

Gelled Products

Objectives

After completing this unit, you should be able to:

1. Describe the different types of gelled products.
2. Explain why the proper amounts of fruit, pectin, acid, and sugar are needed to make a successful gelled product.
3. Explain how low and no sugar fruit spreads gel.

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Supplement <i>Preserving Food: Jams and Jellies</i> , U of Georgia www.uga.edu/nchfp/publications/uga/uga_jams_jellies.pdf	

Introduction

Jams, jellies, conserves, marmalades, preserves, and butters can add zest to meals while providing a good way to use fruits that are unsuitable for canning or freezing. All are preserved by sugar and gelled to some extent, but differences in texture and fruit from distinguish one from another. Individual characteristics depend upon the type of fruit used, how it is prepared, the proportions of different ingredients in the mixtures, and the cooking methods.

Any of these products may be made by cooking the ingredients until they reach the appropriate temperature for the gel to form. Some may have commercial pectin added to shorten the cooking time and to provide uniform results from batch to batch.

- Jams are thick sweet spreads made by cooking crushed or chopped fruits with sugar. They tend to hold their shape, but are generally less firm than jellies.
- Jellies are made by cooking fruit juice with sugar. A good product is clear and firm enough to hold its shape when turned out of its container, but quivers when the container is moved. When cut, it should be tender, yet retain the angle of the cut. Jelly should have a flavorful, fresh, fruity taste.
- Spreads are low or no sugar products made by cooking crushed or chopped fruits or fruit juice with sugar. They tend to hold their shape but are generally less firm than the full sugar versions.
- Preserves are made by cooking small, whole fruit, or uniform-sized pieces in a clear, slightly gelled syrup. The fruit should be tender and plump.
- Conserves are jam-like products that may be made with a combination of fruits. They may also contain nuts, raisins, or coconut.
- Marmalades are soft fruit jellies containing small pieces of fruit or peel, evenly suspended in a transparent jelly. They often contain citrus fruit.
- Butters are soft fruit pulps, cooked with sugar until thick.
- Honeys and syrups are made by cooking fruit juices or purees with sugar to a thicker, pourable consistency.

Ingredients

Proper amounts of fruit, pectin, acid, and sugar are needed to make successful gelled products.

1. Fruit

Fruit gives each product its special flavor and provides at least part of the pectin needed for successful gels. Flavorful varieties of fruits are best for gelled products because the fruit is diluted by the large proportion of sugar necessary for proper consistency and good keeping quality. Flavor is also lost due to evaporation in the cooking process.

Some fruits such as ripe apples, most plums, and grapes contain enough pectin, but lack the acidity necessary for making a gelled product. Other fruits contain enough acid, but have insufficient pectin. Sometimes fruit rich in pectin is combined with fruit rich in acid in order to get the proper proportions for gelling.

Pectin and Acid Content of Common Fruits Used to Make Jelly		
Group I: If not overripe, has enough natural pectin and acid for gel formation with only added sugar.		
Group II: Low in natural acid OR pectin and may need addition of either acid OR pectin.		
Group III: Always needs added acid, pectin or both.		
Group I	Group II	Group III
Apples, sour	Apples, ripe	Apricots
Blackberries, sour	Blackberries, ripe	Blueberries
Crabapples	Cherries, sour	Cherries, sweet
Cranberries	Chokecherries	Figs
Currants	Elderberries	Grapes (Western Concord)
Gooseberries	Grapefruit	Guavas
Grapes (Eastern Concord)	Grape juice, bottles (Eastern Concord)	Nectarines
Lemons	Grapes, California	Peaches
Loganberries	Loquats	Pears
Plums (not Italian)	Oranges	Pineapple
Quinces		Plums (Italian)
		Pomegranates
		Raspberries
		Rhubarb
		Strawberries

Resource: *So Easy to Preserve*, Fifth Edition, University of Georgia, 2006

2. Pectins

Although gelled products can be made without commercial pectin, generally the “added pectin” method has these advantages:

- The yield from a given amount of fruit is greater than with a long cook process.
- Fully ripe fruit may be used.
- The cooking time is shorter.
- The cooking time is standardized.

Fruit pectins should be stored in a cool, dry place, so they will keep their gelling strength. Use pectin by the date indicated on the package. It is found printed on an end flap of the box. Pectin should not be held over from one year to the next.

A. Fruit based pectins

Commercial fruit pectins, which are made from apples or citrus fruits, are either in liquid or powdered form. The powdered and liquid forms are not

interchangeable in recipes. Either is satisfactory when used in a recipe developed especially for that form. These pectins may be used with any fruit.

Pectins found readily in New York State include:

CERTO® Premium Liquid Fruit Pectin

Ball® Liquid Fruit Pectin

SURE.JELL® Premium Fruit Pectin

Ball® Original Fruit Pectin

JEL EASE™ Fruit Pectin

B. Low Methoxyl pectins

Low-methoxyl pectin is extracted from citrus fruit by a different method than that used for regular fruit based pectins. This form of pectin requires little or no sugar in order for a gel to form. Instead of sugar and acid, the calcium, sodium or potassium in the product forms the gel.

Pectins found readily in New York State include:

Ball® No Sugar Needed Fruit Pectin

SURE.JELL® No Sugar Needed Premium Fruit Pectin

C. Vegetable gums

Some commercial gelling agents are manufactured from a vegetable gum. They generally contain malto-dextrin (maltose and dextrin are breakdown products of starch), vegetable gums, fumaric acid, and potassium sorbate and sodium benzoate as preservatives. These preservatives are mold inhibitors which are added to the product to help prevent mold growth.

D. Gelatin

Sugar free jams and jellies made with commercial gelatin should be prepared in small batches and kept in the refrigerator. Do not freeze these products; the gel will disintegrate. Do not can these products; they are not shelf stable or safe at room temperature.

3. Acid

Acid is needed for flavor and for gel formation. The acid content varies in different fruits, and is higher in under-ripe fruits. With fruits that are low in acid, lemon juice or citric acid is commonly added when making gelled products. If a recipe calls for lemon juice, citric acid may be substituted. One tablespoon lemon juice has the same acidity as 1/8 teaspoon of citric acid.

4. Sugar and other sweeteners

Gelled products that are made following long cook directions, or that use regular fruit pectin to assist in gel formation, must have sugar or another sweetener.

A. Sugar

Sucrose, in the form of beet or cane sugar, will be successful in forming a gel, serving as a preservative, and contributing to the flavor of a gelled product. By binding with the free water molecules, sugar helps to prevent the growth of microorganisms. Do not use any of the following sweeteners in the place of sugar:

- Dextrose or a dextrose/sucrose blend, as it will not gel properly

- Brown sugar, sorghum, and molasses will overpower the fruit flavor

B. Honey

Light, mild-flavored honey may replace part of the sugar called for in a recipe. In products made with added pectin, up to 1 cup of honey can replace an equal amount of granulated sugar when making approximately six half-pints of gelled product. The liquid content of additional honey in a gelled product will affect the gelling. Honey can replace half the sugar in recipes where no added pectin is used, because of the evaporation that takes place during the long boil.

C. Corn Syrup

The liquid content of corn syrup needs to be considered when it replaces part of the sugar in a recipe. In products made with no added pectin, limit the use of corn syrup to a maximum of one-fourth of the sugar. Corn syrup can replace up to one-half the sugar if powdered pectin is used and two cups per batch if liquid pectin is used. Corn syrup is a mixture of dextrose and sucrose, and has ½ the sweetening power of pure sucrose.

D. Fructose

About 2/3 cup of fructose has the same sweetness as one cup of sucrose. However, in gelled products, in order to have the product gel, substitute an equal amount of fructose for sucrose. This makes a very sweet product.

E. Artificial sweeteners

Use pectin specially formulated to allow a gel to form without the presence of sugar because an artificial sugar will not bind with the free water molecules as sugar does. Recipes for the pectin product or the artificial sugar product must be used.

General instructions

Gelling is a chemical reaction of pectin with the other ingredients. The following steps must be adhered to in order to have a successful and acceptable product.

- **Use reliable recipes with detailed instructions**
Research based recipes are available in the USDA *Complete Guide to Home Canning, So Easy to Preserve*, the *Ball Blue Book*, and the directions supplied by the pectin manufacturers.
- **Follow instructions carefully.**
If the directions say to boil hard for one minute, use a timer.
- **Measure ingredients carefully.**
Remember, fruit, pectin, acid, and sugar all have to be present in the right amount to form a gel. If the recipe calls for 4 cups of crushed fruit, use only 4 cups.
- **Do not double a recipe.**
If a double batch of gelled product is cooked for the time indicated in the recipe, it will be undercooked, resulting in a soft or runny product. If boiled longer, it will have a caramelized flavor and dark color.

- **Remove air from the fruit.**

When making a gelled product with a long boil recipe (without added pectin) remove the cooking mixture from the heat at frequent intervals and stir for 1 minute before returning the pot to the heat. This will help prevent fruit from floating in the jam.

- **Prevent foaming.**

A small amount (1/8 to 1/2 teaspoon) of butter, margarine, or oil will reduce the amount of foaming during cooking of gelled products. This may cause an off-flavor in long-term storage as the fat may become rancid.

Making gelled products

There are basically two types of gelled products: those made with added pectin and those made without it. The use of commercial pectin simplifies the procedure and yields more product per volume of juice or fruit. Products can be made more quickly using added pectin, and the cooking time is standardized. However, products made without added pectin contain less sugar and have a fruitier taste.

1. Cooked products with added pectin

Products made with powdered or liquid pectin are prepared according to the pectin manufacturer's directions. A powdered pectin may never be substituted in a liquid pectin recipe, and vice versa. Regular fruit pectin may not be substituted in recipes calling for sugar free, low methoxyl pectin and vice versa. Pectin tests, sugar tests and doneness tests are not needed.

2. Cooked products without added pectin

Products made without added pectin require less sugar per cup of juice or fruit than those with added pectin. Longer boiling is necessary to bring the mixture to the proper sugar concentration. Thus, the yield of finished product per cup of juice or fruit is less. The longer cooking time may diminish the natural fruit flavor. Testing must be done to determine proper gelling.

Guidelines for making jam without added pectin

- For best flavor, use fully ripe fruit.
- Wash all fruits thoroughly under running water. An alternative is to lift fruits out of several rinses of water. Do not soak.
- Remove stems, skins, and pits from fruit; cut into pieces and crush. For berries, remove stems and blossoms and crush. Seedy berries may be put through a sieve or food mill.
- Measure crushed fruit (and any other ingredients except sugar) and place in a large saucepan.
- Add measured sugar and bring to a boil while stirring rapidly and constantly. Continue to boil until the mixture thickens. Use one of the doneness tests (follows) to determine when mixture is ready to place in canning jars.

Guidelines for making jelly without added pectin

- Use only firm fruits naturally high in pectin. Select a mixture of about $\frac{3}{4}$ ripe to $\frac{1}{4}$ under-ripe fruit.
- Commercially canned or frozen fruit juices will not make satisfactory jellies unless pectin is added because the natural pectin is broken down when the juice is processed. The heating process causes the breakdown or hydrolysis of the naturally long pectin chains. The heated fruit has shorter pieces of pectin which do not make a good gel network.
- Wash all fruits thoroughly under running water. An alternative is to lift fruits out of several rinses of water. Do not soak.
- Crush soft fruits or berries; cut firmer fruits into small pieces. Using the peels and cores will add pectin to the juice during cooking.
- Add water to fruits that require it. Be careful not to overcook the fruit, as it will negatively affect the color, flavor and pectin content.

Guidelines for Extracting Juices and Making Jelly					
	To extract juice		Ingredients added to each cup of strained juice		Yield from 4 cups of juice
	Cups of water to be added per pound of fruit	Minutes to simmer fruit before extracting juice	Sugar (cups)	Lemon juice (teaspoons)	
					Apples
Blackberries	0 – $\frac{1}{4}$	5 – 10	$\frac{3}{4}$ - 1	0	7 – 8
Crabapples	1	20-25	1	0	4 – 5
Grapes	0 – $\frac{1}{4}$	5 – 10	$\frac{3}{4}$ - 1	0	8 –9
Plums	$\frac{1}{2}$	15 – 20	$\frac{3}{4}$	0	8 -9

Testing the juice or fruit for pectin, acid and gel

A. Pectin

There are three ways to discover if there is enough natural pectin in a fruit juice to make a good product without adding pectin.

1. Cooking test

Measure $\frac{1}{3}$ cup juice and $\frac{1}{4}$ cup sugar into a small pot. Heat slowly, stirring constantly until all the sugar is dissolved. Bring the mixture to a boil and boil rapidly until two drops form together and “sheet” off a spoon. (See illustration on page 9.) Pour the jelly into a clean, hot jelly glass or onto a sauce dish and cool. If the cooled mixture is gelatinous, the fruit juice will gel.

2. Alcohol test

Add 1 teaspoon juice to 1 tablespoon 70% rubbing alcohol. To mix, stir or shake a closed container slightly so that all the juice comes in contact with the alcohol. Do not taste the mixture because it is poisonous.

Fruit high in pectin will form a solid jelly-like mass that can be picked up with a fork. If the juice shows little clumping, there is not enough pectin for gelling.

3. Jelmeter test

A special glass tube called a "Jelmeter" may be purchased for this test. This is a good investment for a home-based business. The jelmeter is a graduated glass tube with a small opening. Fill it with fruit juice that has boiled for about 10 minutes, and then cool it to room temperature. The liquid is confined in the small tube and allowed to flow through the narrow space. Let the juice run through the meter for 1 minute. If the molecules of pectin interspersed in the mixture delay the flow of water, the markings on the Jelmeter will indicate the amount of sugar to use with each cup of juice.

B. Acid

There is not a home test to determine the exact amount of acid present; however, there is a simple test for tartness. Mix 1 teaspoon lemon juice, 3 tablespoons water, and ½ teaspoon sugar. If the fruit juice does not taste as tart as this mixture, it is not tart enough for a gel to form. Add 1 tablespoon lemon juice or ½ teaspoon citric acid to each cup of juice.

C. Gel

The biggest problem in making gelled recipes without added pectin is knowing when to stop cooking. It is particularly important to remove the mixture from the heat before it is overcooked. Although an undercooked product can sometimes be recooked to make a satisfactory product, there is nothing that can be done to improve an overcooked product. Signs of overcooking are a change in color of the mixture and a taste or odor of caramelized sugar.

1. Temperature test

Before cooking the product, take the temperature of boiling water with a jelly, candy or deep-fat thermometer. Cook the product to a temperature 8° F higher than the boiling point of water, as indicated on the thermometer. At that point, the concentration of sugar will be such that the mixture should form a satisfactory gel.

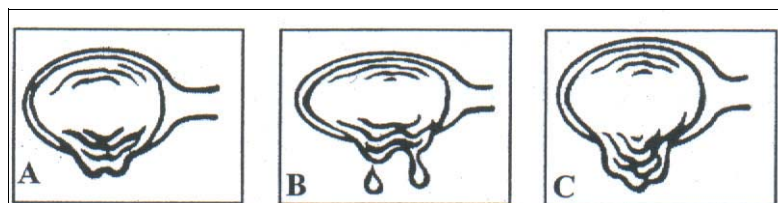
Find out at what temperature water boils at your location on the day the product is being made, because the boiling point may change with different atmospheric conditions at different altitudes. Check the boiling point of water shortly before starting the process. For an accurate thermometer reading, place it in a vertical position and read at eye level. The bulb of the thermometer must be completely covered with the mixture, but must not touch the bottom of the pot.

The following chart indicates the proper temperature for gel formation at different altitudes. This assumes a properly operating thermometer.

Jelly Temperatures at Different Altitudes				
Altitude	Sea level	1,000 feet	2,000 feet	3,000 feet
Temperature needed	220° F	218° F	216° F	214° F

2. Spoon or sheet test

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



- A. When mixture first boils, drops are light and syrupy.
- B. As mixture continues to boil, drops become heavier and drop off the spoon two at a time.
- C. When two drops form together and “sheet” off the spoon, the gelling point has been reached.

3. Refrigerator test

Pour a small amount of boiling product on a cold plate and put it in the freezer compartment of the refrigerator for a few minutes. If the mixture gels, the product has reached the gelling point. During this test, remove the pot from the heat source to avoid overcooking.

Other gelled products

1. Uncooked or freezer jams and jellies

Uncooked jams and jellies can be made from fresh or frozen fruits or juices. These products require commercial pectin and directions on the pectin product must be followed.

- It is important to stir the fruit or juice, pectin, and sugar until all or most of the sugar crystals have dissolved.
- After placing the product in containers, it must remain at room temperature for up to 24 hours to ensure a good gel. Placing the containers in a freezer too soon will prevent the gel from forming.
- Once a gel has formed, freezer products must either be refrigerated (up to 3 weeks) or frozen (up to one year) to prevent spoilage by molds or yeasts.

- One disadvantage of making freezer jam or jelly is that a greater quantity of sugar is required to get a desirable texture. The sweetness may mask the flavor of the fruit.

2. Microwave gelled products

Gelled products prepared in microwave ovens are noted for their fresh flavor.

However, the following disadvantages have been cited:

- The amount that can be prepared at one time is limited to the amount that will fit in a 3-quart casserole.
- Gelled products must be frequently stirred or rotated to distribute the heat evenly.
- Gelled products boil up rapidly, overtaking the container. Opening the door will immediately stop the boiling.

Gelled products should be prepared in a 3-quart casserole dish or bowl. Because microwave products boil rapidly, conventional recipes may be too large. The best products can be obtained by using recipes specified for use in microwave ovens.

To determine doneness, use the “sheet” test or use a thermometer to test for doneness. Remove the product from the oven and then insert the thermometer to test the temperature of the mixture. Microwave jelly thermometers are available for purchase.

3. Preserves, conserves and marmalades

The method used for making these gelled products depends on the fruit. Firm fruits, such as peaches or citrus, are sometimes cooked with water until slightly tender. Soft fruits, such as pears and berries, may be mixed with sugar and allowed to stand until some of the juice begins to flow. Either of these steps will plump the fruit and help to prevent it from floating.

Once fruit is prepared, follow directions in tested recipes.

4. Fruit butters

Fruit butter is made by cooking fruit until soft, pressing it through a sieve, and adding sugar. This mixture is cooked until thick enough to spread when cold. Fruits may be blended for flavor and color. Some typical combinations are apples with grape juice, plums or quince.

White or granulated brown sugar may be used. Brown sugar gives a darker color to light fruits, and a more pronounced flavor to bland fruits.

Making gelled products from frozen fruit

Many fruits that are used for making gelled products mature at about the same time. During the season, it may be difficult to have time to make as many gelled products as desired. For this reason, many fruits may be frozen for later use.

Accurate measurements are important when making any gelled product. Some frozen fruits collapse upon thawing, making it difficult to accurately measure them. For this reason, it is best to pack a measured amount of fruit for a gelled recipe into containers when freezing. These containers should be labeled with the amount in them.

Do not add any sugar to fruit that is frozen for making into gelled product.

When ready to make a gelled product from the frozen fruit, thaw it in the refrigerator until only a few ice crystals remain. Follow the direction in the recipe, using the pre-measured fruit, sugar and pectin (if being used).

When planning to make jelly, freezer space will be saved if you prepare the juice before freezing, instead of freezing the fruit. After extracting the juice from the fruit, cool it and then place in pre-measured amounts in rigid plastic containers or wide mouth freezer jars. Leave 1 ½ to 2 inches head space, as juice will expand upon freezing. Allow frozen juice to thaw in the refrigerator overnight before making jelly. Measure juice and use it immediately in proper proportions with sugar and pectin, following recommended and tested recipes.

Filling and processing containers

1. Use half-pint or smaller canning jars and two-piece metal lids. USDA does not provide directions for processing gelled products in larger jars. Check jars for cracks and imperfections, especially the rims. Lids should have an even application of sealing compound. Lids and ring bands should not be bent, and should be free of nicks, scratches and rust.
2. Wash jars in hot soapy water. Rinse jars, fill with hot water and keep on the rack of the boiling water bath canner. An alternate method is to sterilize the jars by boiling them for 10 minutes. The canner may be used for this purpose.
3. Wash lids and ring bands in hot soapy water. Rinse thoroughly. Place lids (and bands if desired) in a pot, and prepare the lids according to the lid manufacturer's directions.
4. Fill each jar leaving ¼ inch headspace. Remove air bubbles, readjust the headspace if necessary, wipe rim of jar with a damp cloth, apply the lid and ring.
5. Using a jar lifter, place filled jars in the boiling water bath canner in simmering water, making sure the water covers the jars by at least one inch. Gelled products in sterilized jars are usually processed in gently boiling water for 5 minutes. If the jars were not sterilized, process for 10 minutes.
6. When processing time is complete, turn off heat, and allow the jars to remain in the water for an additional 5 minutes to reduce sealing failures. Then remove the jars with the jar lifter and place them on a towel or rack. Be sure to leave a one inch space around each jar, making sure the area is free from drafts.

Methods that should not be used in home canning of gelled products

Processing in a boiling water bath canner creates a strong vacuum, and assures that no air remains in the canning jar. If air is present, there is a high likelihood that mold will grow and that fermentation will occur. Therefore USDA and the Ball Corporation

recommend the use of boiling water bath canners to seal homemade gelled products, because the speed and exact temperatures of commercial sealing cannot be easily duplicated at home. Seal failures and spoiled food caused by the inversion method or paraffin coverings are wasteful and disappointing to the home canner. General Foods, maker of Sure-Jell® and CERTO® pectins, currently advocates using the inversion method. The General Foods directions mention the boiling water method as an alternative, suggesting Cooperative Extension be contacted for directions.

1. Paraffin seal

The use of paraffin to seal jars of gelled products allows mold spores to remain on the surface of the product. Paraffin also does not form a lasting seal.

2. Inversion method

The Food Venture Center, Northeast Center for Food Entrepreneurship located at the Geneva Experiment Station, provides information and methods for the commercial production of foods. Gelled products prepared commercially are sealed by the inversion method.

The inversion method instructions call for leaving only 1/8 inch of headspace, wiping the jar carefully, putting on the lid and screw-band, and immediately inverting the jar, leaving it to sit upside-down for 5 minutes. Then it is turned upright and allowed to continue cooling in the usual way. A vacuum will form if the jars are hot and the contents are at least 165° F.

- On a positive note, the inversion method helps to distribute the floating fruit as the medium gels and the jar is turned back upright.
- The inversion method takes less time, and is simpler and easier than the 5 minute boiling water bath process (in sterilized jars) advocated by USDA.
- Turning the jars upside down holds the hot contents securely against the sealing lid, killing microorganisms left on the lid and in the air space left in the jar. There is no guarantee that the gelled product will be the necessary 165° F.
- A strong vacuum is not achieved and the chances of some air remaining in the jar allows mold growth and/or fermentation, both resulting in the eventual unsealing of the jar, especially in hot humid weather.
- Inverting the jar may allow for some product to spill between the jar rim and the lid, causing sealing failure.
- Inverting the jar may scald a person if the lids are not on properly.

Commercial pectin remake directions

Sometimes gelled products will not gel immediately upon removal from a boiling water bath canner. If the jars are sealed, the product is safe at room temperature. Set the jars aside for a few days. Sometimes a gel will form in that period of time. If a gel still has not formed, the product may be enjoyed over ice cream, pancakes, or biscuits. If you choose to remake the product to achieve a gel, then follow the remake directions from Kraft Foods.

Included are those brands most likely to be found in New York State. Be sure to use the same pectin product that was used in the original recipe.

Remake direction for MCP® Fruit Pectin and Slim Set® Fruit Pectin are available from Kraft Foods at the Consumer Response Center: 1-800-431-1001 ext. 3
M – F, 9:00 a.m. - 9:00 p.m. Eastern Time.

Remake direction for Ball® No Sugar Needed Fruit Pectin and Sure-Jell® Premium Fruit Pectin are not available.

CERTO® Premium Liquid Fruit Pectin Remake Directions for Cooked Jam or Jelly

These directions may also be used for Ball® Liquid Fruit Pectin

1. Sterilize one jar and prepare a canning lid.

2. Prepare a trial batch as follows:

- 1 cup of non-gelled jam or jelly
- 3 tablespoons sugar
- 1 ½ teaspoons lemon juice
- 1 ½ teaspoons CERTO fruit pectin

Measure jam or jelly into a small pot. Bring mixture to a full rolling boil on high heat, stirring constantly. Stir in sugar, lemon juice and CERTO Fruit Pectin. Return to a full rolling boil on high heat, stirring constantly. Remove from heat. Skim off foam with metal spoon.

Quickly pour trial batch into prepared jar. Cover and let stand up to 24 hours to check for gel.

Store opened pouch of CERTO in refrigerator.

3. If the trial batch sets satisfactorily, follow the trial recipe, using the listed measures of sugar, lemon juice and CERTO for each 1 cup of jam or jelly. Do not try to make more than 8 cups at one time. Follow trial batch directions. Be sure to use new, prepared lids.
4. Process filled jars in a boiling water bath canner for 5 minutes.
5. After preparing the batch, discard the remaining CERTO Fruit Pectin in the opened pouch.

Note: If the trial batch does not gel, the product may be used as a glaze or syrup.

Sure.Jell® Premium Fruit Pectin Remake Directions for Cooked Jam or Jelly

These directions may also be used for Ball® Original Fruit Pectin (powdered pectin) and JEL EASE™ Fruit Pectin

1. Sterilize one jar and prepare a canning lid.
2. Prepare Pectin Mixture as follows
Slowly stir 1 box of SURE.JELL Fruit Pectin into $\frac{3}{4}$ cup cold water in small pot. Bring to a boil on medium heat; continue to boil for 2 minutes, stirring constantly. Remove from heat.

3. Prepare a trial batch as follows:

- 1 cup of non-gelled jam or jelly
- 2 tablespoons sugar
- 1 tablespoon Pectin Mixture

Measure jam or jelly, sugar, and Pectin Mixture into a small pot. Bring mixture to a full rolling boil on high heat, stirring constantly. Continue to boil on high heat for 30 seconds, stirring constantly. Remove from heat. Skim off foam with metal spoon.

Quickly pour trial batch into prepared jar. Cover and let stand up to 24 hours to check for gel.

Store remaining Pectin Mixture covered in refrigerator.

4. If the trial batch sets satisfactorily, follow the trial recipe, using the listed measures of sugar and Pectin Mixture for each 1 cup of product. Do not try to make more than 8 cups at one time. Follow trial batch directions. Be sure to use new, prepared lids.
5. Process filled jars in a boiling water bath canner for 5 minutes.
6. After preparing the batch, discard the remaining Pectin Mixture.

Note: If the trial batch does not gel, the product may be used as a glaze or syrup.

SURE.JELL® Fruit Pectin Remake Directions for No-Cook Freezer Jam or Jelly

These directions may also be used for Ball® Original Fruit Pectin (powdered pectin) and JEL EASE™ Fruit Pectin.

1. Rinse clean container and lid with boiling water.
2. Prepare Pectin Mixture
Slowly stir contents of 1 box SURE.JELL Fruit Pectin into $\frac{3}{4}$ cup cold water in a small pot.
Bring to a boil on medium heat; continue to boil 2 minutes, stirring constantly.
Remove from heat.

3. Prepare a trial batch as follows:
1 cup of non-gelled jam or jelly
2 tablespoons sugar
1 tablespoon Pectin Mixture

Measure jam or jelly and sugar into small bowl.

Stir constantly until sugar is dissolved, about 3 minutes.

Add Pectin Mixture and stir until blended, about 3 minutes longer.

Quickly pour into prepared container.

Cover and let stand at room temperature up to 24 hours to check for gel.

Store remaining Pectin Mixture covered in refrigerator.

4. If the trial batch sets satisfactorily, follow the trial recipe, using the listed measures of sugar and Pectin Mixture for each 1 cup of product. Do not try to make more than 8 cups at one time. Follow trial batch directions.
5. Place remade jam or jelly in prepared containers. Allow to set at room temperature up to 24 hours before refrigerating or freezing.
6. After preparing the product, discard any remaining Pectin Mixture.

CERTO® Premium Liquid Fruit Pectin Remake Directions for No-Cook Freezer Jam or Jelly

These directions may also be used for Ball® Liquid Fruit Pectin

1. Rinse clean container and lid with boiling water.
2. Prepare trial batch as follows:

- 1 cup non-gelled jam or jelly
- 3 tablespoons sugar
- 1 ½ teaspoons lemon juice
- 1 ½ teaspoon CERTO Fruit Pectin

Measure jam or jelly into a bowl.

Add sugar and lemon juice. Stir constantly until sugar is dissolved, about 3 minutes.

Add CERTO and stir until blended, about 3 minutes longer.

Quickly pour into prepared container.

Cover and let stand at room temperature up to 24 hours to check for gel.

Store opened pouch of CERTO in refrigerator.

3. If trial batch sets satisfactorily, follow the trial recipe, using the listed measures of sugar, lemon juice and CERTO for each 1 cup of jam or jelly. Do not try to make more than 8 cups at one time. Follow trial batch directions.
4. Place remade jam or jelly in prepared containers. Allow to set at room temperature for 24 hours before refrigerating or freezing.
5. After preparing the product, discard CERTO in opened pouch.

Gelled Products Study Questions

1. What is the difference between a conserve and marmalade?
2. What is the difference between a jam and a jelly?
3. Besides fruit, what are the other three essential ingredients in gelled products that are required to form a gel?
4. What are three functions of sugar in a gelled product?
5. What fruits always need added pectin or acid, or both?
6. What are two forms of fruit pectin? May they be interchanged in a recipe?
7. Is it all right to make double or triple batches of gelled products in very large pots? Why?
8. Describe three ways to test for doneness when making jelly without added pectin.
9. What causes low methoxyl pectin to gel?
10. If canning jars are sterilized, how long should most jams be processed?
11. Describe the steps for extracting juice from fruit.

12. Is it all right to make jam from frozen fruit? If so, what should and should not be done when freezing the fruit?

13. When canning, what is the headspace for a gelled product?

14. Describe two methods of sealing jars of gelled product that are not recommended. Why should these not be practiced?