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BASIC SYRUPS, CREAMS, AND SAUCES

AFTER READING THIS CHAPTER, YOU SHOULD BE ABLE TO:

1. Cook sugar syrups to various stages of hardness.
2. Prepare whipped cream and meringues.
3. Prepare crème anglaise and pastry cream variations.
4. Prepare dessert sauces, ganache, and other chocolate creams.



MUCH OF THE baker's craft consists of mixing and baking flour goods such as breads, cakes, and pastries. However, the baker also must be able to make a variety of other products, sometimes known as *adjuncts*, such as toppings, fillings, and sauces. These are not baked goods in and of themselves, but they are essential in the preparation of many baked goods and desserts.

Several of the procedures you will learn in this chapter are used in many ways. For example, crème anglaise, or custard sauce, is used not only as a dessert sauce but also as the basis for such items as Bavarian creams and ice creams. Pastry cream, with a variety of flavorings, is also used for pie fillings, puddings, and soufflés.

SUGAR COOKING

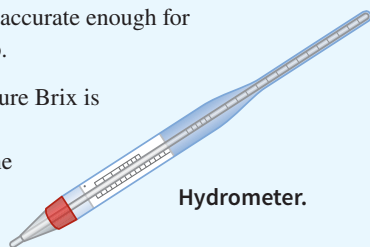
UNDERSTANDING SUGAR COOKING is important in the preparation of desserts and confections because sugar syrups of various strengths are often required (see, for example, Italian Meringue, p. 259).

THE BRIX AND BAUMÉ SCALES

The Brix scale is a measure of the sugar concentration in a solution. It is named after Dr. Adolf F. Brix, an Austrian, who refined the earlier Balling scale to make it more accurate. Each degree (1°) of Brix is equal to a 1% concentration of sugar in solution when measured at 20°C (68°F). For example, a 15% sugar solution (15 grams of sugar in 100 grams of syrup; thus, a syrup consisting of 15 grams of sugar and 85 grams of water) would measure 15° Brix.

A simple way to measure sugar concentration is to use a *hydrometer*, a hollow glass tube with a weight at one end and a scale marked inside the length of the tube. (A hydrometer specifically intended to measure sugar concentration is also called a *saccharometer*.) The hydrometer is placed in the liquid at the correct temperature and the sugar concentration is read off the scale at the surface of the water. The higher the concentration of sugar, the higher the tube floats. This instrument is accurate enough for most purposes in the bakeshop.

A more scientific way to measure Brix is to use a *refractometer*, which measures the angle at which the solution bends a ray of light.



Hydrometer.

A second index used to indicate syrup density is the Baumé (boh MAY) scale, named after Antoine Baumé. Strictly speaking, the Baumé scale measures not the sugar concentration but the *specific gravity*, which is the ratio of the weight of the liquid compared to the weight of the same volume of water. Nevertheless, the measure is close enough so that it can be used for sugar solutions.

To convert Baumé to Brix, multiply the degrees Baumé by 1.905. Then subtract 1.6 from this answer.

For example, 16.6° Baumé equals 30° Brix:

$$\begin{aligned} 16.6 \times 1.905 &= 31.6 \\ 31.6 - 1.6 &= 30 \end{aligned}$$

To convert Brix to Baumé, add 1.6, then divide by 1.905.

$$\begin{aligned} 70^\circ \text{ Brix equals } 37.6^\circ \text{ Baumé:} \\ 70 + 1.6 &= 71.6 \\ 71.6 \div 1.905 &= 37.6 \end{aligned}$$

In this book, we make use of these sugar density scales in our discussion of frozen desserts. These scales are important measurements because sugar concentration affects the freezing point of liquids.

Syrup Strength

Syrup strength is an indication of the concentration of sugar in a solution. (When we talk of syrups in the bakeshop, we usually are referring to a solution of sugar in water, although of course sugar can be dissolved in other water-based liquids as well.) In small concentrations, sugar can be dissolved in water simply by stirring it in. With larger concentrations, however, we boil the syrup, because at higher temperatures, the sugar dissolves more quickly. Also, boiling water can hold more sugar in solution than cold water can.

Once the sugar has dissolved, we can increase the concentration of sugar by continuing to boil the syrup so water gradually evaporates. As the water is boiled off, the temperature of the syrup gradually rises. When all the water has evaporated, we are left with melted sugar. The sugar then begins to *caramelize*, or turn brown and change flavor. If heating continues, the sugar continues to darken and then burn.

A syrup cooked to a high temperature is harder when it is cooled than is a syrup cooked to a lower temperature. For example, a syrup cooked to 240°F (115°C) forms a soft ball when cooled. A syrup cooked to 300°F (150°C) is hard and brittle when cooled.

One pint (1 pound) water is enough to dissolve 3 or 4 pounds of sugar. There is no point in adding more water than you need for a particular purpose because you will just have to boil it off again.

Pure, clean granulated sugar is used to make syrups. Impurities cloud the syrup and form a scum or foam on the syrup as it is being boiled. Any scum should be carefully skimmed off.

Crystallization and Inversion

Graininess is a common fault in many candies and desserts. Graininess results when cooked sugar *crystallizes*—that is, turns to tiny sugar crystals rather than staying dissolved in the syrup. If even one sugar crystal comes in contact with a cooked syrup, it can start a chain reaction that turns the whole thing into a mass of sugar crystals. This effect of sugar crystals on a syrup is called *seeding*.

To avoid crystallization during the first stages of boiling sugar syrups, use one of the following techniques. Do not stir the syrup in either method:

- As you boil the sugar, wash down the sides of the saucepan with a brush dipped in water. Do not let the brush touch the syrup; rather, let water from the brush run down the sides of the pan (see illustration). This removes crystals that may seed the whole batch.
- When first bringing the syrup to a boil, cover the pan and boil for several minutes. This causes condensed steam to wash down the sides of the pan. Uncover and finish cooking without stirring.

Syrups cooked until they contain a high concentration of sugar tend to crystallize after they have been cooled. This can be controlled by a process called *inversion*. As explained in Chapter 4 (p. 64), inversion is a chemical change of regular sugar (sucrose) into another form of sugar that resists crystallizing.

If an acid, such as cream of tartar or lemon juice, is added to a syrup before or during cooking, some of the sugar is inverted. The type and amount of acid used affect the amount of sugar that is inverted. Therefore, be sure to follow specific formulas carefully whenever acids are required in sugar boiling.

Glucose or corn syrup may also be added to control crystallization in boiling syrups. These are convenient to use and produce good results.



Washing down the sides of a pan.

Stages of Sugar Cooking

Testing the temperature with a candy thermometer is the most accurate way to determine the doneness of a syrup. In the old days, a syrup was tested by dropping a little of it into a bowl of cold water and checking the hardness of the cooled sugar.

The stages of doneness were given names that described their hardness. The Stages of Doneness in Sugar Cooking table here lists these stages of sugar cooking. Please note that the names for the stages are not absolute; different sources may use slightly different names. In fact, all such listings are misleading because they suggest the syrup jumps from one stage to the next. Actually, of course, it changes gradually as the water is boiled off. For this reason, it is best to rely on the thermometer and not worry too much about the names.

STAGES OF DONENESS IN SUGAR COOKING		
STAGE	TEMPERATURE	
	°F	°C
Thread	230	110
Soft ball	240	115
Firm ball	245	118
Hard ball	250–260	122–127
Small crack	265–270	130–132
Crack	275–280	135–138
Hard crack	290–310	143–155
Caramel	320–340	160–170

Basic Syrups for the Bakeshop

Two basic syrups are kept in stock in the bakeshop and used in a variety of ways. *Simple syrup*, also known as *stock syrup*, is a solution of equal weights of sugar and water. It is used for such purposes as diluting Fondant (p. 417) and for preparing a variety of dessert syrups. *Dessert syrup*, also called *cake syrup*, is simply a flavored simple syrup. It is used to moisten and flavor sponge cakes and various desserts, such as Babas au Rum (p. 186).

The concentration of both these syrups may be varied to taste. Some chefs prefer a sweeter syrup for some purposes, such as 1 part water to 1½ parts sugar. Others use a less sweet syrup, such as 2 parts water to 1 part sugar.

Following are procedures for preparing simple syrup and a basic dessert syrup. The recipes in this section also include a variety of flavored syrups. Other flavored syrups appear throughout the book as parts of formulas for cakes and pastries.

KEY POINTS TO REVIEW

- How do temperature and sugar concentration change as water is boiled off a sugar syrup?
- What is caramelization?
- How are simple syrup and dessert syrup made?

PROCEDURE: Preparing Simple Syrup

1. Combine the following ingredients in a saucepan:

Water	1 pt	500 mL
Sugar	1 lb	500 g
2. Stir and bring to a boil over moderate heat. Cook and stir until the sugar is dissolved.

3. Remove any scum. Cool the syrup and store it in a covered container.

PROCEDURE: Preparing Dessert Syrup

- METHOD 1

Prepare and cool a simple syrup. Add any desired flavoring according to taste. Extracts such as vanilla or liquors such as rum or kirsch may serve as flavorings. Add flavoring after the syrup has cooled, as some of the flavor may evaporate if it is added to hot syrup.
- METHOD 2

Prepare a simple syrup, but add the rind of one orange and/or one lemon to the sugar and water before bringing it to a boil. Bring the syrup to a boil, simmer for 5 minutes, and then cool. Remove the rind from the cooled syrup.

VANILLA SYRUP

For large-quantity measurements, see page 718.

Ingredients	U.S.	Metric
Water	7 oz	200 g
Sugar	6 oz	180 g
Vanilla bean, split (see variation)	1	1
Total weight:	13 oz (about 12 fl oz)	380 g (about 325 mL)

VARIATION

If vanilla beans are not available, flavor plain syrup to taste with vanilla extract.

PROCEDURE

1. Place all the ingredients in a saucepan and heat gently until the sugar is dissolved.
2. Remove from the heat and allow the vanilla to infuse for 30 minutes.

COCOA VANILLA SYRUP

For large-quantity measurements, see page 718.

Ingredients	U.S.	Metric
Water	4 oz	120 g
Sugar	4 oz	120 g
Vanilla bean (see Note)	1	1
Cocoa powder	1 oz	30 g
Total weight:	9 oz (about 7½ fl oz)	270 g (about 240 mL)

NOTE: If vanilla beans are not available, add ½ tsp vanilla extract just before straining.

PROCEDURE

1. Bring the water, sugar, and vanilla bean to a boil. Boil until the sugar is dissolved.
2. Remove from the heat and add the cocoa powder a little at a time, whipping constantly.
3. Strain through a fine strainer or chinois.

COFFEE RUM SYRUP

For large-quantity measurements, see page 719.

Ingredients	U.S.	Metric	PROCEDURE
Sugar	2.5 oz	65 g	1. Boil the sugar and water until the sugar is dissolved. 2. Remove from the heat and add the coffee. Let stand 10 minutes. 3. Add the rum. 4. Strain through a coffee filter.
Water	2.5 oz	65 g	
Ground coffee	0.16 oz	5 g	
Rum	3.5 oz	90 g	
Total weight:	8.5 oz (7–8 fl oz)	225 g (185–210 mL)	

VARIATIONS

COFFEE SYRUP

For large-quantity measurements, see page 719.

Ingredients	U.S.	Metric
Coffee liqueur	1.67 oz	40 g
Omit the rum in the basic recipe and add the coffee-flavored liqueur.		

RUM SYRUP

For large-quantity measurements, see page 719.

Ingredients	U.S.	Metric
Water	3 oz	75 g
Sugar	2.5 oz	65 g
Dark rum	0.5 oz	15 g
Omit the coffee in the basic recipe and adjust the ingredient quantities as listed above.		

BASIC FOAMS: WHIPPED CREAM AND MERINGUES

THE PREPARATIONS discussed in this section are among the most important and useful in the bakeshop or pastry shop. They find their way into a great variety of desserts—as fillings or components of cakes and pastries and as ingredients of such desserts as Bavarian creams and mousses. Knowing how to successfully whip cream and meringues are essential skills of the pastry chef.

Whipped Cream

Whipped cream is not only one of the most useful dessert toppings and fillings but also an ingredient in many desserts. Cream with a fat content of 30% or more, but preferably over 35%, can be whipped into a foam. One quart cream produces 2 to 2½ quarts whipped cream.

In the classical pastry shop, sweetened, vanilla-flavored whipped cream is known as *crème chantilly* (pronounced krem shawn tee YEE). A recipe is included on page 257. When making all whipped cream preparations, observe the following guidelines:

Guidelines for Whipping Cream

1. Cream for whipping should be at least 1 day old. Very fresh cream doesn't whip well.
2. Chill the cream and all equipment thoroughly, especially in hot weather. Cream that is too warm is hard to whip and curdles easily.
3. Use a wire whip for beating by hand. For machine whipping, use the whip attachment and run the machine at medium speed.
4. If the cream is to be sweetened, use extra-fine granulated sugar or, for best stability, sifted confectioners' sugar.



Overwhipped cream.

5. The classic method of sweetening whipped cream is to add the sugar toward the end of the whipping procedure, when the cream begins to form soft peaks. However, the sugar can also be added at the beginning of the whipping process. This lengthens whipping time considerably, so is best done only in a mixer, not when whipping by hand.
6. Do not overwhip. Stop beating when the cream forms peaks that hold their shape. If the cream is whipped longer, it first becomes grainy in appearance (see illustration) and then separates into butter and whey.
7. Slightly underbeat cream that is to be folded into other ingredients, because the action of folding whips it more and may overbeat it.
8. Fold in flavoring ingredients last, after the cream is whipped.
9. If the cream is not to be used immediately, store it, covered, in the refrigerator.

PROCEDURE: Stabilizing Whipped Cream

During warm weather, it is sometimes helpful to add gelatin or a commercial stabilizer to whipped cream so it will hold up. This is especially true of whipped-cream-topped items displayed on a buffet.

1. To use a commercial stabilizer, sift it with the sugar used to sweeten the cream. Use about $\frac{1}{4}$ ounce stabilizer per quart of cream (7 g/L). Add the sugar as in the basic procedure.

2. To use gelatin, use the following proportions:

Heavy cream	1 qt	1 L
Gelatin	0.33 oz	10 g
Cold water	2 oz	60 mL

Soften the gelatin in the cold water, then warm it until the gelatin dissolves. Whip the cream until it just starts to thicken, then gradually but quickly and steadily whip the cream into the gelatin. Continue to whip the cream to the desired consistency.

PROCEDURE: Making Chocolate Whipped Cream

1. Use the following proportions:

Heavy cream	1 qt	1 L
Semisweet chocolate	12 oz	375 g

2. Whip the cream as in the basic procedure, but underwhip it slightly.
3. Grate or chop the chocolate into small pieces and place it in a saucepan. Set over warm water and stir until the chocolate is melted. Let it cool to lukewarm. It must not cool too much or it will solidify and form small lumps or flecks before it can be mixed evenly with the cream (see illustration).
4. Stir about one-fourth of the whipped cream into the chocolate until it is well mixed (a).



A

Fold the chocolate mixture into the rest of the cream carefully but thoroughly. Be careful not to overwhip the cream (b).



B



Improperly made chocolate whipped cream; the chocolate was cooled too much before mixing.

CRÈME CHANTILLY

For large-quantity measurements, see page 719.

Ingredients	U.S.	Metric	Cream at 100% %	PROCEDURE
Heavy cream or crème fraîche (see Note 1)	8 oz	250 g	100	1. Make sure the cream and all equipment and utensils are chilled.
Confectioners' sugar	1.25 oz	40 g	16	2. Whip the cream by hand or machine until it forms soft peaks.
Vanilla extract (see Note 2)	½ tsp	2 mL	2	3. Add the sugar and vanilla. Continue to whip until the cream forms stiff peaks but is still smooth. Do not overwhip or the cream will become grainy and then separate to form particles of butter.
Total weight:	9 oz	292 g	118%	ALTERNATIVE PROCEDURE Combine all ingredients in the chilled bowl of a mixer fitted with the whip attachment. Whip at medium speed to the desired degree of stiffness.
NOTE 1: For best results, use crème fraîche; if it is not available, use heavy cream with a fat content of 40% or more. Crème chantilly can be made with cream having a fat content as low as 30%, but it is more likely to separate slightly or “weep” on standing. NOTE 2: For best-quality crème chantilly, flavor with seeds from a vanilla bean (p. 261) instead of vanilla extract.				

Meringue

Meringues are whipped egg whites sweetened with sugar. They are frequently used for pie toppings and cake icings. They are also used to give volume and lightness to buttercream icings and to such preparations as mousses and dessert soufflés.

Another excellent use for meringues is to bake them in a slow oven until crisp. In this form, they can be used as cake layers or pastry shells to make light, elegant desserts. To add flavor to meringues, chopped nuts may be folded into them before forming and baking. Pastries and cakes incorporating crisp meringues are discussed in Chapters 14 and 17.

Basic Meringue Types

Meringues may be whipped to various degrees of stiffness as long as they are not overbeaten until they are too stiff and dry. For most purposes, they are beaten until they form stiff, or nearly stiff, moist peaks.

Common meringue, also called *French meringue*, is made from egg whites at room temperature, beaten with sugar. It is the easiest to make, and it is reasonably stable due to the high percentage of sugar.

Swiss meringue is made from egg whites and sugar that are warmed over a hot-water bath while they are beaten. This warming gives the meringue better volume and stability.

Italian meringue is made by beating a hot sugar syrup into the egg whites. This meringue is the most stable of the three because the egg whites are cooked by the heat of the syrup. When flavored with vanilla, it is also known as *boiled icing*. It is also used in meringue-type buttercream icings.

The amount of sugar used in meringues may vary. **Soft meringues**, those used for pie toppings, may be made with as little as 1 pound of sugar per pound of egg whites. **Hard meringues**, those baked until crisp, are made with up to twice as much sugar as egg whites.

Unless made with pasteurized egg whites, uncooked meringue should not be considered safe to eat, because of the danger of salmonella (see the *Meringues and Food Safety* sidebar). However, such meringues may be used as components of products that will be cooked, such as cake batters and baked soufflés.

MERINGUES AND FOOD SAFETY

The danger of salmonella poisoning is well known (see pp. 76 and 738). For this reason, pasteurized eggs products must be used in all preparations in which the eggs are not cooked before being served.

Because eggs coagulate at a fairly low temperature, they must be pasteurized using low heat. In order for low heat to be effective at killing bacteria, they must be held at this temperature for a long time—for example, 130°F (54°C) for 45 minutes.

Common meringue is not heated during production. Therefore, common meringues should be made with pasteurized egg whites if they are to be eaten without further cooking.

Swiss meringue is warmed during production, but it may not be warmed enough to be safe. Like common meringue, it should be made with pasteurized eggs if it is to be eaten without further cooking.

Italian meringue, on the other hand, is thoroughly cooked by hot syrup, so it may be eaten without further cooking, as long as all food safety procedures are followed.

Guidelines for Making Meringues

- 1. **Fats prevent whites from foaming properly.** This is very important. Make sure all equipment is free of every trace of fat or grease, and that the egg whites have no trace of yolk in them.
- 2. **Egg whites foam better if they are at room temperature than if they are cold.** Remove them from the cooler 1 hour before whipping.
- 3. **Do not overbeat.** Beaten egg whites should look moist and shiny. Overbeaten meringues look dry and curdled; they are difficult to fold into other ingredients and have lost much of their ability to leaven cakes and soufflés.
- 4. **Sugar makes egg white foams more stable.** Meringues are thicker and heavier than unsweetened egg white foams, and they are more stable. However, egg whites can hold only a limited amount of sugar without sacrificing volume. For this reason, when making common meringues, many cooks prefer to whip the egg whites with no more than an equal weight of sugar. Additional sugar can be folded in after the meringue is whipped.
- 5. **Mild acids help foaming.** A small amount of cream of tartar or lemon juice is sometimes added to egg whites for whipping in order to give them more volume and stability. This is especially helpful when the whipped whites are folded into other ingredients to provide lightness or leavening, as in the case of angel food cakes. Use about 2 teaspoons cream of tartar per pound of egg whites (15 g/kg).

COMMON MERINGUE (FRENCH MERINGUE)

Ingredients	U.S.	Metric	Egg whites at 100% %
Pasteurized egg whites (see Note)	8 oz	250 g	100
Fine granulated sugar	8 oz	250 g	100
Fine granulated sugar or sifted confectioners' sugar (see Note)	8 oz	250 g	100
Total weight:	1 lb 8 oz	750 g	300%

NOTE: If the meringue is to be fully cooked at a later stage of preparation, regular unpasteurized egg whites may be used.
For soft meringue pie toppings, the second quantity of sugar may be omitted.

VARIATION

CHOCOLATE MERINGUE

Ingredients	U.S.	Metric	%
Cocoa powder	4 oz	125 g	25

Use the confectioners' sugar in step 3 of the basic formula. Sift the sugar twice with the cocoa powder.

PROCEDURE

- 1. With the whip attachment, beat the egg whites first at medium speed, then at high speed, until they form soft peaks.
- 2. Add the first quantity of sugar, a little at a time, with the machine running. Whip until stiff.
- 3. Stop the machine. Fold in the remaining sugar with a spatula.

SWISS MERINGUE

Ingredients	U.S.	Metric	Egg whites at 100% %
Pasteurized egg whites (see Note)	8 oz	250 g	100
Fine granulated sugar or half granulated and half confectioners' sugar	1 lb	500 g	200
Total weight:	1 lb 8 oz	750 g	300%
NOTE: If the meringue is to be fully cooked at a later stage of preparation, regular unpasteurized egg whites may be used.			

PROCEDURE

1. Place the egg whites and sugar in a stainless steel bowl or in the top of a double boiler. Beat with a wire whip over hot water until the mixture is warm (about 120°F/50°C).
2. Transfer the mixture to the bowl of a mixing machine. Whip it at high speed until stiff peaks form and the meringue is completely cool.

ITALIAN MERINGUE

Yield: about 2 qt (2 L)

Ingredients	U.S.	Metric	Egg whites at 100% %
Sugar	1 lb	500 g	200
Water	4 oz	125 mL	50
Egg whites	8 oz	250 g	100

PROCEDURE

1. Heat the sugar and water in a saucepan until the sugar dissolves and the mixture boils. Boil until a candy thermometer placed in the syrup registers 243°F (117°C).
2. While the syrup is cooking, beat the egg whites in a mixing machine until they form soft peaks.
3. With the machine running, very slowly beat in the hot syrup (a).
4. Continue beating until the meringue is cool and forms firm peaks (b).



CUSTARD SAUCES

LIKE WHIPPED CREAM and meringue, discussed in the previous section, the two basic preparations explained in this section, *crème anglaise* and pastry cream (or *crème pâtissière*), are fundamental products used not only on their own but as components or ingredients in a wide variety of pastries and desserts. Learn these techniques well, because you will use them over and over again.

Crème Anglaise

Crème anglaise (pronounced krem awn GLEZZ), also known as *vanilla custard sauce*, is a stirred custard. It consists of milk, sugar, and egg yolks stirred over very low heat until slightly thickened, then flavored with vanilla.

Crème anglaise is used not only as a dessert sauce but also as a component of many other preparations. Such preparations discussed in this book include Bavarian creams (pp. 525–532), ice creams (pp. 549–554), and *crèmeux* (p. 514).

The recipe that follows gives the method for preparing custard sauce. Special care is necessary in preparing this sauce because the eggs curdle easily if overcooked. The following guidelines will help you succeed.

Guidelines for Preparing Crème Anglaise

1. Use clean, sanitized equipment and follow strict sanitation procedures. Egg mixtures are good breeding grounds for bacteria that cause food poisoning. Observe the sanitation guidelines discussed for pastry cream, page 262.
2. Before beginning the cooking process, set a stainless steel bowl in a larger pan of ice water. Place a strainer over the bowl. This setup will enable you to cool the custard the instant it is cooked, to avoid any danger of overcooking the eggs.
3. When combining the egg yolks and sugar, whip the mixture as soon as the sugar is added. Letting sugar and egg yolks stand together without mixing creates lumps that cannot be beaten out (see photo). This is because the sugar absorbs water from the yolk, leaving lumps of dehydrated yolk. Using a stainless steel bowl for this step makes the cooking and stirring easier in step 5.
4. Heat the milk to scalding (just below simmering) before combining with the egg yolks. This makes the final cooking much shorter. To avoid scorching the milk, you can set the pan of milk in a pan of boiling water. Although this takes longer than using direct heat, the pan can be left unattended for a few minutes while you perform other tasks.
5. Slowly beat the hot milk into the beaten eggs and sugar. This raises the temperature of the eggs gradually and helps prevent curdling.
6. Set the bowl containing the egg mixture in a pan of simmering water and stir constantly to prevent curdling.
7. To test for doneness, two methods are possible. Keep in mind that this is a very light sauce, so don't expect a lot of thickening.
 - Check the temperature with a thermometer. When it reaches 180°F (82°C), the sauce is cooked. Do not let the temperature go higher, or the sauce is likely to curdle (see photo). (In fact, it is possible to cook it as high as 185°F (85°C) without curdling, but it is safer to stop at a slightly lower temperature.)
 - When the mixture lightly coats the back of a spoon, instead of running off it like milk, the sauce is cooked.
8. Immediately pour the sauce through the strainer into the bowl set in ice water to cool the sauce quickly. Stir occasionally to cool it evenly.
9. If the sauce accidentally curdles, it is sometimes possible to save it. Immediately stir in 1 to 2 ounces (30 to 60 mL) cold milk, transfer the sauce to a blender, and blend at high speed.



Combining sugar and egg yolks without immediately beating them creates hard lumps.



Crème anglaise coating the back of a spoon.

Double Boiler or Direct Heat?

There are three possible ways to cook crème anglaise: in a double boiler above simmering water, in a bowl set directly into simmering water, or in a bowl over direct heat. Cooking in a double boiler above simmering water is the best way to avoid overcooking, but this method takes a long time. The guidelines above advocate cooking the crème anglaise in a bowl set in simmering water. This method is reasonably quick and still offers some protection against overcooking. Nevertheless, the mixture must be watched closely to avoid getting it too hot.

Some experienced bakers prefer to cook the custard over direct heat rather than in a double boiler, feeling that the stronger heat cooks the sauce faster, and their experience enables them to avoid overcooking. It is best to use one of the hot-water methods until you have some experience cooking this sauce.



Crème anglaise that has curdled because it was overheated.

CRÈME ANGLAISE

Yield: about 2½ pt (1.25 L)

Ingredients	U.S.	Metric	Milk at 100%	PROCEDURE
			%	
Egg yolks	8 oz (12 yolks)	250 g (12 yolks)	25	1. Review the guidelines for preparing crème anglaise preceding this recipe. 2. Combine the egg yolks and sugar in a stainless steel bowl. Whip until thick and light. 3. Scald the milk in a boiling-water bath or over direct heat. 4. Very gradually pour the hot milk into the egg yolk mixture while stirring constantly with the whip. 5. Set the bowl in a pan of simmering water. Heat it, stirring constantly, until it thickens enough to coat the back of a spoon or until it reaches 180°F (82°C). 6. Immediately remove the bowl from the heat and set it in a pan of cold water to stop the cooking. Stir in the vanilla. Stir the sauce occasionally as it cools.
Sugar	8 oz	250 g	25	
Milk (see first variation below)	2 lb (1 qt)	1 L	100	
Vanilla extract	0.5 oz (1 tbsp)	15 mL	1.5	
VARIATIONS				
For a richer crème anglaise, substitute heavy cream for up to half the milk. To flavor with a vanilla bean instead of vanilla extract, first split the bean in half lengthwise (a). Scrape the pulp from inside the bean with a paring knife, as shown in the illustration (b). Add the pulp and the split bean to the milk before heating it in step 3. Vanilla bean technique.				



CHOCOLATE CRÈME ANGLAISE
Melt 6 oz (180 g/18%) semisweet chocolate. Stir it into the crème anglaise while it is still warm (not hot).
COFFEE CRÈME ANGLAISE
Add 2 tbsp (8 g) instant coffee to the warm custard sauce.

Pastry Cream

Although it requires more ingredients and steps, pastry cream is easier to make than *crème anglaise* because it is less likely to curdle. *Pastry cream*, also called *crème pâtissière*, contains a starch-thickening agent that stabilizes the eggs. It can actually be boiled without curdling. In fact, it *must* be brought to a boil or the starch will not cook completely and the cream will have a raw, starchy taste. It may be necessary to boil the cream for up to 2 minutes to eliminate the taste of the starch.

Strict observance of all sanitation rules is essential when preparing pastry cream because of the danger of bacterial contamination. Use clean, sanitized equipment. Do not put your fingers in the cream; do not taste except with a clean spoon. Chill the finished cream rapidly in shallow pans. Keep the cream and all cream-filled products refrigerated at all times.

The procedure for preparing pastry cream is given in the formula that follows. Note the basic steps are similar to those for *crème anglaise*. In this case, however, a starch is mixed with the eggs and half the sugar to make a smooth paste. (In some formulas with lower egg content, it is necessary to add a little cold milk to provide enough liquid to make a paste.) Meanwhile, the milk is scalded with the other half of the sugar. The egg mixture is then tempered with some of the hot milk and then returned to the kettle and brought to a boil. Some chefs prefer to add the cold paste gradually to the hot milk, but the tempering procedure described here seems to protect better against lumping.

Pastry Cream Variations

Pastry cream has many applications in the bakeshop, so it is important to master the basic technique. Pastry cream and its variations are used as fillings for cakes and pastries, as fillings for cream pies (p. 299), and as puddings (p. 512). With additional liquid, it can also be used as a custard sauce.

Cornstarch should be used as the thickening agent when the cream is to be used as a pie filling so the cut slices hold their shape. For other uses, either cornstarch or flour may be used. Just remember that twice as much flour is needed to provide the same thickening power as cornstarch.

Other variations are possible, as you will see in the recipes. Sometimes whipped cream is folded into pastry cream to lighten it and make a creamier product called *pastry cream mousseline*. Adding a meringue to pastry cream and stabilizing it with gelatin makes a cream called *crème Chiboust* (pronounced shee BOO; p. 264).

PASTRY CREAM (CRÈME PÂTISSIÈRE)

Yield: about 1½ qt (1.12 L)

Ingredients	U.S.	Metric	Milk at 100%
			%
Milk	2 lb (1 qt)	1 L	100
Sugar	4 oz	125 g	12.5
Egg yolks	3 oz	90 g	9
Whole eggs	4 oz	125 g	12.5
Cornstarch	2.5 oz	75 g	8
Sugar	4 oz	125 g	12.5
Butter	2 oz	60 g	6
Vanilla extract	0.5 oz (1 tbsp)	15 mL	1.5

PROCEDURE

1. In a heavy saucepan or kettle, dissolve the sugar in the milk and bring just to a boil.
2. With a whip, beat the egg yolks and whole eggs in a stainless steel bowl.
3. Sift the cornstarch and sugar into the eggs. Beat with the whip until perfectly smooth (a).
4. Temper the egg mixture by slowly beating in the hot milk in a thin stream (b).
5. Return the mixture to the heat and bring to a boil, stirring constantly.
6. When the mixture comes to a boil, continue to stir constantly and boil for up to 2 minutes, until the cream has no raw, starchy taste (c). (As always when tasting, use a clean tasting spoon, and do not reuse the spoon.)
7. Remove from the heat. Stir in the butter and vanilla. Mix until the butter is melted and completely blended in (d).
8. Pour out into a clean, sanitized hotel pan or other shallow pan. Cover with plastic film placed directly in contact with the surface of the cream to prevent a crust from forming (e). Cool and chill as quickly as possible.
9. For filling pastries such as éclairs and napoleons, whip the chilled pastry cream until smooth before using.



VARIATIONS

DELUXE PASTRY CREAM

Omit the whole eggs in the basic recipe and use 30% egg yolks (10 oz/ 300 g).

PASTRY CREAM MOUSSELINE

For a lighter pastry cream filling, fold whipped heavy cream into the chilled pastry cream. Quantities may be varied to taste. In general, for every 1 qt (1 L) pastry cream, use ½–1 cup (1.25–2.5 dL) heavy cream.

CHOCOLATE PASTRY CREAM

For each 12 oz pastry cream, stir in 4 oz melted semisweet or bittersweet chocolate while the pastry cream is still warm (100 g chocolate for each 300 g pastry cream).

PRALINE PASTRY CREAM

For each 12 oz pastry cream, stir in 4 oz softened praline paste while the pastry cream is still warm (100 g praline paste for each 300 g pastry cream).

COFFEE PASTRY CREAM

Add 2 tbsp (8 g) instant coffee powder or coffee compound (flavoring) to the milk in step 1.

CHIBOUST CREAM

Yield: about 3 lb (1500 g)

Ingredients	U.S.	Metric	Milk at 100% %
Milk	1 pt	500 g	100
Vanilla extract	½ tsp	2 g	0.4
Sugar	1 oz	30 g	6
Egg yolks	5.33 oz	160 g	33
Sugar	1 oz	30 g	6
Cornstarch	1.33 oz	40 g	8
Italian meringue			
Sugar	13 oz	400 g	80
Water	4 oz	120 g	24
Egg whites	8 oz	240 g	48
Gelatin	0.4 oz	12 g	2.5

PROCEDURE

1. Combine the milk, vanilla, and sugar and bring to a boil, stirring to dissolve the sugar.
2. Whip the egg yolks with the second quantity of sugar. Stir in the cornstarch.
3. Temper the egg mixture with half the hot milk. Pour this mixture back into the pan with the remaining milk. Return to a boil and boil for 1 minute, until thickened.
4. Turn out into a bowl and cover the surface with plastic film to prevent a skin from forming. Keep warm while making the Italian meringue.
5. Boil the sugar and water until the temperature of the syrup reaches 258°F (120°C). Whip the egg whites to firm peaks, then slowly pour the syrup into the whites, whipping constantly. Continue whipping until cool.
6. Soak the gelatin in cold water (see pp. 80–82) and add to the hot pastry cream (a).
7. Mix until the gelatin is dissolved (b). (If the pastry cream is not warm enough, rewarm it slightly.)
8. Add one-third of the meringue to the cream and mix quickly to lighten the mixture (c).
9. Gently fold in the remaining meringue until evenly mixed (d, e).



VARIATIONS

CHOCOLATE CHIBOUST CREAM

Ingredients	U.S.	Metric	%
Rum	1 oz	30 g	6
Bittersweet chocolate	3.5 oz	100 g	20

After step 3 in the basic recipe, stir in the rum and chopped bittersweet chocolate until the chocolate is melted and well blended.

COFFEE CHIBOUST CREAM

Ingredients	U.S.	Metric	%
Coffee liqueur	1 oz	30 g	6
Liquid coffee extract	1.67 oz	50 g	10

After step 3 in the basic recipe, stir in the coffee liqueur and liquid coffee extract.

PRALINE CHIBOUST CREAM

Ingredients	U.S.	Metric	%
Rum	1 oz	30 g	6
Praline paste	2.5 oz	75 g	15

After step 3 in the basic recipe, stir in the rum and praline paste.

CHIBOUST CREAM WITH RASPBERRIES

Yield: about 3 lb (1500 g)

Ingredients	U.S.	Metric	Milk at 100% %
Milk	1 pt	500 g	100
Sugar	1.33 oz	40 g	8
Egg yolks	5.33 oz	160 g	33
Sugar	1.33 oz	40 g	8
Cornstarch	1.67 oz	50 g	10
Italian meringue			
Sugar	13 oz	400 g	80
Water	4 oz	120 g	24
Egg whites	8 oz	240 g	48
Raspberry purée (unsweetened)	6 oz	180 g	36
Gelatin	0.5 oz	16 g	3
NOTE: The quantities of sugar, starch, and gelatin are greater in this recipe than in the basic Chiboust because the addition of raspberry purée requires additional sweetening and thickening.			
VARIATION			
CHIBOUST CREAM FLAVORED WITH ALCOHOL			
Ingredients	U.S.	Metric	%
Lemon zest, grated	½ tsp	2 g	0.4
Liqueur or other alcohol	1.67 oz	50 g	10
Omit the raspberry purée from the basic recipe. Add grated lemon zest to the egg yolk mixture in step 2, and stir rum, kirsch, brandy, or orange liqueur into the warm pastry cream when adding the gelatin in step 7.			

PROCEDURE

1. Combine the milk and sugar and bring to a boil, stirring to dissolve the sugar.
2. Whip the egg yolks with the second quantity of sugar. Stir in the cornstarch.
3. Temper the egg mixture with half the hot milk. Pour this mixture back into the pan with the remaining milk. Return to a boil and boil for 1 minute, until thickened.
4. Turn out into a bowl and cover the surface with plastic film to prevent a skin from forming. Keep warm while making the Italian meringue.
5. Boil the sugar and water until the temperature of the syrup reaches 258°F (120°C). Whip the egg whites to firm peaks, then slowly pour the syrup into the whites, whipping constantly. Continue whipping until cool.
6. Fold the raspberry purée into the meringue.
7. Soak the gelatin in cold water (see pp. 80–82). Stir the gelatin into the warm pastry cream until dissolved and evenly mixed. (If the pastry cream is not warm enough, rewarm it slightly.)
8. Add one-third of the meringue to the cream and mix quickly to lighten the mixture.
9. Gently fold this mixture into the remaining meringue until evenly mixed.

LIME OR LEMON CHIBOUST

Yield: about 1 lb 12 oz (750 g)

Ingredients	U.S.	Metric	Juice at 100%	PROCEDURE
			%	
Lime or lemon juice	10 oz	250 g	100	- Heat the juice, zest, and sugar to a simmer. - Whip the egg yolks with the second quantity of sugar and the cornstarch. As when making pastry cream, gradually stir the juice into the egg yolk mixture, then return to the saucepan and bring to a boil. Remove from the heat. - Soak the gelatin in cold water (see pp. 80–82). Add the gelatin to the egg yolk mixture and stir until dissolved. Cool. - Fold in the Italian meringue.
Lime or lemon zest, grated	0.16 oz (2 tsp)	4 g	1.5	
Sugar	1 oz	25 g	10	
Egg yolks	3 oz	80 g	32	
Sugar	1 oz	25 g	10	
Cornstarch	1 oz	25 g	10	
Gelatin	0.25 oz	6 g	2.5	
Italian meringue (p. 259)	1 lb	400 g	160	

VANILLA CRÈME DIPLOMAT

For large-quantity measurements, see page 719.

Ingredients	U.S.	Metric	Milk at 100%	PROCEDURE
			%	
Milk	8 oz	250 g	100	- Heat the milk and vanilla bean to just below the boiling point. - Whip the egg yolks and sugar until pale. Add the flour and cornstarch and mix well. - Temper the egg mixture by gradually stirring in about half the hot milk. Pour this mixture back into the saucepan with the remaining hot milk. Return to a boil, whipping constantly. - Remove from the heat and stir in the liqueur. - Cover with plastic film and cool the pastry cream thoroughly, then chill. - Once the cream is cold, beat well until perfectly smooth. - Fold in the crème chantilly.
Vanilla bean, split (see <i>Note</i>)	½	½		
Egg yolks	1.33 oz (2 yolks)	40 g (2 yolks)	16	
Fine granulated sugar	1 oz	30 g	12	
Cake flour	0.67 oz	20 g	8	
Cornstarch	0.55 oz	15 g	6	
Orange liqueur, such as Grand Marnier	1 oz	30 g	12	
Crème Chantilly (p. 257)	6.55 oz	200 g	80	
Total weight:	1 lb 3 oz	585 g	234%	
NOTE: If vanilla beans are not available, flavor the finished cream with vanilla extract to taste.				

VARIATIONS

Crème diplomat is often stabilized with gelatin, using the same procedure as for Chiboust Cream (p. 264). For each 8 oz (250 g) milk, use ¼ oz (4 g, or 2 leaves) gelatin.

CHOCOLATE CRÈME DIPLOMAT

For large-quantity measurements, see page 719.

Ingredients	U.S.	Metric	%
Bittersweet chocolate, finely chopped	2.25 oz	70 g	28
Omit the orange liqueur from the basic recipe. Stir dark chocolate into the hot pastry cream in step 4. Stir until the chocolate is completely melted and well mixed.			
Crème diplomat may also be flavored with coffee extract, praline paste, or chestnut purée.			

KEY POINTS TO REVIEW

- What guidelines should be followed when whipping cream?
- What are the three basic meringues, and how are they made?
- What are the guidelines for whipping egg whites to make meringues?
- What are the guidelines for making crème anglaise?
- What is pastry cream, and how is it made?

DESSERT SAUCES AND CHOCOLATE CREAMS

IN ADDITION TO the recipes presented in this section, the following types of dessert sauces are discussed elsewhere in this or other chapters or can be made easily without recipes.

Custard Sauces. Vanilla custard sauce, or Crème Anglaise, is presented earlier in this chapter (p. 261). It is one of the most basic preparations in dessert cookery. Chocolate or other flavors may be added to create variations.

Pastry Cream (p. 263) can be thinned with heavy cream or milk and, if necessary, more sugar, to make another type of custard sauce.

Chocolate Sauce. In addition to the three chocolate sauce recipes in this section, chocolate sauce may be made in several other ways. For example:

- Flavor Crème Anglaise with chocolate (see p. 261).
- Prepare Chocolate Ganache I (p. 272) through step 3 in the procedure. Thin to desired consistency with cream, milk, or simple syrup.

Lemon Sauce. Prepare Lemon Filling (p. 300), but use only 1½ ounces (45 g) cornstarch, or use 1 ounce (30 g) waxy maize.

Fruit Sauces. Some of the best fruit sauces are also the simplest. These are of two types:

- Purées of fresh or cooked fruits, sweetened with sugar. Such a purée is often called a *coulis* (pronounced koo LEE).
- Heated, strained fruit jams and preserves, diluted with simple syrup, water, or liquor.

For greater economy, fruit sauces can be stretched by diluting them with water, adding more sugar, and thickening them with starch. Other sauces, such as those made of blueberries or pineapple, may have a more desirable texture when thickened slightly with starch. These may also be flavored with spices and/or lemon juice.

Gelées. A *gelée* is any liquid thickened with gelatin. Although gelatin is usually used to set a product, so that it is firm, it is also possible to use a small amount of gelatin to thicken a liquid just to the consistency of a sauce. In the pastry department, almost any kind of sweetened juice or purée can be used, as well as wines and other alcoholic beverages. Before preparing gelées, review the guidelines for using gelatin on pages 80–82.

Sabayon. A *sabayon* is a foamy sauce made by whipping egg yolks with a liquid, often wine or liqueur. Two recipes are included in this section, one made without wine and a more traditional one made with wine. The Italian version of this sauce, *zabaglione*, is made with Marsala wine.

COULIS

The word *coulis* has had many meanings in the past century or two. Originally, the term referred to juices from cooked meats. By Escoffier's time, at the beginning of the twentieth century, a coulis was a type of thick soup made from puréed meat, game, or fish. More recently, as puréed meat soups were prepared more rarely, the term was used primarily for thick puréed shellfish soups.

The concept of a thick liquid made of puréed ingredients is preserved in the most common usage of the word *coulis* today. In modern cooking, a coulis is a thick sauce made of puréed fruits or vegetables, such as a raspberry coulis or a tomato coulis.

Caramel Sauces

The first section of this chapter explains the stages of sugar cooking, the last stage of which is caramel. In other words, caramel is simply sugar cooked until it is golden. The simplest caramel sauce is merely caramelized sugar diluted with water to sauce consistency. The addition of heavy cream makes a creamy caramel sauce, as shown by the recipe in this section.

Two methods are possible for caramelizing sugar. In the *wet method*, the sugar is first combined with water and boiled to dissolve it, making a syrup. Glucose or an acid such as

cream of tartar or lemon juice may be added to help prevent crystallization. The sugar caramelizes after the water has boiled off. The recipe for caramel sauce in this section is prepared using the wet method. Follow the guidelines for preparing syrups given at the beginning of this chapter.

The second method is called the *dry method*. In the dry method, the sugar is melted in a dry pan without first making it into a syrup. Often, an acid in the form of a small amount of lemon juice is added to the sugar and rubbed in so the crystals are slightly moist. Place the sugar in a heavy saucepan or sauté pan. Set it over moderately high heat. When the sugar begins to melt, stir constantly so it caramelizes evenly. Many chefs prefer to add the sugar to the pan a little at a time. More sugar is added only when the previous addition is fully melted. Butter caramel, included in this section, is prepared using the dry method.

Remember that sugar, when turning to caramel, is very hot, well over 300°F (150°C). Water or other liquids added to hot caramel can spatter dangerously. To minimize spattering, allow the caramel to cool slightly. To stop the cooking quickly and prevent the sugar from becoming too brown, dip the bottom of the pan in cold water for just an instant. Alternatively, heat the liquid first, then add it carefully to the caramelized sugar.

A more complex type of caramel is butter caramel. The recipe included in this section is rarely used by itself (except to make hard toffee candies). Rather, it is a component of other preparations, such as caramelized fruits. See, for example, the recipes for Caramelized Apricots (p. 590), Figs in Port Wine (p. 587), and Spiced Pineapple (p. 589) in Chapter 21. Because butter caramel is somewhat difficult to make, it is included here to give you an opportunity to study it by itself and master it before trying one of the recipes mentioned. It is necessary to follow the instructions in the recipe procedure carefully in order to make the butter and caramelized sugar form a uniform, emulsified mixture.

Chocolate Creams

Two basic chocolate preparations are included in this section, chocolate ganache and chocolate mousse. Each has many variations, depending on its intended use, and so you will find additional formulas in other chapters in this book, in connection with specific cakes, pastries, and confections.

Ganache

Ganache (pronounced gah NAHSH) is a rich chocolate cream with many uses, including as a glaze, icing, or filling for cakes and pastries, and as a base for confections. It is one of the fundamental pastry preparations.

In its most basic form, ganache is a smooth mixture of heavy cream and chocolate couverture. The exact proportions of cream and chocolate depend on its intended use. Equal parts chocolate and cream make a soft ganache suitable for using as a glaze, while two parts chocolate to one part cream make a firm ganache that can be used for truffles and other confections.

The hardness of the ganache also depends on the amount of cocoa solids and cocoa butter in the chocolate. Extra bittersweet chocolate makes a firmer ganache than dark chocolates containing more sugar and less cocoa, while milk chocolate and white couverture make even softer ganaches. You may have to adjust the ratio of chocolate and cream in your formulas to take into account these differences.

In addition to chocolate and cream, other ingredients may be added to ganache to adjust the flavor and texture. Corn syrup or glucose syrup are often added to increase the smoothness of the ganache. Flavorings such as fruit juices and alcohols create variety. Butter can also be added, especially when fruit juices are used, in order to improve the texture and body of the ganache.

The formula for Passion Fruit Ganache (p. 273) in this section contains passion fruit juice as a flavoring. You might like to experiment with this recipe, substituting other fruit purées and flavorings for the passion fruit. In Chapters 17 and 19 you'll find formulas for ganache intended specifically for icing cakes, and Chapter 23 explains how ganache is used to make truffles.

Ganache can also be whipped to create a mousseliike texture for filling. Whipped ganache, however, is somewhat limited in its usefulness. It must be used at once, because it quickly becomes firm and difficult to spread once it has stood for a short time.

Mousse

Chocolate mousses are chocolate creams that are given a light texture by the addition of egg foams or whipped cream or both. The two chocolate mousse recipes included here are well suited for fillings and pastries. They can also be served by themselves as desserts. Other mousses are included in Chapter 19.

The first of the two formulas is typical of recipes found in many classic cookbooks. But because of food safety concerns, many these classic recipes must be modified to specify the use of pasteurized eggs. If pasteurized eggs are not available, use a different formula, such as the second chocolate mousse in this section, in which the egg products are heated to a safe temperature in the production process.

KEY POINTS TO REVIEW

- What is a fruit coulis?
- What are the two methods for caramelizing sugar?
- How is a basic caramel sauce made?
- What is ganache, and how is it made?

CHOCOLATE SAUCE I

Yield: 1 qt (1 L)

Ingredients	U.S.	Metric	PROCEDURE
Semisweet chocolate	1 lb	500 g	1. Chop the chocolate into small pieces.
Water	1 pt	500 mL	2. Place the chocolate and water in a saucepan. Heat over low heat or over hot water until the chocolate is melted. Bring to a simmer and simmer 2 minutes. Stir while cooking to make a smooth mixture. The mixture should thicken slightly as it simmers.
Butter	6 oz	190 g	3. Remove from the heat and add the butter. Stir until the butter is melted and mixed in.
			4. Set the pan in a bowl of ice water and stir the sauce until it is cool.

CHOCOLATE SAUCE II

Yield: 1 lb 8 oz (600 g)

Ingredients	U.S.	Metric	PROCEDURE
Water	12 oz	300 g	1. Combine the water, sugar, and chocolate. Bring to a boil, stirring to mix the chocolate with the syrup.
Sugar	7 oz	175 g	2. Mix the cornstarch and cocoa powder to a thin paste with a little water.
Bittersweet chocolate couverture	3 oz	75 g	3. Add this paste to the chocolate syrup mixture and return to a boil. Strain and cool.
Cornstarch	1 oz	25 g	
Cocoa powder	2 oz	50 g	
Water, cold	as needed	as needed	

CHOCOLATE FUDGE SAUCE

Yield: 1 qt (1 L)

Ingredients	U.S.	Metric	PROCEDURE
Water	1 pt	0.5 mL	1. Combine the water, sugar, and syrup and bring to a boil, stirring to dissolve the sugar.
Sugar	2 lb	1 kg	2. Boil 1 minute and remove from the heat. Let cool a few minutes.
Corn syrup	6 oz	375 g	3. Melt the chocolate and butter together over low heat. Stir until smooth.
Unsweetened chocolate	8 oz	250 g	4. Very slowly stir the hot syrup into the chocolate.
Butter	2 oz	62 g	5. Place over moderate heat and bring to a boil. Boil for 2 minutes.
			6. Remove from the heat and cool.

FRUIT COULIS

Yield: 10–11 oz (300 g)

Ingredients	U.S.	Metric	PROCEDURE
Berries or other soft fruit	7 oz	200 g	1. Purée the fruit in a blender or food processor and pass through a fine sieve or chinois.
Fine granulated sugar	3.5 oz	100 g	2. Warm the fruit purée in a saucepan.
Water	1.33 oz (8 tsp)	40 g	3. Separately, make a syrup of the sugar and water and boil to 220°F (105°C). Mix into the fruit purée.
Lemon juice	0.5 oz (3 tsp)	15 g	4. Return to a boil, strain, and mix in the juice and alcohol. Cool.
Kirsch or other fruit brandy or liqueur (optional)	0.67 oz (4 tsp)	20 g	

MELBA SAUCE

Yield: about 1 pt (400 mL)

Ingredients	U.S.	Metric	PROCEDURE
Frozen, sweetened raspberries	1 lb 8 oz	600 g	1. Thaw the raspberries and force them through a sieve to purée them and remove the seeds.
Red currant jelly	8 oz	200 g	2. Combine with the jelly in a saucepan. Bring to a boil, stirring until the jelly is melted and completely blended with the fruit purée.
VARIATION			
RASPBERRY SAUCE Purée and sieve frozen sweetened raspberries, or use fresh raspberries and sweeten to taste. Omit the red currant jelly. Use as is or simmer until thickened, as desired. Other fruits can be puréed and sweetened to taste to make dessert sauces, using the same procedure. If purées from pulpy fruits (such as mangoes) are too thick, thin with water, simple syrup, or an appropriate fruit juice.			

CARAMEL SAUCE

Yield: 12 oz (375 mL)

For large-quantity measurements, see page 719.

Ingredients	U.S.	Metric
Sugar	8 oz	250 g
Water	2 fl oz	60 mL
Lemon juice	$\frac{3}{4}$ tsp	4 mL
Heavy cream	6 fl oz	190 mL
Milk or additional cream	4 fl oz	125 mL



Clear caramel sauce and caramel sauce with cream.

PROCEDURE

1. Combine the sugar, water, and juice in a heavy saucepan. Bring to a boil, stirring to dissolve the sugar. Cook the syrup to the caramel stage (see p. 253). Toward the end of the cooking time, turn the heat to very low to avoid burning the sugar or letting it get too dark. It should be a golden color.
2. Remove from the heat and cool 5 minutes. Alternatively, to stop the cooking completely and prevent the sugar from becoming any darker because of residual heat, dip the bottom of the pan in cold water for an instant.
3. Bring the heavy cream to a boil. Add a few ounces of it to the caramel.
4. Stir and continue to add the cream slowly. Return to the heat and stir until all the caramel is dissolved.
5. Let cool completely.
6. Stir the milk or additional cream into the cooled caramel to thin it.

VARIATIONS

HOT CARAMEL SAUCE

Proceed as directed through step 4. Omit the milk or additional cream.

CLEAR CARAMEL SAUCE

Substitute 2½–3 oz (75–90 mL) boiling water for the heavy cream and omit the milk. If the sauce is too thick when cool, add more water.

BUTTERSCOTCH SAUCE

Use brown sugar instead of white granulated sugar in the basic recipe. Omit the lemon juice. In step 1, cook the syrup only to 240°F (115°C). Add 2 oz (60 g) butter before adding the heavy cream.

CARAMEL CREAM

Prepare 2 oz Clear Caramel Sauce. Soften 0.06 oz ($\frac{1}{2}$ tsp/2 g) gelatin in 0.5 oz (1 tbsp/15 mL) water. Add to the warm caramel sauce and stir until dissolved (rewarm if necessary). Cool to room temperature but do not cool until set. Whip 4 oz (125 g) heavy cream to soft peaks. Mix about one-fourth of the cream into the caramel sauce, then fold in the remaining cream.

BUTTER CARAMEL

Yield: 11 oz (330 g)

Ingredients	U.S.	Metric
Sugar	8 oz	250 g
Butter	4 oz	125 g

PROCEDURE

1. Heat the sugar over moderate heat until it melts and then turns to a golden brown caramel.
2. Keep the pan over moderate heat. Add the butter. Stir constantly over heat until the butter has melted and blended into the caramel. It is essential to stir vigorously in order to emulsify the butter and caramel. If you do not stir well enough, the butterfat will tend to separate.
3. The caramel will hold reasonably well for a short time over heat. Stir it from time to time. If the caramel is allowed to cool, it will become a hard, brittle toffee. If it is reheated, the butter will separate, though it can be reincorporated by adding a few drops of water and stirring vigorously.

CHOCOLATE GANACHE I

Ingredients	U.S.	Metric	Chocolate at 100% %
Bittersweet or semisweet chocolate	1 lb	500 g	100
Heavy cream	12 oz	375 g	75
Total weight:	1 lb 12 oz	875 g	175%



A



B



C

VARIATION

The proportion of chocolate and cream may be varied. For a firmer product, or if the weather is warm, decrease the cream to as little as 50%. For a very soft ganache, increase the cream to 100%. This proportion makes a ganache that is too soft for truffles but may be whipped into a mousse.

The composition of the chocolate also affects the consistency of the ganache, and the formula may require slight adjustments depending on the chocolate used.

PROCEDURE

1. Chop the chocolate into small pieces. Place in a bowl.
2. Bring the cream just to a boil, stirring to prevent scorching. (Use very fresh cream; old cream is more likely to curdle when it is boiled.)
3. Pour the cream over the chocolate (a). Let stand for a few minutes. Stir until the chocolate is completely melted and the mixture is smooth (b). If necessary, warm gently over low heat to completely melt the chocolate. At this point, the ganache is ready to be used as an icing or glaze. Apply it by pouring it over the item to be iced (c), like poured fondant (see p. 416).
4. If the ganache is not to be used warm, let it cool at room temperature. Stir from time to time so it cools evenly. Cooled ganache may be stored in the refrigerator and rewarmed over a water bath when needed.
5. For whipped ganache, the mixture should first be cooled thoroughly, or it will not whip properly. Do not let it become too cold, however, or it will be too hard. With a wire whip or the whip attachment of a mixer, whip the ganache until it is light, thick, and creamy. Use at once. If stored, whipped ganache will become firm and hard to spread.

CHOCOLATE GANACHE II

Ingredients	U.S.	Metric	Chocolate at 100% %
Heavy cream	1 lb 2 oz	600 g	100
Vanilla powder	pinch	pinch	
Bittersweet chocolate	1 lb 2 oz	600 g	100
Butter, softened	3 oz	100 g	17
Total weight:	2 lb 7 oz	1300 g	217%

PROCEDURE

1. Bring the cream and vanilla powder to a boil.
2. Chop the chocolate.
3. Pour the hot cream over the chocolate. Stir until the chocolate is melted.
4. When the mixture has cooled to 95°F (35°C), stir in the butter. Use the ganache at once.

PASSION FRUIT GANACHE

For large-quantity measurements, see page 719.

Ingredients	U.S.	Metric	Chocolate at 100%	PROCEDURE
			%	
Heavy cream	4 oz	120 g	56	1. Combine the cream, juice, and butter in a saucepan and bring to a boil. 2. Whip the egg yolks with the sugar until light. 3. Gradually beat the hot liquid into the egg mixture. 4. Return this mixture to the heat and bring it quickly to a boil, then remove from heat. 5. Strain the liquid over the chopped chocolate in a bowl. Stir until all the chocolate is melted and the mixture is evenly blended.
Passion fruit juice	4 oz	120 g	56	
Butter	2 oz	60 g	28	
Egg yolks	1.67 oz	50 g	23	
Sugar	2 oz	60 g	28	
Bittersweet or semisweet chocolate, chopped	7 oz	215 g	100	
Total weight	1 lb 4 oz	625 g	291%	

CHOCOLATE MOUSSE I

Ingredients	U.S.	Metric	Chocolate at 100%	PROCEDURE
			%	
Bittersweet or semisweet chocolate	1 lb	500 g	100	1. Melt the chocolate over hot water. 2. Remove from the heat and add the butter. Stir until the butter is melted and completely mixed in. 3. Add the egg yolks one at a time. Mix in each egg yolk completely before adding the next. 4. Beat the egg whites until they form soft peaks. Add the sugar and beat until the egg whites form stiff but moist peaks. Do not overbeat. 5. Fold the egg whites into the chocolate mixture.
Butter	9 oz	280 g	56	
Pasteurized egg yolks	5 oz	155 g	31	
Pasteurized egg whites	12 oz	375 g	75	
Sugar	2.5 oz	80 g	16	
Total weight	2 lb 12 oz	1390 g	278%	

CHOCOLATE MOUSSE II

Ingredients	U.S.	Metric	Chocolate at 100%	PROCEDURE
			%	
Egg yolks	4.5 oz	120 g	25	1. In a round-bottomed stainless steel bowl, whip the egg yolks until pale. 2. Make a syrup with the sugar and water and boil to 244°F (118°C). Whip the hot syrup into the yolks and continue whipping until cool. 3. Melt the chocolate and fold into the egg mixture. 4. Whip the cream until it forms soft peaks. Whip one-third of the cream into the chocolate mixture. Then fold in the remaining cream until well incorporated.
Fine granulated sugar	4 oz	105 g	22	
Water	3 oz	90 g	19	
Bittersweet chocolate, melted	1 lb 2 oz	480 g	100	
Heavy cream	2 lb	900 g	190	
Total weight:	3 lb 13 oz	1695 g	356%	

SABAYON I

Yield: about 1½ pt (750 mL)

Ingredients	U.S.	Metric	PROCEDURE
Egg yolks	2.67 oz (4 yolks)	80 g (4 yolks)	1. Mix the egg yolks and syrup in a stainless steel bowl. Place the bowl over a hot-water bath and whip until light, frothy, and pale in color. 2. Remove the bowl from the hot-water bath and continue to whip until cool and doubled in volume. 3. Gently fold in the whipped cream. 4. Use as a dessert sauce or topping that can be browned (gratinéed) under a salamander or broiler.
Simple syrup (p. 254)	3.5 oz	100 g	
Whipped cream	2 oz	60 g	

SABAYON II

Yield: about 1 qt (900 mL)

Ingredients	U.S.	Metric	PROCEDURE
Egg yolks	4 oz (6 yolks)	115 g (6 yolks)	1. In a stainless steel bowl, beat the yolks until foamy. 2. Beat in the sugar and wine. Place over a hot-water bath and continue beating until thick and hot. 3. Serve hot as a dessert or as a sauce for fruit or fritters. Serve without delay. If allowed to stand, it will lose some foaminess and begin to separate.
Sugar	8 oz	225 g	
Dry white wine	8 oz	225 g	

VARIATIONS

COLD SABAYON

Dissolve 0.04 oz (½ tsp/1 g) gelatin in the wine. Proceed as in the basic recipe. When the sauce is done, place the bowl over ice and whip the sauce until it is cool.

ZABAGLIONE

This is the Italian sauce and dessert that is the origin of sabayon. Use sweet Marsala wine instead of the dry white wine, and use only half the sugar. Other wines or spirits may be used, such as port or sherry. Adjust the sugar according to the sweetness of the wine.

SAUCE SUZETTE

Yield: about 1 pt (450 mL)

Ingredients	U.S.	Metric	PROCEDURE
Orange juice	7 oz	200 g	1. Warm the juice and zest in a saucepan.
Lemon juice	2 oz	60 g	2. In a separate pan, cook the sugar to a golden caramel.
Orange zest, grated	0.5 oz	15 g	3. Remove from the heat and add the butter. Stir to begin to dissolve the caramelized sugar.
Sugar	7 oz	200 g	4. Add the warmed juices. Reduce by one-third, stirring continuously.
Butter	2.5 oz	80 g	5. Add the liqueur and brandy. Ignite to burn off the alcohol.
Orange liqueur such as Cointreau	7 oz	100 g	6. Serve warm.
Brandy	2 oz	60 g	

BLUEBERRY SAUCE

Yield: about 10 oz (300 mL)

Ingredients	U.S.	Metric	PROCEDURE
Sugar	1.5 oz	45 g	1. Put the sugar in a heavy saucepan. Heat until the sugar melts and then caramelizes to a rich golden brown.
Water	2 oz	60 mL	2. Remove the pan from heat and add the water. Because the pan is very hot, the water will boil immediately, so be careful to avoid being scalded by steam.
Lemon juice	1 fl oz	30 mL	3. Simmer until the caramelized sugar is dissolved.
Blueberries, fresh, washed and drained well	12 oz	360 g	4. Add the lemon juice and simmer 1 minute, until it is well blended.
			5. Add the blueberries and cook slowly for 5 to 10 minutes, until the berries pop and the sauce is slightly reduced and thickened.
			6. Taste for sweetness. If the berries are tart, add a little more sugar to taste. Cool.

BASIL HONEYDEW GELÉE

Yield: 20 fl oz (600 mL)

Ingredients	U.S.	Metric	PROCEDURE
Basil leaves	1 oz	30 g	
Honeydew melon, diced	1 lb	480 g	
Gelatin (see <i>Note</i>)	0.33 oz (1 tbsp)	10 g	
Water	1.5 fl oz	45 mL	
Water	8 fl oz	240 mL	
Sugar	2½ oz	75 g	
Lime juice	1 fl oz	30 mL	
NOTE: To adjust the texture and thickness of the gelée, decrease or increase the gelatin quantity slightly.			
1. Blanch the basil leaves in boiling water for 5 seconds. Drain. Chill quickly in ice water. Drain again and squeeze dry. 2. In a food processor, purée the basil with the melon until smooth. Let stand 5 minutes or longer so that the green color of the basil is extracted into the juice. 3. Strain through a sieve lined with cheesecloth. Discard the solids. 4. Bloom the gelatin in the first quantity of water. 5. Combine the second quantity of water with the sugar and bring to a boil to dissolve the sugar. 6. Remove from the heat. Add the lime juice and the bloomed gelatin. Stir until the gelatin is dissolved. 7. Combine the gelatin mixture and the honeydew juice and mix until well combined. Chill until set. 8. To use as a sauce, stir the gelée gently with a wire whip to break it up.			

DULCE DE LECHE

Yield: about 1 pt (500 mL)

Ingredients	U.S.	Metric	PROCEDURE
Milk	2 pt	1 L	1. Combine the milk, sugar, and baking soda in a heavy saucepan. Set over medium heat. Bring to a slow boil without stirring. 2. As the mixture approaches the boil, it will foam up. Quickly remove it from the heat before it boils over; stir. 3. Turn the heat to low, set the pan back on the heat, and cook slowly, stirring frequently with a wooden spoon, for about 45–60 minutes. The mixture will gradually caramelize. 4. When the mixture is a rich caramel brown and thickened but still pourable, remove from the heat and stir in the vanilla. 5. Cool thoroughly.
Sugar	12 oz	375 mL	
Baking soda	¼ tsp	1 mL	
Vanilla extract	½ tsp	2 mL	

HARD SAUCE

Yield: about 1 pt (500 mL)

Ingredients	U.S.	Metric	PROCEDURE
Butter	8 oz	250 g	1. Cream the butter and sugar until light and fluffy, as for simple buttercream (see p. 419). 2. Beat in the brandy or rum. 3. Serve with steamed puddings, such as English Christmas pudding.
Confectioners' sugar	1 lb	500 g	
Brandy or rum	1 oz	30 mL	

CREAM SAUCE FOR PIPING

Yield: variable

Ingredients	U.S.	Metric	PROCEDURE
Sour cream	as needed	as needed	1. Stir the sour cream until it is smooth. 2. As this sauce is used for marbling or decorating other sauces, the quantity of cream needed depends on the texture of the other sauces. Gradually stir in heavy cream to thin the sour cream until it is the same consistency as the sauce to be decorated.
Heavy cream	as needed	as needed	

TERMS FOR REVIEW

caramelize	common meringue	crème anglaise	sabayon
crystallize	Swiss meringue	pastry cream	zabaglione
simple syrup	Italian meringue	crème Chiboust	ganache
dessert syrup	soft meringue	coulis	
crème chantilly	hard meringue	gelée	



QUESTIONS FOR REVIEW

1. How can you avoid unwanted crystallization when cooking sugar syrups?
2. Why is cream of tartar or lemon juice sometimes added to a sugar syrup before or during cooking?
3. Vanilla custard sauce and pastry cream both contain eggs. Why is it possible to boil pastry cream but not custard sauce?
4. Explain the importance of sanitation in the production of pastry cream. What specific steps should you take to ensure a safe product?
5. Explain the effects of fat, sugar, and temperature on the whipping of egg whites into foams.
6. Describe two simple ways of preparing fruit sauces.