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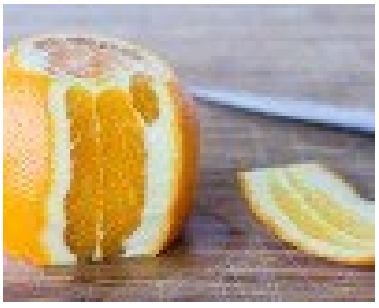
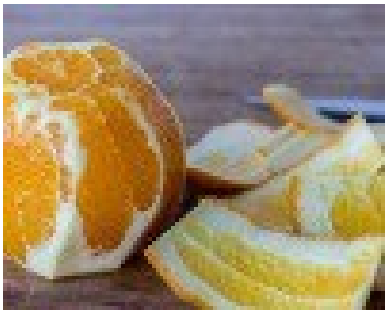
Citrus Creations

1. Cut off both ends of the fruit. You should have something that looks like a truncated sphere.


2. Stand the fruit on end, and, with a sharp paring knife, slice off the peel and pith in large strips. Do not cut straight down, but rather, follow the contours of the fruit to waste as little of it as possible. After cutting off a strip of peel and pith, you should be able to see the bright orange fruit beneath.
3. Rotate the orange and repeat this process until all the peel is removed and you have a juicy, bright orange sphere left.
4. Holding the sphere over a bowl to catch any juices, cut out the citrus segments from in between the strips of membrane surrounding them. Lift out each segment and remove any seeds.
5. When you have segmented the entire fruit, squeeze any remaining juices from the pithy part.

Making Marmalade

Marmalade is often defined as a sweetened citrus preserve that consists of bits of citrus fruit and peel suspended in jelly. However, the term marmalade has evolved to a more modern take on the soft spread to include other non-citrus fruit preserves that contain only a small amount of citrus pulp or peel used to enhance the primary fruit flavor (peach, cherry or other stone fruits). With the addition of non-citrus fruit it is sometimes difficult to differentiate between jams and marmalades. Besides sweet, varying degrees of bitterness is typically one of marmalade's characteristics, making it good for both sweet and savory uses.

Primary Ingredients

There are two primary ingredients in *traditional* marmalades: citrus and sugar.

- ***Citrus*** – Citrus fruits are the third most commonly cultivated fruit family in the world, just behind the apple/pear family and the banana/plantain family. Worldwide citrus production includes about 65% sweet and sour oranges, 15% mandarin oranges (including hybrids like tangelos and tangors), 10% lemons and limes, and 10% grapefruit. All of these citrus fruits can be used individually or in combination to make marmalades.
- ***Sugar*** – Most recipes use granulated white sugar, light or dark brown sugar. Natural cane sugar, which has a slightly cleaner taste than processed white sugar, may be substituted. Light or dark-brown sugar will produce a darker-colored and richer marmalade.

Citrus Sourcing, Selection, and Storage

Common varieties of citrus, such as Navel and Valencia oranges, Meyer, Eureka, and Lisbon lemons, and Persian limes, are available in grocery stores most months of the year. Farmers markets, roadside stands, and local farmers often offer a wider variety of specialty citrus, like Cara Cara navels, Buddha's Hand, kumquats, and varieties within varieties of Mandarins. Choose fruit that is firm and heavy for its size with fine-textured skin and no soft spots. Citrus should be free of cuts or bruises. Scars may develop on the peel where a young fruit has brushed against the tree, but these surface flaws do not affect the quality of the fruit inside. Store fruit in refrigerator, cellar, or basement for up to a month.

Citrus Deconstructed

There are hundreds of citrus varieties ranging in color and flavor, but they all have a similar anatomy. The outer peel or zest is known as the flavedo (that's where the intensely flavorful essential oils and vitamin C tend to concentrate). Just beneath the flavedo lies the inner white peel, or albedo (white pith), which supports the flavedo's essential oil glands and is rich in bitter compounds and pectin. The entire peel encases the pulp, with segments consisting of delicate juice sacs (vesicles) held together by a fibrous membrane. Marmalade recipes range in use of the citrus parts with some utilizing the entire fruit (peel, pith, pulp and pips) while others use only the outer peel.

Making Marmalades

While marmalade can be made with just two ingredients, don't be fooled. It is a slow process that often involves several steps that occur over two or three days. It is not for the fainthearted, who prefer 'quick' or 'speedy' recipes with a limited investment of time. The following information describes some of the terms, techniques, and steps that will often be found in marmalade recipes.

Short-boil vs. long-boil method – There are two basic ways to make soft spreads: the short-boil (added-pectin) method and long-boil method. The two methods yield spreads with significantly different characteristics, including flavor and texture.

- The short-boil or added-pectin method produces spreads with a softer texture and "fresher" taste.
- The long-boil method, sometimes called the traditional method, produces a smaller yield, thicker in texture, deeper in color, and more intense in flavor. The typical ratio of ingredients when using the long-boil method is one part each of citrus, sugar, and liquid. This method requires constant attention and stirring during the long cooking process. The spread is cooked at moderately high heat for a long time and the fruit in the bottom of the pan will scorch if not watched closely giving the entire batch an unpleasant burnt taste. Cooking too long (beyond the gel point) will caramelize the sugar, overly thicken the product, and give it a molasses-like flavor.
- A *traditional* marmalade is made using the long-boil method. However, there are many recipes available using the short-boil method.

Batch size – Small batches of marmalade are easier to work with than large batches. Use a heavy-bottomed pan with a capacity of four times the amount of food to be cooked.

Cleaning the fruit – Wash the fruit carefully before using, even if it is organic. Citrus fruit is often covered in a preservative wax; removing it is essential. To do so, rinse the fruit thoroughly under warm running water to remove surface dirt. Gently scrub the peel with a clean scrub brush; then rinse again under warm water. Dry with a kitchen towel. If any preservative wax remains, fill a basin with boiling water. Plunge the fruit in, remove and rinse under running water.

Whole-fruit vs. cut-rind method – When the whole-fruit method is used the entire fruit is boiled in water before being further processed and combined with sugar and liquid. The cut-rind method separates all parts of the citrus; the peels are removed, sliced, and boiled before being added to the remaining pulp and sugar.

Peeling and hand-cutting vs. zesting – Using a vegetable peeler or sharp paring knife, remove the outer peel leaving only a small amount of the inner white peel or pith, unless your preference is a more bitter-tasting marmalade. Use a sharp knife or kitchen scissors and hand cut the peel to an exact size and thickness (⅛-inch thin-cut, ¼-inch medium-cut, ⅜-inch thick-cut). Alternatively, a zesting tool (five small holes in a row that cut the outer colored portion of the peel into thin strips) may be used to zest the citrus.

Sectioning or supreming citrus – Section or supreme the citrus by cutting the fruit away from the fibrous membrane that surrounds each section. The white membrane is tough and becomes chewy and even tougher when cooked. Over time the membrane may impart bitterness, detracting from both the flavor and the texture of the marmalade.

Cutting crosswise vs. lengthwise – lengthwise is from the stem-end to blossom-end; crosswise is perpendicular to lengthwise.

Precooking and presoaking citrus peels – Citrus peels are tough if not presoaked and/or precooked long enough before combining with sugar. Many recipes call for precooking the peels and then soaking overnight or longer until the peel is soft to the touch. Other recipes may call for presoaking overnight and then precooking until tender to the touch. In addition to softening the fruit, this pretreatment helps extract the pectin from the peels and pith. Once the sugar is added, the peel will not soften further.

Baking soda – Some recipes call for a scant amount of baking soda to be added to the peel when cooked. The baking soda shortens the amount of time needed to soften the citrus peel.

Prewarming the sugar – Some recipes call for warming the sugar in the oven to reduce the amount of time it takes to dissolve the sugar. This step is optional.

Juicing the fruit – Squeeze the fruit by hand or using a citrus squeezer collecting the juice and seeds for later use.

Cooking with seeds and pith – Pectin is the substance in fruit that combines with sugar and acid to make soft spreads gel. Citrus fruit contains an abundance of natural pectin; it is concentrated in the fruit's pith and seeds. Some recipes call for enclosing the pith and seeds in a square of cheesecloth or small seasoning bag and boiling them along with the fruit. This maximizes the marmalade's pectin content.

Preventing fruit float – The primary cause of floating fruit is using chopped fruit rather than crushed fruit when making spreads. Air becomes trapped inside fruit cells and often chopped fruit does not cook long enough to release the air. Secondly, chopped fruit frequently does not absorb enough sugar to keep the pieces from separating from the juice as the spread cools. Whether making a jam or marmalade, cut the fruit into small pieces, then gently crush the pieces with a potato or vegetable masher. This will release the air trapped inside the cells and allows the fruit to absorb more sugar during cooking and become heavier.

Reducing foam – Butter is added to many types of soft spreads to reduce the amount of foaming that develops when the fruit is cooked. Always use unsalted butter, also called "sweet" butter, in soft spreads. Never use salted butter as it can add an unpleasant flavor and develop a rancid flavor during storage.

Syneresis – Soft spreads that contain too much acid will set up too firm and will ooze liquid during storage, a process known as "weeping."

Tests for proper gelling – A candy or sugar thermometer is essential for precise monitoring of the temperature of boiling marmalade, which will achieve a set at about 220°F. Refer to the *Testing the Accuracy of a Candy Thermometer* section for information on testing the accuracy of your thermometer.

- *Temperature Test* – Use a candy or sugar thermometer and boil until marmalade mixture reaches the following temperatures with altitude adjustments. Use the temperature test as an indicator; follow up with the freezer/wrinkle test. For a softer set, stop cooking just before reaching your altitude's gel point.

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

- *Freezer and Wrinkle Test* – Remove the marmalade mixture from the heat. Pour a small amount of boiling marmalade on a cold plate or spoon and put it in a freezer for a few minutes. Remove it from the freezer and push it with your finger to see if it wrinkles. For a firm set, the wrinkle will stay in place after you have removed your finger. If the mixture gels, it should be done.

Other Flavorings – Spices and herbs can be used to add flavor and flair. Because ground spices may affect the appearance of the final product, whole spices are often tied in a square of cheesecloth to create a spice bag. This bag is cooked with the fruit and removed prior to canning.

Standard of Excellence

According to guidelines for county and state fair judging of soft spreads, a high-quality marmalade should exhibit the following attributes. The citrus fruit and peel should be evenly suspended in a shimmering, translucent jelly that will hold its shape and mound up on a spoon. The citrus peel should be tender and of a consistent size and shape; not tough or difficult to chew. The pith, or white portion of the peel, will often give the product a bitter taste and should be removed or kept to a minimum. Likewise, tough membranes, which can also impart a bitter flavor over time, should be separated from the pulp and discarded.

Testing the Accuracy of a Candy Thermometer

Whether making candy or determining the gel point of a soft spread, it is important to test the accuracy of your candy thermometer and make any necessary adjustment to assure your final product is neither over- or under-cooked. Here is a quick and easy method to test the accuracy of your candy thermometer.

1. At sea level, water boils at 212°F. With each 500-feet increase in elevation, the boiling point of water is lowered by just under 1°F. At 2,500 feet, for example, water boils at about 207°F. Determine your elevation and then refer to the chart below to determine the temperature at which water should boil at your elevation. This will be your baseline.

2. Insert your candy thermometer into a pot with at least 2 inches of water and bring the water to a rolling boil. The amount of water needs boil for at least 10 minutes. The bubbles should be constant and vigorous. Leave your thermometer in the water for 10 minutes to give it time to get an accurate reading. Make sure that the bulb of the thermometer is fully immersed in the water the entire time and that it is not touching the bottom or sides of the pot—this can give a false reading.

3. Inspect the temperature on your thermometer making sure that you are eye level with the thermometer and not looking at it from an angle. If it is 212°F (or the corresponding temperature for your elevation shown in the chart, below), your thermometer is accurate!

4. There's a good chance, though, that your thermometer may be off by a few degrees or more. Take this temperature difference into account when doing all future cooking with the thermometer. For instance, if you are at sea level and your thermometer registers 215°F when inserted in boiling water, you know that your thermometer reads temperatures 3° hotter than they actually are. If you have a recipe that calls for a temperature of 220°F, you need to add 3° and reach 223°F on your thermometer to get your marmalade or other soft spread hot enough to gel using the long-boil method. On the other hand, if you are at sea level and your thermometer registers 210°F in boiling water and your recipe calls for a temperature of 220°F, you will need to reduce that temperature by 2° (the difference between the actual reading and the temperature at which water should boil at sea level). Make a note of the inaccuracy so that you can easily remember the "candy thermometer adjustment" required for your elevation.

5. A candy thermometer is most frequently required when determining the gelling point of jams, jellies, and marmalades, which is 220° F at sea level (8° above the boiling point of water). A simpler approach than adjusting for the inaccuracies of your thermometer is to just add 8° (the difference between boiling water at sea level and the gelling point of jams, jellies, and marmalades at sea level) to the boiling point of water at your elevation as determined in Step #3 above. Example: my elevation is 2,500 feet and my candy thermometer reads 209° in boiling water, 2° hotter than it should. I can either make the plus or minus adjustment to correct the inaccuracy of my thermometer or just add 8° to the reading from the boiling water test. In my case, the gelling point for jams, jellies, and marmalades is at 217°F, not 215°F as shown in the table.

6. Perform this test on a regular basis, to ensure that your conversion is still accurate. Make a note of the adjustment that needs to be made either on the thermometer with a Sharpie or record your findings below. If you find that you are regularly getting drastically different results from your calibration that means your thermometer is no longer reliable and it is time to replace it.

Elevation (Feet)	Boiling Point of Water	Gelling Point of Jam
Sea Level	212°F	220°F
500	211°F	219°F
1,000	210°F	218°F
1,500	209°F	217°F
2,000	208°F	216°F
2,500	207°F	215°F
3,000	206°F	214°F
3,500	205°F	213°F
4,000	204°F	212°F
4,500	203°F	212°F
5,000	202°F	211°F
5,500	201°F	210°F
6,000	200°F	209°F
6,500	199°F	208°F
7,000	198°F	207°F
7,500	197°F	206°F

Record Your Findings Below

Your elevation: _____ Boiling water temperature_____ Degrees variance*_____ Date: _____

*Difference between the boiling point of water shown above for your elevation and the actual reading on your candy thermometer.

Adjust recipes as follows:

- If your candy thermometer reads higher than the temperature shown in the above table, **add** the difference to the stated temperature in your recipe.
- If your candy thermometer reads lower than the temperature shown in the above table, **subtract** the difference from the stated temperature in your recipe.

Recipes

Spiced Orange Jelly with powdered pectin

Yield: About 4 half-pint jars

2 cups orange juice (about 5 medium oranges)
⅓ cup lemon juice (about 2 medium lemons)
⅔ cup water
1 package powdered pectin
2 tablespoons orange peel, finely chopped
1 teaspoon whole allspice
½ teaspoon whole cloves
4 sticks cinnamon, 2 inches long
3½ cups sugar

1. Sterilize canning jars and prepare two-piece canning lids according to manufacturer's directions.
2. Mix orange juice, lemon juice, and water in a large saucepan. Stir in pectin.
3. Place orange peel, allspice, cloves, and cinnamon sticks loosely in a clean white cloth; tie with a string and add to fruit mixture.
4. Place on high heat and, stirring constantly, bring to a full rolling boil that cannot be stirred down.
5. Add sugar, continue stirring, and heat again to a full rolling boil.
6. Boil hard for 1 minute. Remove from heat. Remove spice bag and skim off foam quickly.
7. Pour hot jelly immediately into hot, sterile jars, leaving ¼-inch headspace. Wipe rims of jars with a dampened clean paper towel; adjust two-piece metal canning lids.
8. Process in either a boiling water or atmospheric steam canner for 5 minutes between 0-1,000 feet, 10 minutes between 1,001-6,000 feet, and 15 minutes above 6,000 feet.
9. Remove from canner. Let cool, undisturbed, 12-24 hours and check for seals. Clean and label jars. Store sealed jars in a cool, dry, dark location.

Source: National Center for Home Food Preservation, 2018

Meyer Lemon Thyme Jelly

Yield: about 4 (8oz) half-pint jars

2 pounds Meyer lemons (about 12-14 small) to equal 2 cups juice
1 cup water
1 tablespoon Meyer lemon zest
2 teaspoons fresh thyme leaves, plus four small sprigs
Pinch of salt (1/16 teaspoon)
6 tablespoons Ball Real Fruit Classic Pectin
3 cups sugar

1. Sterilize canning jars and prepare two-piece canning lids according to manufacturer's directions.
2. Grate zest from 2 lemons, to equal 1 tablespoon, set zest aside. Juice enough of the lemons to equal 2 cups juice. Strain juice through a fine mesh strainer to collect any remaining solids.
3. Combine juice, water, zest, thyme leaves and pinch of salt in a 4-quart stainless saucepan, whisk in pectin. Stirring constantly, bring mixture to a full rolling boil over high heat.
4. Add sugar, stirring to dissolve. Return jelly to a full rolling boil that cannot be stirred down, boil hard for 1 minute. Remove from heat. Skim foam if necessary.
5. Place one sprig of thyme into a hot jar, ladle hot jelly into jar leaving a ¼-inch headspace. Remove air bubbles. Wipe jar rim. Apply lid and ring.
6. Process in either a boiling water or atmospheric steam canner for 5 minutes between 0-1,000 feet, 10 minutes between 1,001-6,000 feet, and 15 minutes above 6,000 feet.
7. Remove from canner. Let cool, undisturbed, 12-24 hours and check for seals. Clean and label jars. Store sealed jars in a cool, dry, dark location.

Source: freshpreserving.com, 2018

Citrus Marmalade

Yield: About 3 or 4 half-pint jars

(without added pectin – long-boil method)

Note: When peeling citrus fruits for marmalades, be sure to include some of the white membrane found just under the skin. This is where most of the pectin is located.

¾ cup grapefruit peel (from grapefruit)
¾ cup orange peel (1 orange)
⅓ cup lemon peel (1 lemon)
1 quart cold water
Pulp of 1 grapefruit
Pulp of 4 medium-sized oranges
2 cups boiling water
3 cups sugar

1. Sterilize canning jars and prepare two-piece canning lids according to manufacturer's directions.
2. Wash and peel fruit. Cut peel in thin strips into a saucepan. Add cold water and simmer, covered, until tender (about 30 minutes). Drain. Remove seeds and membrane from peeled fruit. Cut fruit into small pieces.
3. Combine peel and fruit in saucepan, add boiling water and sugar. Boil rapidly over high heat, stirring frequently, until the temperature measures 8°F above the boiling point of water (220°F at sea level), about 20 minutes.
4. Remove from heat; skim. Pour hot marmalade into hot, sterile jars, leaving ¼-inch headspace. Wipe rims of jars with a dampened clean paper towel; adjust two-piece metal canning lids.
5. Process in either a boiling water or atmospheric steam canner for 5 minutes between 0-1,000 feet, 10 minutes between 1,001-6,000 feet, and 15 minutes above 6,000 feet.
6. Remove from canner. Let cool, undisturbed, 12-24 hours and check for seals. Clean and label jars. Store sealed jars in a cool, dry, dark location.

Source: National Center for Home Food Preservation, 2018

Kumquat Marmalade

Yield: about 8 half-pint jars

This recipe is a two-day process as it requires an overnight resting of fruit and juice.

2 cups thinly sliced kumquats (about 24 medium)
1½ cups chopped orange pulp (about 2 medium)
1½ cups sliced orange peel (about 2 medium)
⅓ cup lemon juice, fresh or bottled
1½ quarts water
Sugar

Day 1:

1. Wash kumquats and oranges under cold running water; drain. Thinly slice kumquats crosswise.
2. Cut oranges in half crosswise and remove seeds. Remove pulp from each orange half, reserving peel. Chop orange pulp; measure 1½ cups of chopped orange pulp. Remove white pith from orange peel. Thinly slice orange peel into ½-inch pieces; measure 1½ cups sliced peel.
3. Combine all ingredients, except sugar, in a large saucepan. Boil gently for 5 minutes; remove from heat. Cover and let stand in refrigerator for 12 to 18 hours.

Day 2:

4. Sterilize canning jars and prepare two-piece canning lids according to manufacturer's directions.
5. Cook rapidly until peel is tender.
6. Measure the fruit and liquid together. Add 1 cup sugar for each cup fruit mixture, stirring until sugar dissolves.
7. Bring mixture to a boil over medium-high heat, stirring constantly. Cook rapidly over medium-high heat almost to the gelling point (220°F), stirring constantly. Remove from heat. Skim off foam if necessary.
8. Ladle hot marmalade into a hot jar, leaving ¼-inch headspace. Remove air bubbles. Clean jar rim. Center lid on jar and adjust band to fingertip-tight.
9. Process in either a boiling water or atmospheric steam canner for 5 minutes between 0-1,000 feet, 10 minutes between 1,001-6,000 feet, and 15 minutes above 6,000 feet.
10. Remove from canner. Let cool, undisturbed, 12-24 hours and check for seals. Clean and label jars. Store sealed jars in a cool, dry, dark location.

Source: Ball Blue Book Guide to Preserving, 2014

Meyer Lemon Marmalade *Yield: about 5 half-pint jars*

This recipe is a two-day process as it requires an overnight resting of fruit and juice.

2 pounds Meyer lemons, divided
2 regular lemons
6 cups water, divided
5 cups sugar
¼ cup fresh lemon juice (about 2 lemons)

Day 1:

1. Cut 1 pound Meyer lemons and regular lemons lengthwise into quarters, and place in a 6-quart stainless steel or enameled Dutch oven. Add 3 cups water. Bring to a boil; reduce heat, and simmer, uncovered, 1 hour and 30 minutes or until lemons are very soft and liquid is syrupy, pressing lemons to release juice. Remove from heat, cover, and let stand at room temperature overnight.

Day 2:

2. Sterilize canning jars and prepare two-piece canning lids according to manufacturer's directions.
3. While quartered lemons are simmering, quarter remaining Meyer lemons lengthwise; remove seeds, and cut crosswise into very thin slices. Place in a 6-quart stainless steel or enameled Dutch oven. Add remaining water (just enough to cover lemon slices). Bring to a boil; reduce heat, and simmer, uncovered, 30 minutes, stirring occasionally. Remove from heat; cover and let stand at room temperature overnight.
4. Pour lemon quarters mixture through a fine-mesh strainer into Dutch oven containing lemon slices, pressing with back of a wooden spoon to extract as much juice as possible. Discard solids. Add sugar and lemon juice to lemon slices. Bring to a rolling boil over high heat; reduce heat to medium, and cook, uncovered, stirring often, 45 minutes or to gelling point.
5. Ladle hot marmalade into a hot jar, leaving ¼-inch headspace. Remove air bubbles. Wipe jar rim. Center lid on jar. Apply band and adjust to fingertip-tight. Place jar in boiling- water canner. Repeat until all jars are filled.
6. Process in either a boiling water or atmospheric steam canner for 5 minutes between 0-1,000 feet, 10 minutes between 1,001-6,000 feet, and 15 minutes above 6,000 feet.
7. Remove from canner. Let cool, undisturbed, 12-24 hours and check for seals. Clean and label jars. Store sealed jars in a cool, dry, dark location.

Source: The All New Ball Book of Canning and Preserving, 2016

Grapefruit and Orange Sections

Yield: An average of 15 pounds is needed per canner load of 7 quarts; an average of 13 pounds is needed per canner load of 9 pints—an average of about 2 pounds yields 1 quart.

Select firm, mature, sweet fruit of ideal quality for eating fresh. The flavor of orange sections is best if the sections are canned with equal parts of grapefruit. Grapefruit may be canned without oranges. Sections may be packed in your choice of water, citrus juice or syrup.

1. Wash and peel fruit and remove white tissue to prevent a bitter taste.
2. If you use syrup, prepare a very light, light, or medium syrup and bring to boil.
3. Fill hot jars with sections and water, juice or hot syrup *(recipe on next page*), leaving 1/2-inch headspace.
4. Remove air bubbles and adjust headspace if needed. Wipe rims of jars with a dampened clean paper towel. Adjust lids and process both pints and quart jars in a boiling water or atmospheric steam canner for 10 minutes between 0 - 1,000', 15 minutes between 1,001-6,000', and 20 minutes above 6,000'.
5. Remove from canner. Let cool, undisturbed, 12-24 hours and check for seals. Clean and label jars. Store sealed jars in a cool, dry, dark location.

Source: USDA Complete Guide to Home Canning, Revised 2015

Fruit Syrup

Adding syrup to canned fruit helps to retain its flavor, color, and shape. It does not prevent spoilage of these foods.

Measures of Water and Sugar

		*For 9-pint load**		*For 7-quart load*		
Syrup Type	**Approx % Sugar**	**Cups Water**	**Cups Sugar**	**Cups Water**	**Cups Sugar**	**Fruits commonly packed in syrup****
Very light	10	6½	¾	10½	1¼	Approximates natural sugar level in most fruits and adds the fewest calories.
Light	20	5¾	1½	9	2¼	Very sweet fruit. Try a small amount the first time to see if your family likes it.

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

1. For **raw** packs: Heat water and sugar together. Bring to a boil and pour over raw fruits in jars.
2. For **hot** packs: Bring water and sugar to boil, add fruit, reheat to boil, and fill jars immediately.

Source: USDA Complete Guide to Home Canning, Revised 2015

Canned Lemon Curd

Yield: About 3 to 4 half-pint jars

2½ cups superfine sugar*
½ cup lemon zest (freshly zested), optional
1 cup bottled lemon juice**
¾ cup unsalted butter, chilled, cut into approximately ¾-inch pieces
7 large egg yolks
4 large whole eggs

Special Equipment Needed:
Lemon zester
Balloon whisk
1½ quart double boiler*** (the top double boiler pan should be at least 1½-quart volume)
Strainer
kitchen thermometer measuring at least up to 180°F
Glass or stainless steel medium mixing bowl
Silicone spatula or cooking spoon

Preparation Notes:
*If superfine sugar is not available, run granulated sugar through a grinder or food processor for 1 minute, let settle, and use in place of superfine sugar. Do not use powdered sugar.
**Bottled lemon juice is used to standardize acidity. Fresh lemon juice can vary in acidity and is not recommended.
***If a double boiler is not available, a substitute can be made with a large bowl or saucepan that can fit partway down into a saucepan of a smaller diameter. If the bottom pan has a larger diameter, the top bowl or pan should have a handle(s) that can rest on the rim of the lower pan.

1. Wash 4 half-pint canning jars with warm, soapy water. Rinse well; keep hot until ready to fill. Prepare canning lids according to manufacturer's directions.
2. Fill boiling water canner with enough water to cover the filled jars by 1 to 2 inches. Use a thermometer to preheat the water to 180°F by the time filled jars are ready to be added.
   Caution: Do not heat the water in the canner to more than 180°F before jars are added. If the water in the canner is too hot when jars are added, the process time will not be long enough. The time it takes for the canner to reach boiling after the jars are added is expected to be 25 to 30 minutes for this product. Process time starts after the water in the canner comes to a full boil over the tops of the jars.
3. Combine the sugar and lemon zest in a small bowl, stir to mix, and set aside about 30 minutes. Pre-measure the lemon juice and prepare the chilled butter pieces.
4. Heat water in the bottom pan of the double boiler until it boils gently. The water should not boil vigorously or touch the bottom of the top double boiler pan or bowl in which the curd is to be cooked. Steam produced will be sufficient for the cooking process to occur.
5. In the top of the double boiler, on the counter top or table, whisk the egg yolks and whole eggs together until thoroughly mixed. Slowly whisk in the sugar and zest, blending until well mixed and smooth. Blend in the lemon juice and then add the butter pieces to the mixture.
6. Place the top of the double boiler over boiling water in the bottom pan. Stir gently but continuously with a silicone spatula or cooking spoon, to prevent the mixture from sticking to the bottom of the pan. Continue cooking until the mixture reaches a temperature of 170°F. Use a food thermometer to monitor the temperature.
7. Remove the double boiler pan from the stove and place on a protected surface, such as a dish cloth or towel on the counter top. Continue to stir gently until the curd thickens (about 5 minutes). Strain curd through a mesh strainer into a glass or stainless steel bowl; discard collected zest.
8. Fill hot strained curd into the clean, hot half-pint jars, leaving ½-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe rims of jars with a dampened, clean paper towel; apply two-piece metal canning lids.

9. Process in the prepared boiling water canner 15 minutes between 0-1,000 feet, 20 minutes between 1,000 – 6,000 feet, 25 minutes above 6,000 feet.
10. Let cool, undisturbed, for 12 to 24 hours and check for seals.

Shelf Life:

- For best quality, store in a cool, dark place (away from light). Plan to use canned lemon curd within 3 to 4 months. Browning and/or separation may occur with longer storage; discard any time these changes are observed.
- Prepared lemon curd can also be frozen instead of canned for up to 1 year without quality changes when thawed. Package in freezer containers after straining and cooling to room temperature. To thaw, place container in a refrigerator at 40°F or lower for 24 hours before intended use. After thawing, consume within 4 weeks.

Variation:

- For Lime Curd, use the same recipe but substitute 1 cup bottled lime juice and ¼ cup fresh lime zest for the lemon juice and zest.

Drying Citrus

Dried Citrus

Prep Time: 20 Minutes
Bake Time: 6 Hours

1. Preheat oven to 150°F.
2. Wash the citrus fruit and cut into uniform slices, about ⅛- to ¼-inch thick.
3. Arrange on a baking tray over two paper towels to absorb the juices and continue layering the paper towels and fruit in a stack.
4. To bake, arrange the slices in a single layer on a baking sheet lined with parchment paper.
5. After 3 hours, place a sheet of parchment paper over the citrus slices and cover with another baking sheet. Hold both baking sheets together and flip so that the citrus slices bake evenly on both sides.
6. Return to the oven for another 3 hours or until dried; they should be bendable and no juice should come out.

Alternate technique: dry the slices in a dehydrator at 130°F for 16-18 hours, flipping several times for an even dry.
Source: Sunkist.com, 2018

Citrus Salt

Yield: about 1¼ cups

1 cup flake salt or coarse salt
3 tablespoons citrus zest (any kind)

1. Mix salt and zest in a bowl; work zest into salt with your fingers to release oils and flavor.
2. Spread on a baking tray. Air-dry until dried completely, 8 hours to overnight.
3. Keep airtight at room temperature for up to 2 months.

Notes:
- Zest's color will fade over time, but this won't affect taste.
- Another drying option is to heat the oven to 200°F, insert the baking tray and turn off the oven. Let the tray sit in the oven overnight. Use a fork to separate any clumps.

Citrus Peel Powder

1. Peels of citron, grapefruit, kumquat, lime, lemon, tangelo and tangerine can be dried. Thick-skinned navel orange peel dries better than thin-skinned Valencia peel.
2. Wash thoroughly. Remove outer 1/6 to 1/8 inch of peel. Avoid white bitter pith.
3. Dry at 140°F in dehydrator for 8-12 hours.
4. Place dried rinds in blender, herb, or coffee grinder and blend until a fine powder.
5. Use powder in a variety of dishes to add citrus flavor without adding liquid.

Citrus Pulp Powder

1. Spread pulp from juiced citrus in a thin, even layer on parchment paper placed on a dehydrator tray. Remove seeds.
2. Dry at 140°F in dehydrator for 8-12 hours.
3. Place dried pulp in blender, herb, or coffee grinder and blend until a fine powder.
4. Use powder in a variety of dishes to add citrus flavor without adding liquid.

Candied Citrus Peel

Yield: about 2 pints

Peels, including pith, from 6 oranges or other thick-skinned citrus fruit
1 cup water, plus more for boiling peels
5 cups sugar
1 vanilla bean

1. Cut the peels into ¼-inch strips. Cover the peels with cold water in a large nonreactive saucepan and bring to a boil, stirring to ensure that all of the peels are heated through. Strain and repeat two more times to remove the bitter flavor from the pith and to soften the peels. After the third round, set aside the peels to drain while you make the syrup.
2. Bring 1 cup water to a boil and gradually add 4 cups of the sugar, stirring to dissolve. Add the peels and the vanilla bean. Return to a boil, and then reduce to a simmer, cooking gently until the peels are translucent and tender, about 1 hour.
3. Using tongs, remove the peels to a drying rack placed over a baking sheet and separate them so they don't touch. Let drain, and then dry for 4 to 5 hours.
4. When quite dry but still tacky, roll the peels in the remaining 1 cup sugar to coat.
5. Peels keep, stored in an airtight container, for up to 1 month.

Source: Put 'em Up!

Traditional Preserved Lemons

Yield: one quart jar

10 lemons, divided
½ cup pickling or canning salt, divided
4 bay leaves
4 cinnamon sticks (each about 4 inches)
1 teaspoon whole black peppercorns (optional)

1. Prepare jar and lid. For this recipe, the jar needs to be sterilized prior to packing. Boil jar in water for 10 minutes and keep hot until ready to use.
2. Wash 5 of the lemons in warm water, scrubbing well to remove any dirt and wax, and dry well using paper towels.
    a. Option 1: Cut a thin (⅛-inch) slice off the stem end. From stem end, cut each lemon into quarters, without cutting through the bottom end and leaving it intact.
    b. Option 2: Quarter lemons. (In step 4, just layer the 4 quarters in the jar.)
3. Juice the remaining 5 lemons to measure 1½ cups juice.
4. Sprinkle 1 tablespoon pickling salt over the bottom of sterilized jar. Working over a bowl, pack 1 heaping tablespoon salt into each lemon before placing in the jar, stem end up. When 3 lemons have been salted and packed, slip bay leaves and cinnamon sticks against sides of the jar and add peppercorns, if using. Repeat with remaining lemons and salt. Cover with the remaining salt.
5. Fill jar with lemon juice to within ½-inch of top of jar. Center lid on jar. Screw band down until resistance is met, then increase to fingertip-tight.
6. Place jar in a dark, cool cupboard for 2 weeks, shaking every day to distribute the salt. After 2 weeks, the lemons are ready to use. Remove pulp and membrane, using only the peel. Rinse under water to remove excess salt and dry with a paper towel. Store preserved lemons in the refrigerator.
7. Store preserved lemons in a container with an airtight lid. Cover and refrigerate for up to 6 months.

Source: Ball Complete Book of Home Preserving, 2012

Dried Candied Kumquat Flowers

Yield: about 30 candies or 1 pint in syrup

1 pound kumquats
Water
2 cups sugar
Optional spices:
1 (1-inch) coin ginger
1 cinnamon stick
1 star anise pod
2 cloves

1. Using a sharp paring knife, cut 6 to 8 lengthwise slits in each kumquat. Leave the top and bottom ends of each kumquat intact and be careful not to cut all the way through the fruit.
2. Lightly pinch the top and bottom of each kumquat to form a lantern shape and use a toothpick, skewer, or sharp chopstick to gently remove the seeds. Don't worry if you can't fish out every seed; the seeds will loosen during cooking, and it's important to be gentle with the kumquats so they don't split apart.
3. Fill a saucepan with water and bring to a boil. Add the kumquats and blanch for 1 minute. Remove the kumquats and drain. Repeat this process two more times (three times total), using fresh water each time.
4. Refill the pot with 2 cups of water, sugar, and spices (if using). Bring to a boil, stirring to dissolve the sugar. Add the kumquats and reduce heat to low. Keep the kumquats evenly covered in syrup by periodically spooning syrup over them or gently submerging them with a wooden spoon. Simmer until the peel is translucent, about 45 minutes.
5. Remove from heat, cover the saucepan with a cloth, and let the kumquats steep for 8 hours or overnight.
6. Using a slotted spoon, remove each kumquat from the syrup and gently press down on the top and bottom to flatten it into a flower shape. This is also a good opportunity to press out any remaining seeds.
7. Dry the kumquats on a baking rack, on a parchment-lined baking sheet in an oven at 200°F or below, or in a dehydrator at 135°F. Drying time depends on the method, conditions, and fruit size; in a dehydrator it takes about 8-12 hours.
8. The candies are ready when they are pliable and no longer very sticky to the touch.
9. Store in an airtight container in the refrigerator. Kumquats are best consumed within a week.

Note: Don't toss any leftover syrup! It can be used to flavor sparkling water and cocktails, drizzled on cake, and mixed into dressings and marinades.
Source: Emily Han, 2013

Recipes Using Preserved Citrus

Creamy Orange Chipotle Dressing

Yield: 2 servings

3 tablespoons olive oil mayonnaise
Juice of 1 mandarin orange
2-3 teaspoons lemon or lime juice
½ teaspoon kosher salt
¼ teaspoon chipotle powder
¼ teaspoon garlic powder
Fresh ground pepper

Whisk all ingredients in a small bowl until smooth and pour over salad.
Source: http://www.chocolatesalad.com

Orange Marmalade Chicken

Yield: 4 servings

Prep: 5 minutes
Cook: 15 minutes

1 lemon, zested and juiced
⅓ cup orange marmalade
2 boneless and skinless chicken breasts
¼ teaspoon salt
¼ teaspoon fresh ground black pepper (or to taste)
2 teaspoons olive oil

1. In a small bowl, combine lemon juice, freshly grated zest and marmalade. Set aside.
2. Cut each chicken breast in half lengthwise and season with salt and fresh pepper.
3. In a medium-sized nonstick sauté pan, heat olive oil on medium-high heat.
4. Add chicken and cook 3–4 minutes per side.
5. Add marmalade mixture and bring to a simmer. Reduce heat to medium and cook about 4–6 minutes, until chicken is cooked through to an internal temperature of 165°F.

Variations:

- *Top with additional green onions or fresh basil.*
- *To add some spice, add a pinch of red pepper flakes.*

Roasted Fingerlings with Preserved Lemon

Yield: 4 servings

Preserved lemons add a wonderful salty-sweet hit to these simple potatoes, but if you don't have them on hand, you can use regular lemons instead. Thinly slice the peel of one lemon, then toss with the potatoes before roasting.

2 pounds fingerling potatoes, halved lengthwise
3 tablespoons olive oil
2 teaspoons chopped fresh rosemary
Kosher salt and freshly ground black pepper

1. Preheat oven to 450°F.
2. Toss potatoes, oil, and rosemary on a large rimmed baking sheet; season with salt and pepper.
3. Roast, tossing halfway through, until soft and golden brown, 25–30 minutes.
4. Toss warm potatoes with preserved lemon peel.

Source: bonappetit.com

Lemon Crumb Tart

1 roll sugar cookie dough at room temperature
1 cup all-purpose flour
¾ cup white baking chips
1-2 jars lemon curd

1. Preheat oven to 350ºF.
2. Let cookie dough stand at room temperature 10 minutes to soften. In large bowl, mix cookie dough and flour until well blended. Stir in white chips. Reserve 1 cup of the mixture for topping. Press remaining mixture in 10- or 11-inch tart pan with removable bottom.
3. Bake 13 to 18 minutes or until edges just begin to brown. Cool 5 minutes. In small bowl, microwave lemon curd 20-30 seconds or until softened; stir until smooth, then spread to within 1 inch of crust edge. Sprinkle reserved crumb mixture evenly over top of tart.
4. Bake an additional 20–30 minutes or until light golden brown. Cool completely. Cut into wedges.

Orange Marmalade Cake

Sift together and set aside:	2 cups flour	1 teaspoon baking soda	½ teaspoon salt
Mix:	⅓ cup canola oil	½ cup sugar	1 teaspoon orange extract
Add:	2 eggs		
Mix together:	1 cup of orange marmalade ¾ cup of buttermilk or sour milk (1½ teaspoons lemon juice plus enough fresh milk to make ¾ cup can be substituted for sour milk)		

Stir jam mixture into the batter by thirds, alternating with the flour mixture. Spoon into 2 greased and floured 9-inch layer cake tins or a Bundt pan. Bake at 350° for 25 to 30 minutes or when a toothpick inserted into the center comes out clean.

Preserved Lemon Ice Cream

Yield: about 1 quart

Serve scoops of this sweet and salty treat in elegant little dishes with small pour of fruity olive oil and a sprinkle of sea salt on top for an unexpectedly complex treat.

4 large egg yolks
2 cups heavy cream
1 cup whole milk
1 cup granulated sugar
¼ cup freshly squeezed lemon juice
3 tablespoons finely chopped preserved lemon rind
½ teaspoon salt or to taste
¼ cup olive oil, plus a bit more to serve
Flaky sea salt, optional to serve

1. Whisk the egg yolks together in a glass or stainless steel bowl; set aside. Combine the cream, milk, and sugar in a saucepan. Cook over medium heat, stirring occasionally, until the mixture begins to bubble around the edges. Ladle about 1 cup of the cream mixture into the egg yolks and whisk vigorously to temper. Pour the egg and cream mixture back into the pan and whisk well to combine.
2. Cook the mixture on medium low heat while stirring constantly and being careful not to let the mixture boil, until it thickens enough to coat the back of a spoon, about 7 minutes. Whisk in the lemon juice and preserved lemon rind. Add the salt to taste. Cool the mixture completely, for at least 4 hours or overnight.
3. Just before churning, whisk in the olive oil, then freeze in an ice cream machine according to manufacturer's instructions. Transfer the ice cream to a freezer-safe container, cover, and freeze until firm, about 4 hours or overnight. Serve scoops of ice cream in dishes with a drizzle of fruity olive oil and a sprinkle of salt. Keeps in the freezer for 4 days.

Sources

National Center for Home Food Preservation: http://nchfp.uga.edu/
USDA Complete Guide to Home Canning, 2015
Ball Blue Book Guide to Preserving, 2014