000 ft.	6,001-8,000 ft.
Hot	Pints	8 min.	6 lb.	7 lb.	8 lb.	9 lb.
Hot	Quarts	8	6	7	8	9

### Sliced Apples, in a Weighted-Gauge Pressure Canner

Recommended Process Times

Style of pack	Jar size	Process time	Canner pressure (PSI) at altitudes of	
			0-1,000 ft.	Above 1,000 ft.
Hot	Pints	8 min.	5 lb.	10 lb.
Hot	Quarts	8	5	10

## Applesauce

Select apples that are sweet, juicy and crisp. For a tart flavor, add 1 to 2 pounds of tart apples to each 3 pounds of sweeter fruit.

Wash, peel and core apples. If desired, slice into water containing ascorbic acid to prevent browning (see directions on front). Place drained slices in an 8-to 10-quart pot. Add  $\frac{1}{2}$  cup water per 10 pounds of apple slices. Heat quickly until tender (5 to 20 minutes, depending on maturity and variety), stirring occasionally to prevent burning. Press apples through a sieve or food mill, or purée with a blender or a food processor. If you prefer chunk-style sauce, skip the pressing step. Sauce may be packed without sugar. If desired, add  $\frac{1}{8}$  cup sugar per quart of sauce. Taste and add more, if preferred. Reheat sauce to boiling. Fill hot jars with hot applesauce. Adjust lids and process.

### Applesauce, in a Boiling-Water Canner

Recommended Process Times

Style of pack	Jar size	Process times (in minutes) at altitudes of			
		0-1,000 ft.	1,001-3,000 ft.	3,001-6,000 ft.	Over 6,000 ft.
Hot	Pints	15	20	20	25
Hot	Quarts	20	25	30	35

### Applesauce, in a Dial-Gauge Pressure Canner

Recommended Process Times

Style of pack	Jar size	Process time	Canner pressure (PSI) at altitudes of			
			0-2,000 ft.	2,001-4,000 ft.	4,001-6,000 ft.	6,001-8,000 ft.
Hot	Pints	8 min.	6 lb.	7 lb.	8 lb.	9 lb.
Hot	Quarts	10	6	7	8	9

### Applesauce, in a Weighted-Gauge Canner

Recommended Process Times

Style of pack	Jar size	Process time	Canner pressure (PSI) at altitudes of	
			0-1,000 ft.	Above 1,000 ft.
Hot	Pints	8 min.	5 lb.	10 lb.
Hot	Quarts	10	5	10

## Sliced Apple Rings (about 8 to 9 pints)

12 pounds firm, tart apples (maximum diameter 2 $\frac{1}{2}$  inches)

12 cups sugar

6 cups water

$\frac{1}{4}$  cups white vinegar (5% acidity)

3 tablespoons whole cloves

$\frac{3}{4}$  cup red hot cinnamon candies

OR

8 cinnamon sticks and

1 teaspoon red food coloring (optional)

Wash apples. To prevent discoloration, peel and slice one apple at a time. Immediately cut crosswise into  $\frac{1}{2}$ -inch slices, remove core area with a melon baller, and immerse in ascorbic acid solution (see

directions on front). To make flavored syrup, combine sugar, water, vinegar, cloves and cinnamon candies, or cinnamon sticks and food coloring, in a 6-quart saucepan. Stir, heat to boiling, and simmer 3 minutes. Drain apples, add to hot syrup and cook 5 minutes. Fill hot jars (preferably wide-mouth) with apple rings and flavored syrup, leaving ½ inch headspace. Adjust lids and process.

**Spiced Apple Rings**

Recommended Process Times in a Boiling-Water Canner

Style of pack	Jar size	Process times (in minutes) at altitudes of		
		0-1,000 ft.	1,001-6,000 ft.	Above 6,000 ft.
Hot	Half-pints	10 min.	15 min.	20 min.
Hot	Pints	10	15	20

**Pear-Apple Jam (about 7 to 8 half-pints)**

- 2 cups peeled, cored and finely chopped pears (about 2 pounds)
- 1 cup peeled, cored and finely chopped apples (about 1 pound)
- 6½ cups sugar
- ¼ teaspoon ground cinnamon
- ⅓ cup bottled lemon juice
- 6 ounces liquid pectin
- (Purchase fresh pectin each year. Old pectin may result in poor gels.)

Crush apples and pears in a large saucepan and stir in cinnamon. Thoroughly mix sugar and lemon juice with fruit and bring to a boil over high heat, stirring constantly. Immediately stir in pectin. Bring to a full rolling boil and boil hard 1 minute, stirring constantly. Remove from heat, quickly skim off foam, and fill hot sterilized jars, leaving ¼-inch headspace. Adjust lids and process.

**Pear-Apple Jam**

Recommended Process Times in a Boiling-Water Canner

Style of pack	Jar size	Process times (in minutes) at altitudes of		
		0-1,000 ft.	1,001-6,000 ft.	6,001-8,000 ft.
Hot	Half-pints	5 min.	10 min.	15 min.

**Making Jam Without Added Pectin**

Use only firm apples. To be sure they are naturally high in pectin, select a mixture of about ¾ ripe and ¼ underripe fruits. Do not use commercially canned or frozen fruit juices—their pectin content is too low. Wash all fruits thoroughly before cooking. Cut apples into small pieces. Using the peels and cores adds pectin to the juice during cooking. Put apple slices and water in large saucepan and bring to a boil. Simmer according to the times below until fruit is soft, while stirring to prevent scorching. One pound of apples should yield at least 1 cup of clear juice.

**Extracting juice and making jelly:**

Cups of water to be added per pound of fruit	Minutes to simmer fruit before straining	Ingredients added to each cup of strained juice		Jelly yield (half-pints) from 4 cups of juice
		Sugar (cups)	Lemon juice (teaspoons)	
1 cup water/pound apples	20 to 25	¾	1½ (opt)	4 to 5
1 cup water/ pound crabapples	20 to 25	1	None	4 to 5

When apples are tender, strain through a colander, then through a double layer of cheesecloth or a jelly bag. Allow juice to drip through, using a stand or colander to hold the bag. Pressing or squeezing the bag or cloth will cause the jelly to be cloudy.

Use no more than 6 to 8 cups of extracted fruit juice at a time. Measure fruit juice, sugar and lemon juice according to the ingredients in the table above and heat to the jelling point. To test jelly for doneness, use one of the following methods.

**Temperature test:** Use a jelly or candy thermometer and boil until mixture reaches the following temperature at your altitude.

Sea level	1,000 ft.	2,000 ft.	3,000 ft.	4,000 ft.	5,000 ft.	6,000 ft.
220° F	218° F	216° F	214° F	212° F	211° F	209° F

**Sheet or spoon test:** Dip a cool metal spoon into the boiling jelly mixture. Raise the spoon about 12 inches above the pan (out of steam). Turn the spoon so the liquid runs off the side. The jelly is done when the syrup forms two drops that flow together and sheet or hang off the edge of the spoon.

Remove from heat and quickly skim off foam. Use a measuring cup or ladle and wide-mouthed funnel, to fill hot, sterilized jars with jelly, leaving ¼ inch headspace. Adjust lids and process.

**Apple Jelly without Added Pectin**

Recommended Process Times in a Boiling-Water Canner

Style of pack	Jar size	Process times (in minutes) at altitudes of		
		0-1,000 ft.	1,001-6,000 ft.	6,001-8,000 ft.
Hot	Half-pints	5 min.	10 min.	15 min.

**Apple Pie Filling (1 or 7 quarts)**

Each quart makes one 8-inch to 9-inch pie. The filling may also be used as a topping on desserts or pastries. "Clear Jel A" is a chemically modified starch made from waxy maize, which produces excellent sauce consistency even after fillings are canned and baked. Other starches may break down when used in these pie fillings, causing sauce to be runny. Ask your county Extension home economist about ordering Clear Jel A.

Because the variety of fruit may alter the flavor of the fruit pie, first prepare a single quart of filling, make a pie with it, and serve. Then adjust the sugar

and spices in the recipe to suit your preferences. The amount of lemon juice **SHOULD NOT BE ALTERED**, because it affects the safety and storage stability of the filling.

	Quantities of Ingredients Needed for	
	1 quart	7 quarts
Blanched, sliced apples	3½ cups	6 quarts
Granulated sugar	¾ cup + 2 tablespoons	5½ cups
Clear Jel A	¼ cup	1½ cups
Cinnamon	½ teaspoon	1 tablespoon
Cold water	½ cup	2½ cups
Apple juice	¾ cup	5 cups
Bottled lemon juice	2 tablespoons	¾ cup
Nutmeg (optional)	⅛ teaspoon	1 teaspoon
Yellow food coloring (optional)	1 drop	7 drops

Use firm, crisp apples. Stayman, Golden Delicious, Rome and other varieties of similar quality are suitable. If apples lack tartness, use an additional ¼ cup of lemon juice for each 6 quarts of apple slices.

Wash, peel and core apples. Cut slices ½ inch wide and place in water containing ascorbic acid to prevent browning (see directions on front). Blanch 2 quarts at a time for 1 minute in boiling water. While blanching other batches of apples, keep blanched apples in a covered pot so they will stay warm. Combine sugar, Clear Jel A and cinnamon in a large kettle with water and apple juice. If desired, add food color and nutmeg. Stir and cook on medium high heat until mixture thickens and begins to bubble. Drain apple slices. Add lemon juice and boil 1 minute, stirring constantly. Fold in apple slices immediately and fill hot jars with mixture without delay, leaving ½ inch headspace. Adjust lids and process.

**Apple Pie Filling**

Recommended Process Times in a Boiling-Water Canner

Style of pack	Jar size	Process times (in minutes) at altitudes of			
		0-1,000 ft.	1,001-3,000 ft.	3,001-6,001 ft.	Over 6,000 ft.
Hot	Pints	25 min.	30 min.	35 min.	40 min.
Hot	Quarts	25	30	35	40

**Apple Butter (about 8 to 9 pints)**

Use Jonathan, Winesap, Stayman, Golden Delicious, McIntosh or other tasty apple varieties for good results.

8 pounds apples	2¼ cups packed brown sugar
2 cups cider	2 tablespoons ground cinnamon
2 cups vinegar (5% acidity)	1 tablespoon ground cloves
2¼ cups white sugar	

Wash, remove stems, quarter and core fruit. Cook slowly in cider and vinegar until soft. Press fruit through a colander, food mill or strainer. Cook fruit pulp (approximately 10 to 30 minutes) with sugar and spices, stirring frequently. To test for doneness,

remove a spoonful and hold it away from steam for 2 minutes. It is done if the butter remains mounded on the spoon. Another way to determine when the butter is cooked adequately is to spoon a small quantity onto a plate. When a rim of liquid does not separate around the edge of the butter, it is ready for canning. Place hot into hot, sterilized half-pint or pint jars, leaving ¼ inch headspace. Quart jars need not be presterilized. Adjust lids and process.

**Apple Butter**

Recommended Process Times in a Boiling-Water Canner

Style of pack	Jar size	Process times (in minutes) at altitudes of		
		0-1,000 ft.	1,001-6,000 ft.	Over 6,000 ft.
Hot	Half-pints	5 min.	10 min.	15 min.
Hot	Pints	5	10	15
Hot	Quarts	10	15	20

**Apple Jelly made with Bottled Juice and Artificial Sweetener (about 4 half-pints)**

- 2 tablespoons unflavored gelatin
- 1 quart unsweetened apple juice
- 2 tablespoons bottled lemon juice
- 2 tablespoons liquid low-calorie sweetener
- Food coloring, if desired

In a saucepan, soften gelatin in apple juice and lemon juice. Bring to a rolling boil, dissolving gelatin; boil 1 minute. Remove from heat. Stir in liquid sweetener and food coloring. Pour into hot, sterilized jars, leaving ¼ inch headspace. Label and seal. Store in refrigerator for up to four weeks.

Prepared by Sandra L. Andrews, Ph.D., R.D., Extension Specialist, Department of Food Science and Human Nutrition, Michigan State University.

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**This bulletin was originally prepared by Shirley Hamman, Allegan County Extension home economist, Kathleen Staskiewicz, Ottawa County Extension home economist, and Penny Ross, Extension Food and Nutrition Specialist, MSU.**