

Chapter 32



Fruit Torte, page 972.

Cakes and Icings

Cakes are the richest and sweetest of all the baked products we have studied so far. From the baker's point of view, producing cakes requires as much precision as producing breads, but for completely opposite reasons. Breads are lean products that require strong gluten development and careful control of yeast action during the long fermentation and proofing periods. Cakes, on the other hand, are high in both fat and sugar. The baker's job is to create a structure that will support these ingredients and yet be as light and delicate as possible. Fortunately, producing cakes in quantity is relatively easy if the baker has good, well-balanced formulas, scales ingredients accurately, and understands basic mixing methods well.

Cakes owe their popularity not only to their richness and sweetness but also to their versatility. They can be presented in many forms, from simple sheet cakes in cafeterias to elaborately decorated works of art for weddings and other important occasions. With only a few basic formulas and a variety of icings, the chef or baker can construct the perfect dessert for any occasion or purpose.

After reading this chapter, you should be able to

1. Demonstrate the five basic cake mixing methods.
2. Describe the characteristics of high-fat cakes and low-fat cakes.
3. Prepare high-fat, or shortened, cakes and low-fat, or foam-type, cakes.
4. Prepare the six basic types of icing.
5. Assemble and ice layer cakes, small cakes, and sheet cakes.

UNDERSTANDING CAKE MAKING

Basic Mixing Methods

The mixing methods presented in this chapter are basic for most cakes prepared in the modern bakeshop. Each method is used for a particular type of formula.

High-fat or shortened cakes

Creaming method
Two-stage or blending method

Low-fat or foam-type cakes

Foaming or sponge method
Angel food method
Chiffon method

We discuss these cake types in detail after you have had a chance to study the actual procedures on pages 969–971.

Creaming Method

The *creaming method*, also called the *conventional method*, was, for a long time, the standard method for mixing butter cakes. Recently, the development of emulsified or high-ratio shortenings has led to the development of simpler mixing methods for shortened cakes. But the creaming method is still used for many types of butter cakes.

Two-Stage Method

The *two-stage method*, also called the *blending method*, was developed for use with modern high-ratio shortenings (see Chapter 29). Although it is simpler than the creaming method, it produces a very smooth batter that bakes up into a fine-grained, moist cake. It is called *two-stage* because the liquids are added in two stages.

Foaming or Sponge Method

All egg-foam cakes are similar in that they contain little or no shortening and depend for most or all of their leavening on the air trapped in beaten eggs.

One mixing method is usually presented as the basic method for all foam cakes. However, because whole-egg foams and egg-yolk foams are handled differently than egg-white foams, we discuss two separate, although similar, methods: the *foaming method* and the *angel food method*. A third method, the *chiffon method*, is somewhat unusual. It combines an egg-white foam with a high-fat batter made with oil.

Angel Food Method

Angel food cakes are based on egg-white foams and contain no fat. For success in beating egg whites, review the principles of egg foams in Chapter 23.

Chiffon Method

Chiffon cakes and angel food cakes are both based on egg-white foams. But here the similarities in the mixing methods end. In angel food cakes, a dry flour-sugar mixture is folded into the egg whites. In chiffon cakes, a batter containing flour, egg yolks, vegetable oil, and water is folded into the whites.

Whip egg whites for chiffon cakes until they are a little firmer than those for angel food cakes, but not until they are dry. Chiffon cakes contain baking powder, so they do not depend on the egg foam for all their leavening.

Procedure: Creaming Method

1. Scale ingredients accurately. Have all ingredients at room temperature.
2. Place the butter or shortening in the mixing bowl. With the paddle attachment, beat slowly until the fat is smooth and creamy.
3. Add the sugar. Cream the mixture at moderate speed until it is light and fluffy (Figure 32.1).
Some bakers prefer to add the salt and flavorings with the sugar to ensure uniform distribution.
If melted chocolate is used, it is added during creaming.
4. Add the eggs, a little at a time. After each addition, beat until the eggs are absorbed before adding more. The mixture should be light and fluffy after the eggs are beaten in.
5. Scrape down the sides of the bowl to ensure even mixing.
6. Add the sifted dry ingredients (including the spices, if they were not added in step 3), alternating with the liquids. This is done as follows:
 - Add one-fourth of the dry ingredients. Mix just until blended in.
 - Add one-third of the liquid. Mix just until blended in.
 - Repeat until all ingredients are used. Scrape down the sides of the bowl occasionally for even mixing.

The reason for adding dry and liquids alternately is that the batter may not absorb all the liquid unless some of the flour is present. Cocoa, if used, is included with the flour.

Figure 32.1



(a) Cream the butter and sugar until the mixture is light and fluffy.



(b) Beat in the eggs a little at a time.



(c) Add one fourth of the dry ingredients and mix in.



(d) Add one third of the liquid ingredients and mix in. Repeat until all the dry and liquid ingredients are incorporated.

Procedure: Two-Stage Method

1. Scale ingredients accurately. Have all ingredients at room temperature.
2. Sift the flour, baking powder, soda, and salt into the mixing bowl and add the shortening. With the paddle attachment, mix at low speed for 2 minutes. Stop the machine, scrape down the bowl and beater, and mix again for 2 minutes.
If melted chocolate is used, blend it in during this step.
If cocoa is used, sift it with the flour in this step or with the sugar in step 3.
3. Sift the remaining dry ingredients into the bowl and add part of the water or milk. Blend at low speed 3 to 5 minutes. Scrape down the sides of the bowl and the beater several times to ensure even mixing.
4. Combine the remaining liquids and lightly beaten eggs. With the mixer running, add this mixture to the batter in three parts. After each part, turn off the machine and scrape down the bowl.
Continue mixing for a total of 5 minutes in this stage.
The finished batter is normally quite liquid.

Variation

This variation combines steps 2 and 3 above into one step.

1. Scale ingredients as in the basic method.
2. Sift all dry ingredients into the mixing bowl. Add the shortening and part of the liquid. Mix on low speed 7 to 8 minutes. Scrape down the sides of the bowl and the beater several times.
3. Continue with step 4 in the basic procedure.

Procedure: Foaming or Sponge Method

- Scale ingredients accurately. Have all ingredients at room temperature.
If butter is included, it must be melted.
If liquid and butter are included, heat them together, just until the butter is melted.
- Combine the eggs and sugar, and warm to about 110°F (43°C). This may be done in one of two ways:
 - Stir the egg-sugar mixture over a hot-water bath.
 - Warm the sugar on a sheet pan in the oven (do not get it too hot) and gradually beat it into the eggs.

This step is performed because warm foam attains greater volume.

- With the whip attachment, beat the eggs at high speed until light and thick. This may take 10 to 15 minutes.

This step is important. One of the most frequent causes of failure in the sponge method is not whipping the eggs and sugar enough. The foam must be very thick. When the beater is lifted from the bowl, the foam should fall slowly from it and make a ribbon that slowly sinks into the batter in the bowl (see Figure 32.2).

- Fold in the sifted flour, being careful not to deflate the foam. Many bakers do this by hand.

If other dry ingredients are used, such as cornstarch or baking powder, they are first sifted with the flour.

- If melted butter or a butter-liquid mixture is being used, fold it in at this point. Be careful not to overmix, or the cake will be tough (because of developed gluten).
- Immediately pan and bake the batter. Delays cause loss of volume.

Variations

Some formulas contain water or some other liquid, but no butter (so you cannot heat the liquid and butter together, as in the basic procedure). In this case, the liquid is usually added after step 3 and before folding in the flour. Either whip it in a steady stream or stir it in, as indicated in the recipe.

In some formulas, the egg yolks and whites are separated. Use the yolks and part of the sugar to make the foam in steps 2 and 3. Use the remaining sugar to whip with the whites. Fold the egg-white foam into the batter after step 5.

Figure 32.2



(a) With a wire whip or the whip attachment of a mixer, beat the eggs until they are very thick and light.



(b) Fold in the sifted flour in three or four stages, until all the flour is blended in.



(c) If melted butter is used, fold it in after the flour.

Procedure: Angel Food Method

- Scale ingredients accurately. Have all ingredients at room temperature. You may warm the egg whites slightly for better volume.
- Sift the flour with half the sugar. This step helps the flour mix more evenly with the foam.
- Beat the egg whites, using the whip attachment, until they form soft peaks.
Add salt and cream of tartar near the beginning of the beating process.
- Gradually beat in the sugar that was not mixed with the flour. Continue to beat until the egg whites form soft, glossy peaks. Do not overbeat.
- Fold in the flour-sugar mixture just until it is thoroughly absorbed, but no longer.
- Pan and bake immediately.

Procedure: Chiffon Method

1. Scale all ingredients accurately, and be sure they are all at room temperature. Use a good-quality, flavorless vegetable oil.
2. Sift the dry ingredients, including part of the sugar, into the mixing bowl.
3. Mixing with the paddle attachment at 2nd speed, gradually add the oil, then the egg yolks, water, and liquid flavorings, all in a slow, steady stream. While adding the liquids, stop the machine several times and scrape down the bowl and the beater. Mix until smooth, but do not overmix.
4. Whip the egg whites until they form soft peaks. Add the cream of tartar and sugar in a stream and whip to firm, moist peaks.
5. Fold the whipped egg whites into the flour–liquid mixture.
6. Immediately deposit batter in ungreased tube pans (like angel food cakes) or in layer pans that have had the bottoms, but not the sides, greased and dusted (like sponge layers).

Prepared Mixes

Many cake mixes are available that contain all ingredients except water and, sometimes, egg. These products also contain emulsifiers to ensure even blending of ingredients. To use them, follow the package instructions exactly.

Most mixes produce cakes with excellent volume, texture, and tenderness. Whether or not they also taste good is a matter of opinion. On the other hand, cakes made from scratch are not necessarily better. They are better only if they are carefully mixed and baked and are prepared using good, tested formulas and high-quality ingredients.

KEY POINTS TO REVIEW

- What are the steps in the creaming method?
- What are the steps in the two-stage method?
- What are the steps in the foaming or sponge method?
- What are the steps in the angel food method?
- What are the steps in the chiffon method?

Cake Formula Types

The proper mixing method for a particular formula depends on the balance of ingredients. A baker can look at the ingredients in a formula and know immediately which mixing method to use.

- If *fat is high*, use the creaming method or the two-stage method.
The two-stage method may be used if the percentage of sugar is over 100 percent and if the fat is emulsified shortening.
In other cases, the creaming method is used.
- If *fat is low* and *eggs and sugar are high*, use an egg-foam method.

High-Fat Cakes

The creaming method's major disadvantage is the labor it requires. The two-stage method is quicker, but because the flour is mixed for a long time, two conditions are necessary to prevent the gluten from developing toughness:

1. Increased percentage of sugar (sugar is a tenderizer).
2. Emulsified shortening, which blends thoroughly to prevent toughness.

Cakes made by the two-stage method have good volume and lightness, a fine, velvety texture, and great tenderness. The texture of butter cakes made by the creaming method is coarser, and the tenderness is generally somewhat less.

One factor seems to be neglected when cakes are rated, however—flavor. Shortening contributes no flavor to cakes, only texture. Butter, on the other hand, is highly prized for its flavor. It also influences texture because it melts in the mouth, while shortening does not. Thus, butter cakes are and always will be in demand. Therefore, the creaming method is important for you to know.

Low-Fat Cakes

High-fat cakes depend on air incorporated by the creaming action of the fat and sugar for some of their leavening and much of their texture. Low-fat or no-fat cakes obviously cannot. They must depend on the foaming action of eggs.

Sponge cakes have a springy texture and are tougher than shortened cakes. This makes them valuable for many kinds of desserts that require much handling to assemble. For example, many European-style cakes or tortes are made by cutting sponge cake layers horizontally into thin layers and stacking them with a variety of rich fillings, creams, icings, and fruits.

Even if a high-ratio cake survived all this without breaking into crumbs, it would probably disintegrate when it absorbed moisture from the fillings. In addition, sponge layers in this kind of cake are usually moistened with a flavored sugar syrup to compensate for their lack of moisture.

The *fruit torte* (illustrated in the photograph) is an example of this type of cake. Genoise layers are split, moistened with dessert syrup (p. 1034), layered and iced with whipped cream, and topped with attractively arranged fruit pieces. The fruit is then coated with glaze (p. 985) to protect it and enhance its appearance.

Sponge sheets for jelly rolls and other rolled cakes are made without shortening, so they do not crack when rolled.

Flour for sponge cakes must be weak to avoid making the cake tough. Cornstarch is often added to cake flour for sponge cakes to weaken the flour further.



Fruit torte

Scaling and Panning

Prepare pans before mixing cake batters so cake batters can be baked without delay.

1. For high-fat cakes, the bottoms of layer pans must be greased, preferably with a commercial pan greasing preparation. If this is not available, dust the greased pan with flour and tap out the excess.
2. For sheet cakes, line the pan with greased parchment.
3. For angel food cakes, do not grease the pan. The batter must be able to cling to the sides in order to rise.
4. For sponge cake layers with a small percentage of fat, grease the bottoms but not the sides.

Procedure for Scaling Creaming-Method Batters

These batters are thick and do not pour easily. Scale cakes as follows:

1. Place the prepared cake pan on the left side of a balance scale. Balance the scale by placing another pan on the right side.
2. Set the scale for the desired weight.
3. Add batter to the left pan until the scale balances.
4. Remove the pan from the scale and spread the batter smooth with a spatula.
5. Repeat with remaining pans.
6. Give the pans several sharp raps on the bench to free large trapped air bubbles. Bake immediately.

Procedure for Scaling Two-Stage Batters

These batters are more liquid than creamed batters. They may be scaled like creamed batters or, for greater speed, they may be scaled as follows:

1. Place an empty volume measure on the left side of a balance scale. Balance the scale to zero.
2. Set the scale for the desired weight.
3. Pour batter into the measure until the scale balances.
4. Note the volume of batter in the measure.
5. Pour the measured batter into a prepared pan, quickly scraping out the measure to get all the batter.
6. Scale the remaining cakes with the volume measure, using the volume noted in step 4.
7. Give the pans several sharp raps on the bench to free large trapped air bubbles. Bake immediately.

Procedure for Scaling Foam Cakes

Foam cake batters should be handled as little as possible and baked immediately in order to avoid deflating the beaten eggs. Although they may be scaled like creamed batters, many bakers prefer to eyeball them in order to minimize handling.

1. Have all prepared pans lined up on the bench.
2. Scale the first pan as for creamed batters.
3. Quickly fill remaining pans to the same level as the first pan, judging the level by eye.
4. Spread the batter smooth and bake immediately.

See Table 32.1 for average scaling weights as well as baking temperatures and times.

Table 32.1 Average Cake Scaling Weights, Baking Temperatures, and Times

PAN TYPE AND SIZE	SCALING WEIGHT		BAKING TEMPERATURES		APPROXIMATE BAKING TIME IN MINUTES
	U.S.	METRIC	U.S.	METRIC	
High-fat cakes					
Round layers					
6 in. (15 cm)	8–10 oz	230–285 g	375°F	190°C	18
8 in. (20 cm)	14–18 oz	400–510 g	375°F	190°C	25
10 in. (25 cm)	24–28 oz	680–800 g	360°F	180°C	35
12 in. (30 cm)	32–40 oz	900–1100 g	360°F	180°C	35
Sheets and square pans					
18 × 26 in. (46 × 66 cm)	7–8 lb	3.2–3.6 kg	360°F	180°C	35
18 × 13 in. (46 × 33 cm)	3½–4 lb	1.6–1.8 kg	360°F	180°C	35
9 × 9 in. (23 × 23 cm)	24 oz	680 g	360°F	180°C	30–35
Loaf (pound cake)					
2¼ × 3½ × 8 in. (6 × 9 × 20 cm)	16–18 oz	450–500 g	350°F	175°C	50–60
2¾ × 4½ × 8½ in. (7 × 11 × 22 cm)	24–27 oz	680–765 g	350°F	175°C	55–65
Cupcakes per dozen	18 oz	510 g	385°F	195°C	18–20
Foam-type cakes					
Round layers					
6 in. (15 cm)	5–6 oz	140–170 g	375°F	190°C	20
8 in. (20 cm)	10 oz	280 g	375°F	190°C	20
10 in. (25 cm)	16 oz	450 g	360°F	180°C	25–30
12 in. (30 cm)	24 oz	700 g	360°F	180°C	25–30
Sheets (for jelly roll or sponge roll)					
18 × 26 in., ½ in. thick (46 × 66 cm, 12 mm thick)	2½ lb	1.2 kg	375°F	190°C	15–20
18 × 26 in., ¼ in. thick (46 × 66 cm, 6 mm thick)	28 oz	800 g	400°F	200°C	7–10
Tube (angel food and chiffon)					
8 in. (20 cm)	12–14 oz	340–400 g	360°F	180°C	30
10 in. (25 cm)	24–32 oz	700–900 g	350°F	175°C	50
Cupcakes per dozen	10 oz	280 g	375°F	190°C	18–20

Note: The weights given are averages. Weights may be increased by 25 percent if thicker layers are desired. Baking times may then need to be increased slightly.

Baking and Cooling

Baking

Cake structure is fragile, so proper baking conditions are essential for high-quality products. The following guidelines will help you avoid cake failures.

1. Preheat the ovens. (To conserve expensive energy, don't preheat longer than necessary.)
2. Make sure ovens and shelves are level.
3. Do not let pans touch each other in the oven. If the pans touch, air circulation is inhibited and the cakes rise unevenly.
4. Bake at the correct temperature.
 - Too hot an oven causes the cake to set unevenly or to set before it has fully risen. Crusts will be too dark.
 - Too slow an oven causes poor volume and texture because the cake doesn't set fast enough and may fall.
5. Do not open the ovens or disturb the cakes until they have finished rising and are partially browned. Disturbing the cakes before they are set may cause them to fall.
6. If steam in the oven is available, use it for creamed and two-stage batters. These cakes bake with a flatter top if baked with steam because the steam delays the formation of the top crust.
7. Tests for doneness:
 - Shortened cakes shrink away from sides of pan slightly.
 - Cakes are springy. The center of the top springs back when pressed slightly.
 - A cake tester or pick inserted in the center of the cake comes out clean.

Cooling and Removing from Pans

1. Cool layer cakes and sheet cakes 15 minutes in pans and then turn out while slightly warm. They are too fragile to turn out when hot, and they may break.
2. Turn out layer cakes onto racks to finish cooling.
3. To turn out sheet cakes:
 - Sprinkle top lightly with granulated sugar.
 - Set an empty sheet pan on top, bottom side down.
 - Invert both pans.
 - Remove top pan.
 - Peel parchment off cake.
4. Cool angel food cakes upside down in pans. Support the edges of the pan so the top of the cake is off the bench. When cool, loosen the cake from the sides of the pan with a knife or spatula and pull out carefully.

Common Cake Faults and Their Causes

Errors in mixing, scaling, baking, and cooling cakes cause many kinds of defects and failures. For easy reference, these defects and their possible causes are summarized in the troubleshooting guide in Table 32.2.

KEY POINTS TO REVIEW

- What mixing methods are used for high-fat cakes? for low-fat cakes?
- What are the procedures for scaling cake batters?
- How are cakes tested for doneness?
- How are cakes removed from their baking pans?

Altitude Adjustments

At high altitudes, atmospheric pressure is much lower than at sea level. This factor must be taken into account in cake baking. Formulas must be adjusted to suit baking conditions over 2,000 or 3,000 feet (600 or 900 m) above sea level.

Although general guidelines can be given, the exact adjustments required vary for different kinds of cake. Many manufacturers of flour, shortening, and other bakery ingredients supply detailed information and adjusted formulas for any given locality.

In general, the following adjustments must be made above elevations of 2,000 or 3,000 feet (600 or 900 m). See Table 32.3 for more specific adjustments.

LEAVENING

Leavening gases expand more when air pressure is lower, so baking powder and baking soda must be *decreased*.

Creaming and foaming procedures should also be reduced so less air is incorporated.

TOUGHENERS: FLOUR AND EGGS

Cakes require firmer structure at high altitudes. Both eggs and flour must be increased to supply proteins for structure.

TENDERIZERS: SHORTENING AND SUGAR

Shortening and sugar must be decreased so the structure of the cake is firmer.

LIQUIDS

At high altitudes, water boils at a lower temperature and evaporates more easily. Liquids must be *increased* to prevent excess drying both during and after baking. This also helps compensate for the decrease in moisturizers (sugar and fat) and the increase in flour, which absorbs moisture.

BAKING TEMPERATURES

Increase baking temperatures about 25°F (14°C) above 3,500 feet (1050 m).

PAN GREASING

High-fat cakes tend to stick at high altitudes. Grease pans more heavily. Remove baked cakes from pans as soon as possible.

STORING

Wrap or ice cakes as soon as they are cool to prevent drying.

Table 32.2 Common Cake Faults and Their Causes

FAULT	CAUSES
Volume and shape	
Poor volume	Too little flour Too much liquid Too little leavening Oven too hot
Uneven shape	Improper mixing Batter spread unevenly Uneven oven heat Oven racks not level Cake pans warped
Crust	
Too dark	Too much sugar Oven too hot
Too light	Too little sugar Oven not hot enough
Burst or cracked	Too much flour or flour too strong Too little liquid Improper mixing Oven too hot
Soggy	Underbaked Cooling in pans or with not enough ventilation Wrapping before cool
Texture	
Dense or heavy	Too little leavening Too much liquid Too much sugar Too much shortening Oven not hot enough
Coarse or irregular	Too much leavening Too little egg Improper mixing
Crumbly	Too much leavening Too much shortening Too much sugar Wrong kind of flour Improper mixing
Tough	Flour too strong Too much flour Too little sugar or shortening Overmixing
Poor flavor	
	Poor-quality ingredients Poor storage or sanitation Unbalanced formula

Table 32.3 Approximate Formula Adjustment in Shortened Cakes at High Altitudes

INGREDIENT	INCREASE OR DECREASE	PERCENTAGE ADJUSTMENT		
		2500 FEET (750 M)	5000 FEET (1500 M)	7500 FEET (2300 M)
Baking powder	Decrease	20%	40%	60%
Flour	Increase	—	4%	9%
Eggs	Increase	2.5%	9%	15%
Sugar	Decrease	3%	6%	9%
Fat	Decrease	—	—	9%
Liquid	Increase	9%	15%	22%

To make adjustments, multiply the percentage indicated by the amount of ingredient and add or subtract as indicated.

Example: To adjust 1 lb (16 oz) eggs for 7,500 feet: $0.15 \times 16 \text{ oz} = 2.4 \text{ oz}$
 $16 \text{ oz} + 2.4 \text{ oz} = 18.4 \text{ oz}$

CAKE FORMULAS

Creaming Method



Yellow Butter Cake



INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter	1 lb 8 oz	720 g	80 %
Sugar	1 lb 10 oz	780 g	87 %
Salt	0.25 oz (1¼ tsp)	7 g (6 mL)	1 %
Eggs	15 oz	450 g	50 %
Cake flour	1 lb 14 oz	900 g	100 %
Baking powder	1.25 oz	35 g	4 %
Milk	1 lb 14 oz	900 g	100 %
Vanilla	0.5 oz	15 mL	1.5 %
<i>Yield:</i>	<i>7 lb 14 oz</i>	<i>3810 g</i>	<i>423 %</i>

Per 1 ounce (28.35 g): Calories, 90; Protein, 1 g; Fat, 5 g (48% cal.); Cholesterol, 25 mg; Carbohydrates, 11 g; Fiber, 0 g; Sodium, 80 mg.

PROCEDURE

Mixing:
Creaming method.

Scaling and baking:
See Table 32.1.

Chocolate Butter Cake



INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter	9 oz	280 g	75 %
Sugar	15 oz	470 g	125 %
Salt	0.2 oz (1 tsp)	6 g	1.5 %
Unsweetened chocolate, melted	6 oz	188 g	50 %
Eggs	8 oz	250 g	67 %
Cake flour	12 oz	250 g	100 %
Baking powder	0.5 oz	15 g	4 %
Milk	14 oz	439 g	115 %
Vanilla	0.25 oz (1½ tsp)	8 mL	2 %
<i>Yield:</i>	<i>4 lb</i>	<i>1906 g</i>	<i>539 %</i>

Per 1 ounce (28.35 g): Calories, 90; Protein, 1 g; Fat, 5 g (46% cal.); Cholesterol, 25 mg; Carbohydrates, 12 g; Fiber, 0.5 g; Sodium, 80 mg.

PROCEDURE

Mixing:
Creaming method. Blend in the melted chocolate after the fat and sugar are well creamed.

Scaling and baking:
See Table 32.1.

Brown Sugar Spice Cake

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter	12 oz	400 g	80 %
Brown sugar	15 oz	500 g	100 %
Salt	0.25 oz	8 g	1.5 %
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Eggs	9 oz	300 g	60 %
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Cake flour	15 oz	500 g	100 %
Baking powder	0.5 oz	15 g	3 %
Baking soda	$\frac{3}{8}$ tsp	1.5 g (1.5 mL)	0.3 %
Cinnamon	$1\frac{1}{2}$ tsp	2.5 g (7 mL)	0.5 %
Ground cloves	$\frac{3}{4}$ tsp	1.5 g (3 mL)	0.3 %
Nutmeg	$\frac{3}{8}$ tsp	1 g (1.5 mL)	0.2 %
Milk	15 oz	500 g	100 %
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<i>Yield:</i>	<i>4 lb 2 oz</i>	<i>2229 g</i>	<i>445 %</i>

Per 1 ounce (28.35 g): Calories, 90; Protein, 1 g; Fat, 5 g (46% cal.); Cholesterol, 30 mg; Carbohydrates, 12 g; Fiber, 0 g; Sodium, 105 mg.

PROCEDURE

Mixing:
Creaming method.

Scaling and baking:
See **Table 32.1**.

VARIATION

Carrot Nut Cake

Reduce the milk to 90% (13.5 oz/450 g). Add 40% (6 oz/200 g) grated fresh carrots, 20% (3 oz/100 g) finely chopped walnuts, and 0.5% (1 tsp/3 g or 5 mL) grated orange zest after eggs are beaten in. Omit cloves.

Old-Fashioned Pound Cake

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter or butter and shortening combined (see Note)	1 lb	500 g	100 %
Sugar	1 lb	500 g	100 %
Vanilla	2 tsp	10 mL	2 %
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Eggs	1 lb	500 g	100 %
Cake flour	1 lb	500 g	100 %
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<i>Yield:</i>	<i>4 lb</i>	<i>2000 g</i>	<i>402 %</i>

Per 1 ounce (28.35 g): Calories, 110; Protein, 2 g; Fat, 7 g (51% cal.); Cholesterol, 45 mg; Carbohydrates, 13 g; Fiber, 0 g; Sodium, 70 mg.

Note: If you are using unsalted butter or shortening, add 1.5% ($\frac{1}{4}$ oz / $\frac{1}{4}$ tsp or 6 mL) salt during the first stage of mixing.

PROCEDURE

Mixing:
Creaming method. Add the eggs and the cake flour alternately to avoid curdling the mixture.

Scaling and baking:
See **Table 32.1**.

VARIATIONS

Mace or grated lemon or orange zest may also be used to flavor pound cake.

Raisin Pound Cake

Add 25% (4 oz/125 g) raisins or dried currants that were soaked in boiling water and drained well.

Chocolate Pound Cake

Add 25% (4 oz/125 g) unsweetened chocolate to the butter and sugar after the creaming stage.

Marble Pound Cake

Fill pans one-third full of the basic yellow batter. Add a layer of Chocolate Pound Cake batter, then finish with the yellow batter. Run a spatula blade through the layers to marble them.



Marble Pound Cake

Two-Stage Method

White Cake

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Cake flour	1 lb 8 oz	700 g	100 %
Baking powder	1.5 oz	45 g	6.25 %
Salt	0.5 oz	15 g	2 %
Emulsified shortening	12 oz	350 g	50 %
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Sugar	1 lb 14 oz	875 g	125 %
Skim milk	12 oz	350 g	50 %
Vanilla	2 tsp	10 mL	1.5 %
Almond extract	1 tsp	5 mL	0.75 %
.....			
Skim milk	12 oz	350 g	50 %
Egg whites	1 lb	475 g	67 %
.....			
<i>Yield:</i>	<i>6 lb 12 oz</i>	<i>3175 g</i>	<i>452 %</i>

Per 1 ounce (28.35 g): Calories, 90; Protein, 1 g; Fat, 3 g (33% cal.); Cholesterol, 0 mg; Carbohydrates, 13 g; Fiber, 0 g; Sodium, 105 mg.

PROCEDURE

Mixing:

Two-stage method.

Scaling and baking:

See **Table 32.1**

VARIATIONS

Use water instead of milk and add 10% (2½ oz/70 g) nonfat dry milk powder to the dry ingredients.

Flavor with lemon extract or emulsion instead of vanilla and almond.

Yellow Cake

Reduce shortening to 45% (11 oz/325 g). Substitute whole eggs for egg whites, using the same total weight (67%). Use 2% vanilla (½ oz/15 g) and omit almond extract.

Devil's Food Cake

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Cake flour	1 lb 8 oz	700 g	100 %
Cocoa	4 oz	125 g	17 %
Salt	0.5 oz	15 g	2 %
Baking powder	0.75 oz	20 g	3 %
Baking soda	0.5 oz	15 g	2 %
Emulsified shortening	14 oz	400 g	58 %
.....			
Sugar	2 lb	925 g	133 %
Skim milk	1 lb	475 g	67 %
Vanilla	2 tsp	10 mL	1.5 %
.....			
Skim milk	12 oz	350 g	50 %
Eggs	1 lb	475 g	67 %
.....			
<i>Yield:</i>	<i>7 lb 8 oz</i>	<i>3500 g</i>	<i>500 %</i>

Per 1 ounce (28.35 g): Calories, 90; Protein, 1 g; Fat, 4 g (39% cal.); Cholesterol, 15 mg; Carbohydrates, 13 g; Fiber, 1 g; Sodium, 105 mg.

PROCEDURE

Mixing:

Two-stage method.

Scaling and baking:

See **Table 32.1**.

Foaming Methods



Sponge Cake (Genoise)



INGREDIENTS	U.S.	METRIC	PERCENTAGE
Eggs	2 lb 4 oz	1050 g	150 %
Sugar	1 lb 8 oz	700 g	100 %
Cake flour	1 lb 8 oz	700 g	100 %
Butter, melted	8 oz	225 g	33 %
Vanilla (or lemon flavor)	0.5 oz	15 mL	2 %
<i>Yield:</i>	<i>5 lb 12 oz</i>	<i>2690 g</i>	<i>385 %</i>

Per 1 ounce (28.35 g): Calories, 90; Protein, 2 g; Fat, 3 g (31% cal.); Cholesterol, 55 mg; Carbohydrates, 13 g; Fiber, 0 g; Sodium, 35 mg.

PROCEDURE

Mixing:
Foaming method.

Scaling and baking:
See **Table 32.1**.

VARIATIONS

Chocolate Genoise

Substitute 4 oz (125 g) cocoa powder for 4 oz (125 g) flour. Use the vanilla, not the lemon flavor.

Sponge Roll or Jelly Roll

Prepare the basic formula, but omit the butter. Add the vanilla to the beaten eggs just before folding in the flour. Spread evenly in parchment-lined pans. When baked and cooled, trim the edges. Cut in half or into quarters. Spread each rectangle with desired filling (jelly, buttercream, etc.) and roll up so the long side of the rectangle becomes the length of the roll. Ice or sprinkle with 6X sugar.

Milk and Butter Sponge



INGREDIENTS	U.S.	METRIC	PERCENTAGE
Sugar	1 lb 4 oz	625 g	125 %
Eggs, whole	12 oz	375 g	75 %
Egg yolks	4 oz	125 g	25 %
Salt	0.25 oz (1¼ tsp)	7 g (6 mL)	1.5 %
Cake flour	1 lb	500 g	100 %
Baking powder	0.5 oz	15 g	3 %
Skim milk	8 oz	250 g	50 %
Butter	4 oz	125 g	25 %
Vanilla	1 tbs	15 mL	3 %
<i>Yield:</i>	<i>4 lb</i>	<i>2037 g</i>	<i>407 %</i>

Per 1 ounce (28.35 g): Calories, 90; Protein, 2 g; Fat, 2.5 g (25% cal.); Cholesterol, 50 mg; Carbohydrates, 15 g; Fiber, 0 g; Sodium, 90 mg.

PROCEDURE

Mixing:
Sponge method. Heat the milk and butter until the butter is melted; fold into batter (step 5 in basic procedure).

Scaling and baking:
Cake layers; see **Table 32.1**.

Jelly Roll Sponge

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Sugar	11 oz	325 g	100 %
Eggs, whole	10 oz	292 g	90 %
Egg yolks	2 oz	65 g	20 %
Salt	0.25 oz (1¼ tsp)	7 g (7 mL)	2 %
Corn syrup	1.5 oz	45 g	14 %
Water	1 oz	30 g	10 %
Vanilla	1 tsp	5 mL	1.5 %
.....			
Hot water	4 oz	118 g	36 %
.....			
Cake flour	11 oz	325 g	100 %
Baking powder	1 tsp	5 g (5 mL)	1.5 %
.....			
<i>Yield:</i>	<i>2 lb 8 oz</i>	<i>1217 g</i>	<i>375 %</i>

Per 1 ounce (28.35 g): Calories, 80; Protein, 2 g; Fat, 1 g (12% cal.); Cholesterol, 50 mg; Carbohydrates, 15 g; Fiber, 0 g; Sodium, 40 mg.

PROCEDURE

Mixing:

Sponge method. Add the syrup, the first quantity of water, and the vanilla to the sugar and eggs in the first mixing stage. When the foam is completely whipped, stir in the second quantity of water.

Scaling and baking:

See **Table 32.1**. One recipe makes 1 sheet pan. Line the pans with greased paper. Immediately after baking, turn out of pan onto a sheet of parchment and remove the paper from the bottom of the cake. Spread with jelly and roll up tightly. When cool, dust with confectioners' sugar.

Yellow Chiffon Cake

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Cake flour	1 lb 4 oz	500 g	100 %
Sugar	1 lb	400 g	80 %
Salt	0.5 oz	12 g	2.5 %
Baking powder	1 oz	25 g	5 %
.....			
Vegetable oil	10 oz	250 g	50 %
Egg yolks	10 oz	250 g	50 %
Water	15 oz	375 g	75 %
Vanilla	0.5 oz	12 mL	2.5 %
.....			
Egg whites	1 lb 4 oz	500 g	100 %
Sugar	10 oz	250 g	50 %
Cream of tartar	1¼ tsp	2.5 g (5 mL)	0.5 %
.....			
<i>Yield:</i>	<i>6 lb 7 oz</i>	<i>2576 g</i>	<i>515 %</i>

Per 1 ounce (28.35 g): Calories, 90; Protein, 1 g; Fat, 3.5 g (38% cal.); Cholesterol, 35 mg; Carbohydrates, 12 g; Fiber, 0 g; Sodium, 95 mg.

PROCEDURE

Mixing:

Chiffon method.

Scaling and baking:

Set **Table 32.1**.

VARIATION

Chocolate Chiffon Cake

Add 20% cocoa (4 oz/100 g); sift it with the flour. Increase the egg yolks to 60% (12 oz/300 g). Increase the water to 90% (1 lb 2 oz/450 g).

Angel Food Cake

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Egg whites	2 lb	1000 g	267 %
Cream of tartar	0.25 oz (1 tbsp)	8 g (15 mL)	2 %
Salt	1 tsp	5 g (5 mL)	1.5 %
Sugar	1 lb	500 g	133 %
Vanilla	2 tsp	10 mL	2.5 %
Almond extract	1 tsp	5 mL	1.25 %
.....			
Sugar	1 lb	500 g	133 %
Cake flour	12 oz	375 g	100 %
.....			
<i>Yield:</i>	<i>4 lb 12 oz</i>	<i>2403 g</i>	<i>640 %</i>

Per 1 ounce (28.35 g): Calories, 70; Protein, 2 g; Fat, 0 g (0% cal.); Cholesterol, 0 mg; Carbohydrates, 16 g; Fiber, 0 g; Sodium, 50 mg.

PROCEDURE

Mixing:

Angel food method.

Scaling and baking:

See **Table 32.1**.

VARIATION

Chocolate Angel Food Cake

Substitute 3 oz (90 g) cocoa for 3 oz (90 g) flour.

ICINGS: PRODUCTION AND APPLICATION

Producing and Handling Basic Types

Icings or frostings (the two terms mean the same thing) are sweet coatings for cakes and other baked goods. Icings have three main functions:

1. They improve the keeping qualities of the cake by forming a protective coating around it.
2. They contribute flavor and richness.
3. They improve appearance.

There are six basic kinds of icing:

Fondant	Fudge-type icing
Buttercream	Flat-type icing
Foam-type icing	Royal or decorator's icing

In addition, we consider two other preparations for cakes:

Glazes	Fillings
--------	----------

Use top-quality flavorings for icings so they enhance the cake rather than detract from it. Use moderation when adding flavorings and colors. Flavors should be light and delicate. Colors should be delicate, pastel shades—except chocolate, of course.

Fondant

Fondant is a sugar syrup that is crystallized to a smooth, creamy white mass. It is familiar as the icing for napoleons, éclairs, petits fours, and some cakes. When applied, it sets up into a shiny, nonsticky coating.

Because it is difficult to make in the bakeshop, fondant is almost always purchased already prepared, either in ready-to-use moist form or in a dry form that requires only the addition of water.

Guidelines for Using Fondant

1. Heat fondant over a warm-water bath, stirring constantly, to thin the icing and make it pourable. Do not heat over 100°F (38°C), or it will lose its shine.
2. If the fondant is still too thick, thin it with a little simple sugar syrup or water (simple syrup blends in more easily).
3. Add flavorings and colorings as desired.
4. To make chocolate fondant, stir melted bitter chocolate into warm fondant until the desired color and flavor are reached. Chocolate thickens the fondant, so the icing may require more thinning with sugar syrup.
5. Apply fondant by pouring it over the item or by dipping items into it.

Buttercream

Buttercream icings are light, smooth mixtures of fat and confectioners' sugar. They may also contain eggs to increase their smoothness or lightness. These popular icings are used for many kinds of cake. They are easily flavored and colored to suit a variety of purposes.

We consider three basic kinds of buttercream:

1. *Simple buttercreams* are made by creaming together fat and sugar to the desired consistency and lightness. A small quantity of egg whites may be whipped in.

Decorator's buttercream is a simple buttercream used for making flowers and other cake decorations. It is creamed only a little because if too much air is beaten in, it would not be able to hold delicate shapes.
2. *Meringue-type buttercreams* are prepared by first beating egg whites and adding a boiling syrup or just sugar. Soft butter is then mixed into the meringue. This is a very light, smooth icing.

3. *French buttercreams* are similar to the meringue type, but the foam is made with egg yolks (and, sometimes, whole eggs) and boiling syrup. This is a very rich, light icing.

Butter, especially sweet, unsalted butter, is the preferred fat for buttercreams because of its flavor and melt-in-the-mouth quality. Icings made with shortening only can be unpleasant because the fat congeals and coats the inside of the mouth and does not melt. However, butter makes a less stable icing because it melts so easily. There are two ways around this problem:

1. Use buttercreams in cool weather only.
2. Blend a small quantity of emulsified shortening with the butter to stabilize it.

Simple Buttercream

YIELD: 4 LB 2 OZ (2075 G)

U.S.	METRIC	INGREDIENTS
1 lb	500 g	Butter
8 oz	250 g	Shortening
2 lb 8 oz	1.25 kg	Confectioners' sugar (10X)
2.5 oz	75 g	Egg whites, pasteurized
1 tsp	5 mL	Lemon juice
1 tbsp	15 mL	Vanilla

Per 1 ounce (28.35 g): Calories, 150; Protein, 0 g; Fat, 10 g (58% cal.); Cholesterol, 15 mg; Carbohydrates, 16 g; Fiber, 0 g; Sodium, 65 mg.

PROCEDURE

1. Cream together the butter, shortening, and sugar until well blended, using the paddle attachment.
2. Add the egg whites, lemon juice, and vanilla. Blend in at medium speed. Then mix at high speed until light and fluffy.

VARIATIONS

Decorator's Buttercream

Use 1 lb 8 oz (750 g) regular shortening, no butter. Omit lemon juice and vanilla. Reduce egg whites to 2 oz (60 g). Blend at low speed until smooth; do not whip.

Cream Cheese Icing

Substitute cream cheese for the butter and shortening. Omit egg whites. If necessary, thin the icing with cream or milk. If desired, flavor with grated lemon or orange zest instead of vanilla.

Meringue-Type Buttercream

YIELD: 5 LB 12 OZ (2900 G)

U.S.	METRIC	INGREDIENTS
2 lb	1 kg	Sugar
8 fl oz	250 mL	Water
1 lb	500 g	Egg whites
2 lb	1 kg	Butter, soft
8 oz	250 g	Emulsified shortening
2 tsp	10 mL	Lemon juice
1 tbsp	15 mL	Vanilla

Per 1 ounce (28.35 g): Calories, 130; Protein, 1 g; Fat, 10 g (67% cal.); Cholesterol, 20 mg; Carbohydrates, 10 g; Fiber, 0 g; Sodium, 90 mg.

PROCEDURE

1. Combine the sugar and water in a saucepan. Bring to a boil, stirring to dissolve the sugar.
2. Continue to boil until the syrup reaches a temperature of 240°F (115°C).
3. While the syrup is boiling, beat the egg whites in a clean, grease-free bowl, using the whip attachment, until they form firm, moist peaks. Do not overbeat.
4. As soon as the syrup reaches 240°F (115°C), pour it very slowly into the egg whites while the mixer is running at medium speed.
5. Continue to beat until the meringue is cool and forms stiff peaks. (You have now made an Italian meringue. For more information, see Chapter 34.)
6. With the mixer still running at medium speed, begin adding the butter, a little at a time. Add it just as fast as it can be absorbed by the meringue.
7. When all the butter is beaten in, add the shortening in the same way.
8. Beat in the lemon juice and vanilla.
9. Continue whipping until the buttercream is smooth.



French Buttercream



YIELD: 5 LB 8 OZ (2750 G)

U. S.	METRIC	INGREDIENTS	PROCEDURE
2 lb 8 fl oz	1 kg 250 mL	Sugar Water	1. Combine the sugar and water in a saucepan. Bring to a boil, stirring to dissolve the sugar. 2. Continue to boil until the syrup reaches a temperature of 240°F (115°C).
12 oz	375 g	Egg yolks	3. While the syrup is boiling, beat the yolks with the whip attachment until they are thick and light. 4. As soon as the syrup reaches 240°F (115°C), pour it very slowly into the beaten yolks while the mixer is running at 2nd speed. 5. Continue to beat until the mixture is cool and the yolks are very light and thick.
2 lb 8 oz 1 tbsp	1.25 kg 15 mL	Butter, soft Vanilla	6. With the mixer still running, add the butter, a little at a time. Add it just as fast as it can be absorbed by the mixture. 7. Beat in the vanilla. If the icing is too soft, refrigerate until it is firm enough to spread.

Per 1 ounce (28.35 g): Calories, 150; Protein, 1 g; Fat, 12 g (71% cal.); Cholesterol, 80 mg; Carbohydrates, 10 g; Fiber, 0 g; Sodium, 110 mg.

VARIATIONS

Flavored buttercreams are made by adding the desired flavoring to any of the basic buttercream recipes. In addition to the two variations given below, extracts and emulsions such as lemon, orange, and almond may be used.

Chocolate Buttercream

Add 4–5 oz (125–150 g) sweet chocolate, melted and cooled, to each 1 pound (500 g) buttercream.

Coffee Buttercream

For each 1 pound (500 g) buttercream, add 1½ tbsp (22 mL) instant coffee dissolved in 2 tsp (10 mL) hot water.

Foam-Type Icing

Foam icings, sometimes called *boiled icings*, are simply meringues made with a boiling syrup. Some also contain stabilizing ingredients like gelatin.

Foam-type icings should be applied thickly to cakes and left in peaks and swirls.

These icings are not stable. They should be used the day they are prepared. Italian meringue, discussed in Chapter 34, is the simplest foam-type icing. Follow the recipes on page 1027 but add 8 ounces (250 g) corn syrup to the sugar and water for the boiled syrup. The meringue is usually flavored with vanilla.

Flat Icing

Flat icings, also called *water icings*, are simply mixtures of 10X sugar, water, and, sometimes, corn syrup and flavoring. They are used mostly for coffee cakes, Danish pastry, and sweet rolls. Flat icings are warmed to 100°F (38°C) for application and are handled like fondant.

Fudge-Type Icing

Fudge icings are rich cooked icings. Many are made somewhat like candy. Fudge icings are heavy and thick, and they may be flavored with a variety of ingredients. They are used on cupcakes, layer cakes, loaf cakes, and sheet cakes.

Fudge icings are stable and hold up well on cakes and in storage. Stored icings must be covered tightly to prevent drying and crusting.

To use stored fudge icing, warm it in a double boiler until soft enough to spread.

Fudge-type icings do not necessarily contain chocolate. Plain white fudge icings may be flavored with vanilla, almond, maple, coffee, or other desired flavoring.

Flat Icing

YIELD: 2 LB 8 OZ (1250 G)

U.S.	METRIC	INGREDIENTS
2 lb	1 kg	Confectioners' sugar (10X or 6X)
6 fl oz	180 g	Water, hot
2 fl oz	60 g	Corn syrup
1½ tsp	8 mL	Vanilla

Per 1 ounce (28.35 g): Calories, 90; Protein, 0 g; Fat, 0 g (0% cal.); Cholesterol, 0 mg; Carbohydrates, 24 g; Fiber, 0 g; Sodium, 0 mg.

PROCEDURE

1. Mix all ingredients until smooth.
2. To use, place desired amount in a double boiler. Warm to 100°F (38°C) and apply to the product to be iced.

Caramel Fudge Icing

YIELD: 4 LB (2 KG)

U.S.	METRIC	INGREDIENTS
3 lb	1500 g	Brown sugar
1½ pt	750 mL	Milk
12 oz	375 g	Butter or shortening
¼ tsp	1 mL	Salt
1 tbs	15 mL	Vanilla

Per 1 ounce (28.35 g): Calories, 130; Protein, 0 g; Fat, 4.5 g (33% cal.); Cholesterol, 15 mg; Carbohydrates, 21 g; Fiber, 0 g; Sodium, 65 mg.

PROCEDURE

1. Combine the sugar and milk in a saucepan. Bring to a boil, stirring to dissolve the sugar. Using a brush dipped in water, wash down the sides of the saucepan to prevent sugar crystals from forming. (See “Sugar Cooking,” Chapter 35.)
2. Boil the mixture slowly, without stirring, until it reaches 240°F (115°C).
3. Pour the mixture into the bowl of a mixer. Add the butter and salt. Mix in with the paddle attachment.
4. Turn off the machine. Let the mixture cool to 110°F (43°C).
5. Add the vanilla and turn the machine on low speed. Beat the icing until it is smooth and creamy in texture. If it is too thick, thin it with a little cream or milk.
6. Spread on cooled cake while the icing is warm, or rewarm it in a double boiler.

Quick White Fudge Icing

YIELD: 5 LB 30 OZ (2600 G)

U.S.	METRIC	INGREDIENTS
8 fl oz	250 mL	Water
4 oz	125 g	Butter
4 oz	125 g	Emulsified shortening
3 oz	90 g	Corn syrup
½ tsp	2 mL	Salt
<hr/>		
4 lb	2 kg	Confectioners' sugar (10X or 6X)
1 tbs	15 mL	Vanilla

Per 1 ounce (28.35 g): Calories, 110; Protein, 0 g; Fat, 2.5 g (20% cal.); Cholesterol, 5 mg; Carbohydrates, 23 g; Fiber, 0 g; Sodium, 25 mg.

PROCEDURE

1. Place the water, butter, shortening, syrup, and salt in a saucepan. Bring to a boil.
2. Sift the sugar into the bowl of a mixer.
3. Using the paddle attachment and with the machine running on low speed, add the boiling water mixture. Blend until smooth. Icing will become lighter the more it is mixed.
4. Blend in the vanilla.
5. Use while still warm, or rewarm in a double boiler. If necessary, thin with hot water.

VARIATION

Quick Chocolate Fudge Icing

Omit the butter in the basic recipe. Beat in 12 oz (375 g) melted unsweetened chocolate after the boiling water has been added. Thin with more hot water as needed.

Cocoa Fudge Icing

YIELD: 4 LB 12 OZ (2375 G)

U. S.	METRIC	INGREDIENTS	PROCEDURE
2 lb	1 kg	Granulated sugar	1. Combine the granulated sugar, syrup, water, and salt in a saucepan. Bring to a boil, stirring to dissolve the sugar. Boil the mixture until it reaches 240°F (115°C). (See “Sugar Cooking,” Chapter 35.)
10 oz	300 g	Corn syrup	
8 fl oz	250 mL	Water	
1 tsp	5 mL	Salt	
8 oz	250 g	Butter or part butter and part emulsified shortening	2. While the sugar mixture is cooking, mix the fat, confectioners' sugar, and cocoa until evenly combined, using the paddle attachment of the mixer. 3. With the machine running at low speed, very slowly pour in the hot syrup. 4. Mix in the vanilla. Continue to beat until the icing is smooth, creamy, and spreadable. If necessary, thin with a little hot water. 5. Use while still warm, or rewarm in a double boiler.
1 lb	500 g	Confectioners' sugar (10X or 6X)	
6 oz	175 g	Cocoa	
to taste	to taste	Vanilla	
as needed	as needed	Hot water	

Per 1 ounce (28.35 g): Calories, 110; Protein, 0 g; Fat, 2.5 g (20% cal.); Cholesterol, 5 mg; Carbohydrates, 22 g; Fiber, 1 g; Sodium, 60 mg.

VARIATION

Vanilla Fudge Icing

Use evaporated milk or light cream instead of water for the syrup. Omit cocoa. Adjust consistency with additional confectioners' sugar (to thicken) or water (to thin). Other flavorings may be used in place of vanilla, such as almond, maple, peppermint, or coffee.

Royal Icing

Royal icing, also called *decorating* or *decorator's icing*, is similar to flat icings except that it is much thicker and is made with egg whites, which make it hard and brittle when dry. It is used almost exclusively for decorative work.

To prepare royal icing:

1. Place the desired amount of 10X sugar in a mixing bowl. Add a small quantity of cream of tartar (for whiteness)—about $\frac{1}{4}$ teaspoon per pound of sugar (1 g per kg).
2. Beat in egg white, a little at a time, until the sugar forms a smooth paste. You will need 2 to 3 ounces egg whites per pound of sugar (125 g per kg).
3. Keep unused icing covered with a damp cloth at all times to prevent hardening.

Glazes

Glazes are thin, glossy, transparent coatings that give shine to baked products and help prevent drying.

The simplest glaze is a sugar syrup or diluted corn syrup brushed onto coffee cakes or Danish while the glaze is hot. See Chapter 30 for recipe (p. 950). Syrup glazes may contain gelatin or waxy maize starch. Fruit glazes, the most popular being apricot, are available commercially prepared. They are melted, thinned with a little water, and brushed on while hot.

Fruit glazes may also be made by melting apricot or other preserves and forcing them through a strainer.

One of the most common uses of glazes in cake making is to coat the fruit arranged on the top of fruit tortes (see p. 972).

Ganache is a mixture of heavy cream and melted chocolate. Although it is not transparent like the glazes we have been discussing, it is used like other glazes to give a thin, shiny coating to cakes and other desserts. Making basic ganache is a simple procedure:

1. Heat heavy cream just to the boiling point and remove from the heat.
2. Add chopped chocolate and let stand until the chocolate has melted.
3. Stir until smooth.

Freshly made ganache can be used immediately, or it can be refrigerated and then rewarmed for later use. When it cools, it solidifies and can be used as the base for chocolate truffles.

Chocolate Ganache

YIELD: 1 LB 12 OZ (875 G)

U.S.	METRIC	INGREDIENTS
1 lb	500g	Dark chocolate
12 oz	375 g	Heavy cream

Per 1 ounce (28.35 g): Calories, 130; Protein, 1 g; Fat, 10 g (67% cal.); Cholesterol, 20 mg; Carbohydrates, 10 g; Fiber, 1 g; Sodium, 5 mg.

VARIATIONS

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 half the weight of the chocolate. For a softer ganache, increase the cream to the same weight as the chocolate.

PROCEDURE

1. Chop the chocolate into small pieces.
2. Bring the cream just to a boil, stirring to prevent scorching. (Use very fresh cream; old cream is more likely to curdle when boiled.)
3. Remove from the heat and add the chocolate. Stir and let stand for a few minutes. Stir again until the chocolate is completely melted and the mixture is smooth.
4. Apply to cakes as a glaze by pouring the ganache over the cake, as for fondant.

Fillings

Fillings are sometimes used instead of icings between cake layers. Fillings are also used in such products as jelly rolls, Danish, and other pastries.

1. Fruit fillings.

Fruit fillings may be cooked or uncooked.

Cooked fruit fillings are chopped or puréed fruits or fruit juices thickened with starch or eggs. They are prepared somewhat like pie fillings (see Chapter 34).

Uncooked fruit fillings include jellies and preserves and dried fruits that have been ground and flavored (see recipes in Chapter 30). Fresh fruits, such as the strawberries in strawberry shortcake, are also used.

Many ready-to-use fruit fillings are on the market.

2. Cream fillings.

Cream fillings include pastry cream (recipes in Chapter 35) and various pudding-type preparations.

Desserts with cream fillings should be assembled as close to service time as possible and kept refrigerated to avoid health hazards.

3. Whipped cream.

Whipped cream is used as a dessert topping, filling, and frosting. See page 836 for instructions on whipping and handling heavy cream.

Artificial whipped toppings resemble whipped cream in appearance. They should be used only if your customers actually like them.

Assembling and Icing Cakes

Selection of Icing

The flavor, texture, and color of the icing must be compatible with the cake.

1. In general, use heavy frostings with heavy cakes and light frostings with light cakes.

For example, ice angel food cakes with a simple flat icing, fondant, or a light, fluffy boiled icing.

High-ratio cakes go well with buttercreams and fudge-type icings.

Shortened sponge layer cakes (genoise) are often combined with fruits or fruit fillings, light French or meringue-type buttercream, whipped cream, or flavored fondant.

2. Use the best-quality flavorings, and use them sparingly. The flavor of the frosting should not be stronger than that of the cake.

Fudge-type icings may be flavored more strongly, as long as the flavor is of good quality.

3. Use coloring sparingly. Light, pastel shades are more appetizing than loud colors.

Paste colors give the best results. Mix a little color with a small portion of the icing, then use this icing to color the rest.

Small Cakes

1. Cupcakes are iced by dipping the tops in a soft icing. Twist the cakes slightly and pull them out quickly in one smooth motion.

Cupcakes may also be iced by spreading icing on with a spatula. Practice is necessary to develop speed and efficiency.

2. Petits fours are tiny cakes cut from sheet cakes. Select a cake that doesn't crumble easily. Carefully cut it into desired shapes. Remove all crumbs and place the cakes on a rack over a sheet pan. Ice by pouring fondant or flat icing over them to cover completely.

Procedure for Assembling Layer Cakes

- Cool cake layers completely before assembling and icing.
- Trim layers, if necessary.
 - Remove any ragged edges.
 - Slightly rounded tops are easily covered by icing, but excessively large bumps may have to be cut off.
 - If desired, layers may be split horizontally. This makes the cake higher and increases the proportion of filling to cake. See Figure 32.3.
- Brush all crumbs from cakes. Loose crumbs make the icing process difficult.
- Place the bottom layer upside down (to give a flat surface for the filling) on a cardboard cake circle of the same diameter. Place the cake in the center of a cake turntable.

If a cake circle or turntable is not available, place the cake on a serving plate and slip sheets of waxed paper or parchment under the edges of the cake to keep the plate clean.
- Spread filling on the bottom layer out to the edges. If the filling is different from the icing for the outside of the cake, be careful not to spread the filling over the edges.

Use the proper amount of filling. If applied too heavily, it will ooze out when the top layer is set in place.
- Place the top layer on the bottom layer, right side up.
- Ice the cake:
 - If a thin or light icing is used, pour or spread the icing onto the center of the cake. Then spread it to the edges and down the sides with a spatula.
 - If a heavy icing is used, it may be necessary to spread the sides first, then place a good quantity of icing in the center of the top and push it to the edges with the spatula.

Pushing the icing rather than pulling or dragging it with the spatula prevents pulling up crumbs and getting them mixed with the icing.

Use enough icing to cover the entire cake generously, but not excessively, with an even layer.

Smooth the icing with the spatula or leave it textured or swirled, as desired.

The finished, iced cake should have a perfectly level top and perfectly straight, even sides.

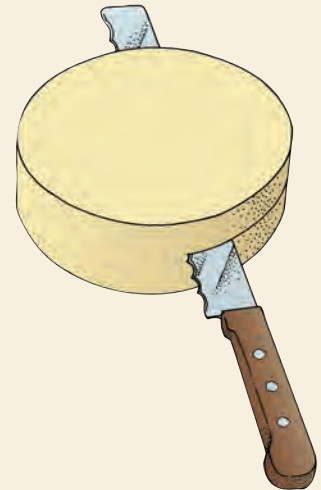


Figure 32.3 Cake layers may be split horizontally, using a long-bladed, serrated knife.

Sheet Cakes

Sheet cakes are ideal for volume service because they require little labor to bake, ice, and decorate, and they keep well as long as they are uncut.

For special occasions, sheet cakes are sometimes decorated as a single unit with a design or picture in colored icing, a “Happy Special Occasion” message, and so on. It is more common, however, to ice them for individual service, as in the following procedure.

Procedure for Icing Sheet Cakes

1. Turn out the cake onto the bottom of another sheet pan or tray, as described on page 974. Cool the cake thoroughly.
2. Trim the edges evenly with a serrated knife.
3. Brush all crumbs from the cake.
4. Place a quantity of icing in the center of the cake. With a spatula, push the icing to the edges. Smooth the top with the spatula, giving the entire cake an even layer of icing.
5. With a long knife or spatula, mark the entire cake off into portions, as in Figure 32.4, by pressing the back of the knife lightly into the icing. Do not cut the cake.
6. Using a paper cone or pastry bag fitted with a star tube, pipe a rosette or swirl of icing onto the center of each marked-off portion, or select another decoration, as desired. Whatever decorations you use, keep them simple, and make them the same for every portion. The finished sheet cake will resemble that in Figure 32.5.
7. Hold for service. Cut as close as possible to service time to keep the cake from drying.

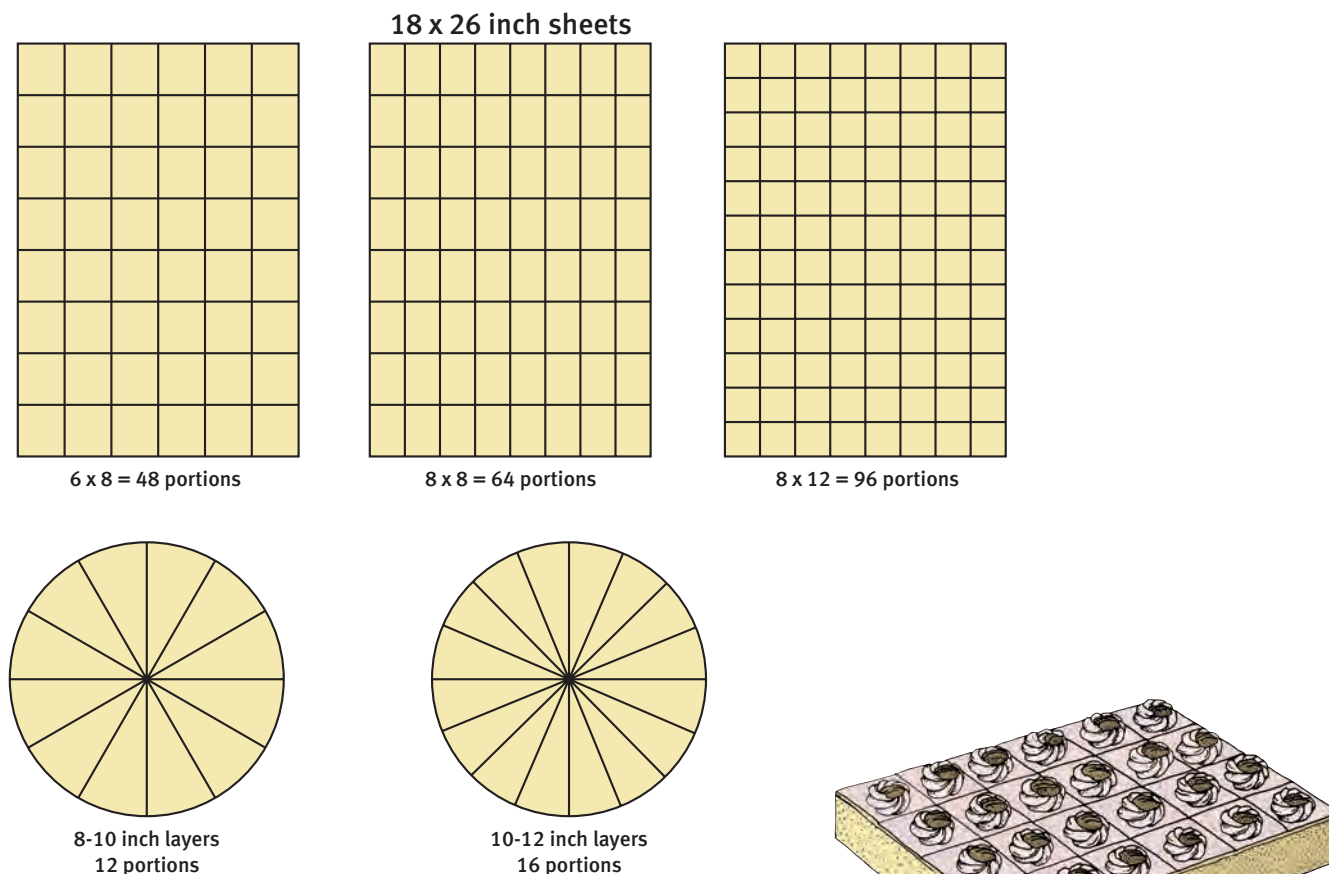


Figure 32.4 Cake-cutting guides for sheet cakes and round layer cakes. For sheets measuring 13 × 18 in. (33 × 46 cm), simply divide the above diagrams for full-sized sheet cakes in half.

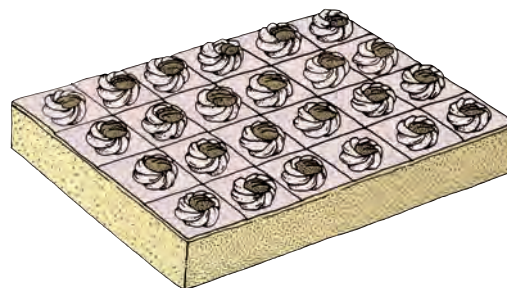


Figure 32.5 A finished sheet cake marked off into portions and decorated so each portion is identical.

KEY POINTS TO REVIEW

- What are the six basic types of icing?
- What are the steps in the procedure for assembling and icing layer cakes?
- What are the steps in the procedure for icing sheet cakes?

TERMS FOR REVIEW

creaming method	angel food method	foam icing	royal icing
two-stage method	chiffon method	flat icing	glaze
blending method	fondant	fudge icing	ganache
foaming method	buttercream		

QUESTIONS FOR DISCUSSION

1. Briefly list the steps in each of the four basic cake-mixing methods presented in this chapter.
2. What are the reasons, in the creaming method, for creaming the butter and sugar until the mixture is light and fluffy?
3. In both the creaming method and the two-stage method, scraping down the sides of the bowl is emphasized. Why is this necessary?
4. What might the finished product be like if you tried to mix a low-fat cake by the two-stage method? Explain.
5. Examine the cake formulas below and indicate which mixing method you would use for each.
6. What is the most important rule to consider when using fondant?
7. Compare the keeping qualities of simple buttercreams and meringue-type buttercreams.
8. List the steps in assembling and icing a three-layer cake.

CAKE 1

2 lb	Cake flour	1 kg
1 lb 2 oz	Emulsified shortening	525 g
1 oz	Salt	30 g
1.5 oz	Baking powder	45 g
2 lb 8 oz	Fine granulated sugar	1250 g
1 lb	Skim milk	500 g
1 lb 5 oz	Whole eggs	650 g
10 oz	Skim milk	300 g

CAKE 2

3 lb	Whole eggs	1.5 kg
1 lb	Egg yolks	500 g
2 lb 4 oz	Sugar	1125 g
2 lb	Cake flour	1 kg
6 oz	Cornstarch	175 g
6 oz	Melted butter	175 g

CAKE 3

1 lb	Butter	500 g
8 oz	Shortening	250 g
4 lb	Sugar	2 kg
1 oz	Vanilla	30 g
1 lb 4 oz	Whole eggs	625 g
3 lb 8 oz	Cake flour	1750 g
10 oz	Cocoa powder	300 g
1.5 oz	Baking soda	45 g
3 lb	Buttermilk	1.5 kg
1 lb 8 oz	Water	750 g

Chapter 33



Cookies

The word *cookie* means “small cake,” and that’s exactly what a cookie is. In fact, some cookies are made from cake batter. Some products, such as certain kinds of brownies, are difficult to classify as cakes or cookies.

Most cookie formulas, however, call for less liquid than cake formulas do. Cookie doughs range from soft to very stiff, unlike the thinner batters for cakes. This difference in moisture content means some differences in mixing methods, although the basic procedures are much like those for cakes.

The most apparent differences between cakes and cookies are in the makeup. Because most cookies are individually formed or shaped, a great deal of hand labor is involved. Learning correct methods and practicing diligently are essential for efficiency.

After reading this chapter, you should be able to

1. List the factors responsible for crispness, softness, chewiness, and spread in cookies.
2. Demonstrate the three basic cookie mixing methods.
3. Prepare the seven basic cookie types: dropped, bagged, rolled, molded, icebox, bar, and sheet.
4. Prepare pans for, bake, and cool cookies.

Cookie Characteristics and Their Causes

Cookies come in an infinite variety of shapes, sizes, flavors, and textures. Characteristics that are desirable in some are not desirable in others. For example, we want some cookies to be crisp and others to be soft. We want some to hold their shape and others to spread during baking. In order to produce the characteristics we want and to correct faults, it is useful to know what causes these characteristics.

Crispness

Cookies are crisp if they are very low in moisture. The following factors contribute to crispness:

1. Low proportion of liquid in the mix. Most crisp cookies are made from a stiff dough.
2. High sugar and fat content.
3. Evaporation of moisture during baking due to high temperatures and/or long baking.
4. Small size or thin shape, so the cookies dry quickly during baking.
5. Proper storage. Crisp cookies can become soft if they absorb moisture.

Softness

Softness is the opposite of crispness, so it has the opposite causes, as follows:

1. High proportion of liquid in mix.
2. Low sugar and fat.
3. Honey, molasses, or corn syrup included in formulas. These sugars are hygroscopic, which means they readily absorb moisture from the air or from their surroundings.
4. Underbaking.
5. Large size or thick shape. The cookies retain moisture.
6. Proper storage. Soft cookies can become stale and dry if not tightly covered or wrapped.

Chewiness

Moisture is necessary for chewiness, but other factors are also required. In other words, all chewy cookies are soft, but not all soft cookies are chewy.

1. High sugar and liquid content, but low fat content.
2. High proportion of eggs.
3. Strong flour, or gluten developed during mixing.

Spread

Spread is desirable in some cookies, while others must hold their shape. Several factors contribute to spread or lack of spread.

1. **Sugar.**
High sugar content increases spread. Coarse granulated sugar increases spread, whereas fine sugar or confectioners' sugar reduces spread.
2. **Leavening.**
High baking soda or baking ammonia content encourages spread. So does long creaming, which incorporates air.

3. Temperature.

Low oven temperature increases spread. High temperature decreases spread because the cookie sets up before it has a chance to spread too much.

4. Liquid.

A slack batter—that is, one with a high liquid content—spreads more than a stiff dough.

5. Flour.

Strong flour or activation of gluten decreases spread.

6. Pan grease.

Cookies spread more if baked on a heavily greased pan.

Mixing Methods

Cookie-mixing methods are much like cake-mixing methods. The major difference is that less liquid is usually incorporated, so mixing is somewhat easier.

Less liquid means gluten is less developed by the mixing. Also, a smooth, uniform mix is easier to obtain.

There are three basic cookie mixing methods:

1. One-stage
2. Creaming
3. Sponge

These methods are subject to many variations due to differences in formulas. The general procedures are as follows. Be sure, however, to follow the exact instructions when a formula indicates a variation in the procedure.

One-Stage Method

The *one-stage method* is the counterpart of the blending or two-stage cake-mixing method, discussed in the previous chapter. Cake batters have more liquid, so it must be added in two or more stages in order to blend uniformly. Low-moisture cookies, on the other hand, can be mixed all in one stage.

Creaming Method

The *creaming method* for cookies is nearly identical to the creaming method for cakes. Because cookies require less liquid, it is usually not necessary to add the liquid alternately with the flour. It can be added all at once.

Sponge Method

The *sponge method* for cookies is essentially the same as the egg-foam methods for cakes. The procedure varies considerably, depending on the ingredients. Batches should be kept small because the batter is delicate.

Procedure for One-Stage Method

1. Scale ingredients accurately. Have all ingredients at room temperature.
2. Place all ingredients in mixer. With the paddle attachment, mix at low speed until uniformly blended. Scrape down the sides of the bowl as necessary.

Procedure for Creaming Method

1. Scale ingredients accurately. Have all ingredients at room temperature.
2. Place the fat, sugar, salt, and spices in the mixing bowl. With the paddle attachment, cream these ingredients at low speed.
 - For light cookies, cream until the mix is light and fluffy, incorporating more air for leavening.
 - For a dense, chewy cookie, cream only slightly.
3. Add the eggs and liquid, if any, and blend in at low speed.
4. Sift in the flour and leavening. Mix until just combined.

Procedure for Sponge Method

1. Scale all ingredients accurately. Have all ingredients at room temperature, or warm the eggs slightly for greater volume, as for sponge cakes.
2. Following the procedure given in the formula used, whip the eggs (whole, yolks, or whites) and the sugar to the proper stage: soft peaks for whites, thick and light for whole eggs or yolks.
3. Fold in the remaining ingredients as specified in the recipe. Be careful not to overmix or to deflate the eggs.

KEY POINTS TO REVIEW

- What are the factors that determine whether a cookie will be crisp, soft, or chewy?
- What are the factors that determine how much a cookie will spread when baked?
- What are the steps in the one-stage method for mixing cookies?
- What are the steps in the creaming method for mixing cookies?
- What are the steps in the sponge method for mixing cookies?

Types and Makeup Methods

We can classify cookie types by makeup method as well as by mixing method. Grouping by the makeup method is perhaps more useful from the point of view of production because mixing methods are relatively simple, whereas makeup procedures vary considerably.

In this section, we present basic procedures for producing seven cookie types:

1. Dropped
2. Bagged
3. Rolled
4. Molded
5. Icebox
6. Bar
7. Sheet

No matter what makeup method you use, follow one important rule: *Make all cookies of uniform size and thickness.* This is essential for even baking. Because baking times are so short, small cookies may burn before large ones are done.

Dropped Cookies

Dropped cookies are made from a soft dough or batter. They are fast and easy to make up. Many sponge or foam-type batters are made up as dropped cookies.

1. Select the proper size scoop for accurate portioning.
 - A No. 30 scoop makes a large cookie, about 1 ounce (30 g).
 - A No. 40 scoop makes a medium cookie.
 - Nos. 50, 60, or smaller scoops make small cookies.
2. Drop the cookies onto the prepared baking sheets. Allow enough space between cookies for spreading.
3. Rich cookies spread by themselves. However, if the formula requires it, flatten the mounds of batter slightly with a weight dipped in sugar.

Bagged Cookies

Bagged cookies, or pressed cookies, are also made from soft doughs. The dough must be soft enough to be forced through a pastry bag but stiff enough to hold its shape.

1. Fit a pastry bag with a tip of the desired size and shape. Fill the bag with the cookie dough. Review Figure 18.1 for tips on use of the pastry bag.
2. Press out cookies of desired shape and size directly onto prepared cookie sheets.

Rolled Cookies

Rolled cookies, which are cut from a stiff dough, are not often made in commercial food service because they require excessive labor. Also, scraps are always left over after cutting. When rerolled, these scraps make inferior, tough cookies.

1. Chill dough thoroughly.
2. Roll dough to $\frac{1}{8}$ inch (3 mm) thick on a floured canvas or floured workbench. Use as little flour as possible for dusting because the flour can toughen the cookies.
3. Cut out cookies with cookie cutters and place on prepared baking sheets. Cut as close together as possible to reduce the quantity of scraps.

Molded Cookies

The first part of the procedure for *molded cookies* (steps 1 and 2) is simply a fast and fairly accurate way of dividing the dough into equal portions. Each piece is then molded into the desired shape. This usually consists of simply flattening the pieces out with a weight. For some traditional cookies, special molds are used to flatten the dough and, at the same time, stamp it with a design.

The pieces may also be shaped by hand into crescents, fingers, or other shapes.

1. Roll the dough into long cylinders about 1 inch (2.5 cm) thick, or whatever size is required. (Refrigerate the dough if it is too soft to handle.)
2. With a knife or bench scraper, cut the roll into 1-ounce (30-g) pieces, or whatever size is required.
3. Place the pieces on prepared baking sheets, leaving 2 inches (5 cm) of space between them.
4. Flatten cookies with a weight (such as a can) dipped in granulated sugar after pressing each cookie.
A fork is sometimes used for flattening the dough, as for peanut butter cookies.
5. Alternative method: After step 2, shape the dough by hand into desired shapes.

Icebox Cookies

The *icebox method*, or refrigerator method, is ideal for operations that wish to have freshly baked cookies on hand at all times. The rolls of dough may be made up in advance and stored. Cookies can easily be cut and baked as needed.

1. Scale dough into pieces of uniform size, from 1½ pounds (700 g), if you are making small cookies, to 3 pounds (1400 g), for large cookies.
2. Form the dough into cylinders from 1 to 2 inches (2.5 to 5 cm) in diameter, depending on the size cookie desired.
For accurate portioning, it is important to make all the cylinders of dough the same thickness and length.
3. Wrap the cylinders in parchment or waxed paper, place them on sheet pans, and refrigerate overnight.
4. Unwrap the dough and cut into slices of uniform thickness. The exact thickness required depends on the size of the cookie and how much the dough spreads during baking. The usual range is from ¼ to ½ inch (3 to 12 mm).
A slicing machine is recommended for ensuring even thickness. Doughs containing nuts or fruits should be sliced by hand with a knife.
5. Place the slices on prepared baking sheets, allowing 2 inches (5 cm) of space between cookies.

Bar Cookies

Bar cookies are so called because the dough is shaped into long bars, which are baked and then cut. After cutting, they may be baked again, as in the case of biscotti, which means “twice baked.” Do not confuse bar cookies with sheet cookies (see below), which are often called *bars* by consumers.

1. Scale the dough into 1¾-pound (800-g) units (1-pound units, or 500-g units, may be used for smaller cookies).
2. Shape the pieces of dough into cylinders the length of the sheet pans. Place three strips on each greased pan, spacing them well apart.
3. Flatten the dough with the fingers into strips about 3 to 4 inches wide and about ¼ inch thick (8 to 10 cm wide, 6 mm thick).

4. If required, brush with egg wash.
5. Bake as directed in the formula.
6. After baking, while cookies are still warm, cut each strip into bars about $1\frac{3}{4}$ inches (4.5 cm) wide.

Sheet Cookies

Sheet cookies vary so much that it is nearly impossible to give a single procedure for all of them. Some of them are almost like sheet cakes, only denser and richer. They may even be iced like sheet cakes. Others consist of two or three layers added and baked in separate stages. The following procedure is a general guideline only.

1. Spread the cookie mixture into prepared sheet pans. Make sure the thickness is even.
2. If required, add topping, or brush with an egg wash.
3. Bake as directed. Cool.
4. Apply icing or topping, if any.
5. Cut into individual squares or rectangles.

Panning, Baking, and Cooling

Preparing the Pans

1. Use clean, unwarped pans.
2. Lining the sheets with parchment or silicone paper is fast, and it eliminates the necessity of greasing the pans.
3. A heavily greased pan increases the spread of the cookie. A greased and floured pan decreases spread.
4. Some high-fat cookies can be baked on ungreased pans.

Baking

1. Most cookies are baked at a relatively high temperature for a short time.
2. Too low a temperature increases spreading and may produce hard, dry, pale cookies.
3. Too high a temperature decreases spreading and may burn the edges or bottoms.
4. Even one minute of overbaking can burn cookies, so watch them closely. The heat of the pan continues to bake the cookies even after they are removed from the oven.
5. Doneness is indicated by color. The edges and bottoms should just be turning a light golden color.
6. With some rich doughs, burnt bottoms may be a problem. In this case, double-pan the cookies by placing the sheet pan on a second pan of the same size.

Cooling

1. Remove the cookies from the pans while they are still warm, or they may stick.
2. If the cookies are very soft, do not remove them from the pans until they are cool enough and firm enough to handle. Cookies may be soft when hot but become crisp when cool.
3. Do not cool cookies too rapidly or in cold drafts, or they may crack.
4. Cool completely before storing.

KEY POINTS TO REVIEW

- What are the seven makeup methods for making cookies? Describe the procedure for each.
- How are pans prepared for baking cookies?
- When baking cookies, how do you determine when they are done?
- What is the proper way to cool cookies after baking?



Chocolate Chip Cookies



INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter and/or shortening	10 oz	300 g	50 %
Granulated sugar	8 oz	240 g	40 %
Brown sugar	8 oz	240 g	40 %
Salt	0.25 oz (1½ tsp)	8 g (7 mL)	1.25 %
Eggs	6 oz	175 g	30 %
Vanilla	2 tsp	10 mL	1.5 %
Pastry flour	1 lb 4 oz	600 g	100 %
Baking soda	0.25 oz (1½ tsp)	8 g (7 mL)	1.25 %
Chocolate chips	1 lb 4 oz	600 g	100 %
Chopped walnuts or pecans	8 oz	240 g	40 %
<i>Yield:</i>	<i>5 lb</i>	<i>2421 g</i>	<i>404 %</i>

Per 1 ounce (28.35 g): Calories, 130; Protein, 2 g; Fat, 7 g (47% cal.); Cholesterol, 15 mg; Carbohydrates, 16 g; Fiber, 2 g; Sodium, 85 mg.

PROCEDURE

Mixing:

Creaming method. Blend in chocolate chips and nuts last.

Makeup:

Drop method. Use greased or parchment-lined baking sheets.

Baking:

375°F (190°C), 8–12 minutes, depending on size.

VARIATIONS

Brown Sugar Nut Cookies

Omit granulated sugar and use 100% (1 lb 4 oz/600 g) brown sugar. Omit chocolate chips and increase nuts to 100% (1 lb 4 oz/600 g).

TOLL HOUSE COOKIES

Chocolate chip cookies, in their many varieties, are the most popular cookies in North America. They owe their origin to the Toll House cookie, said to have been developed in the 1920s or 1930s by Ruth Wakefield, owner of the Toll House Inn in Whitman, Massachusetts. The original Toll House cookies are simple butter cookies with semisweet chocolate morsels mixed into the dough. Today's chocolate chip or chocolate chunk cookies are likely to contain any kind of chocolate plus other ingredients, especially nuts, such as pecans, walnuts, or macadamia nuts.

Oatmeal Raisin Cookies



INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter and/or shortening	8 oz	250 g	67 %
Brown sugar	1 lb	500 g	133 %
Salt	1 tsp	5 g (5 mL)	1.5 %
Eggs	4 oz	125 g	33 %
Vanilla	2 tsp	10 mL	3 %
Milk	1 oz	30 g	8 %
Pastry flour	12 oz	375 g	100 %
Baking powder	0.5 oz (1 tbsp)	15 g	4 %
Baking soda	0.25 oz (1½ tsp)	8 g	2 %
Rolled oats (quick cooking)	10 oz	300 g	83 %
Raisins (see Note)	8 oz	250 g	67 %
<i>Yield:</i>	<i>3 lb 11 oz</i>	<i>1858 g</i>	<i>501 %</i>

Per 1 ounce (28.35 g): Calories, 110; Protein, 2 g; Fat, 4 g (31% cal.); Cholesterol, 15 mg; Carbohydrates, 18 g; Fiber, 1 g; Sodium, 135 mg.

Note: If raisins are hard and dry, soak them in hot water 30 minutes, drain, and dry well before adding to cookie dough.

PROCEDURE

Mixing:

Creaming method. Combine oats with other dry ingredients after they are sifted. Mix raisins into dough last.

Makeup:

Drop method. Use greased or parchment-lined baking sheets.

Baking:

375°F (190°C), 10–12 minutes, depending on size.

Tea Cookies

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter or half butter and half shortening	1 lb	500 g	67 %
Granulated sugar	8 oz	250 g	33 %
Confectioners' sugar	4 oz	125 g	17 %
<hr/>			
Eggs	6 oz	175 g	25 %
Vanilla (or almond extract)	1½ tsp	8 mL	1 %
<hr/>			
Cake flour	1 lb 8 oz	750 g	100 %
<hr/>			
<i>Yield:</i>	<i>3 lb 10 oz</i>	<i>1823 g</i>	<i>243 %</i>

Per 1 ounce (28.35 g): Calories, 130; Protein, 1 g; Fat, 7 g (50% cal.); Cholesterol, 30 mg; Carbohydrates, 15 g; Fiber, 0 g; Sodium, 70 mg.

PROCEDURE

Mixing:

Creaming method.

Makeup:

Bagged method. Make small cookies, about 1 in. (2.5 cm) in diameter, using a star tube or plain tube. Bag out onto ungreased or parchment-lined baking sheets.

Baking:

375°F (190°C), about 10 minutes.

VARIATIONS

Almond Tea Cookies

Add 17% (4 oz/125 g) almond paste. Blend it thoroughly with the sugar before adding the butter.

Sandwich-Type Cookies

Select cookies with the same size and shape. Turn half of them over and dot the centers of the flat sides with small amount of jam or fudge icing. Sandwich with the remaining cookies.

Chocolate Tea Cookies

Substitute 6 oz (175 g) cocoa for 6 oz (175 g) flour.

Ladyfingers

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Egg yolks	6 oz	180 g	60 %
Sugar	3 oz	90 g	30 %
<hr/>			
Egg whites	9 oz	270 g	90 %
Sugar	5 oz	150 g	50 %
Lemon juice	½ tsp	2.5 mL	0.8%
<hr/>			
Pastry flour	10 oz	300 g	100 %
<hr/>			
<i>Yield:</i> <i>(enough for</i> <i>about 6 dozen</i> <i>ladyfingers)</i>	<i>2 lb 1 oz</i>	<i>990 g</i>	<i>340 %</i>

Per ladyfinger: Calories, 35; Protein, 1 g; Fat, 1 g (24% cal.); Cholesterol, 30 mg; Carbohydrates, 6 g; Fiber, 1 g; Sodium, 5 mg.

PROCEDURE

Mixing:

Sponge method.

1. Beat egg yolks 1 minute at medium speed using whip attachment. With machine running, gradually add the first amount of sugar. Continue to whip until thick and light.
2. Whip the egg whites until they form soft peaks. Add the sugar and lemon juice and beat until stiff but still moist.
3. Sift the flour and fold into the yolks.
4. Fold the whites into the batter.

Makeup:

Bagged method. Use plain tube. Bag out strips measuring 3 in. × ¾ in. (7.5 × 2 cm) onto pans that have been lined with parchment or greased and floured.

Baking:

375°F (190°C), about 10 minutes.

Coconut Macaroons (Meringue Type)

INGREDIENTS	U.S.	METRIC
Egg whites	8 oz	250 g
Cream of tartar	1 tsp	2 g (5 mL)
Sugar	1 lb 4 oz	625 g
Vanilla (or rum flavor)	0.5 oz	15 mL
.....		
Macaroon coconut	1 lb	500 g
.....		
<i>Yield:</i>	<i>2 lb 12 oz</i>	<i>1392 g</i>

Per 1 ounce (28.35 g): Calories, 120; Protein, 1 g; Fat, 7 g (48% cal.); Cholesterol, 0 mg; Carbohydrates, 16 g; Fiber, 2 g; Sodium, 15 mg.

PROCEDURE

Mixing:

Sponge method.

1. Beat the egg whites and cream of tartar until they form soft peaks. Gradually beat in the sugar. Continue to beat until stiff and glossy.
2. Fold in the coconut.

Makeup:

Bagged method. Bag out with a star tube onto parchment-lined baking sheets.

Baking:

300°F (150°C), about 30 minutes.

Sugar Cookies

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter and/or shortening	1 lb	500 g	40 %
Sugar	1 lb 4 oz	625 g	50 %
Salt	2 tsp	10 g (10 mL)	0.9 %
.....			
Eggs	4 oz	125 g	10 %
Milk	4 oz	125 g	10 %
Vanilla	0.5 oz	15 mL	1.25 %
.....			
Cake flour	2 lb 8 oz	1250 g	100 %
Baking powder	1.25 oz	35 g	3 %
.....			
<i>Yield:</i>	<i>5 lb 5 oz</i>	<i>2685 g</i>	<i>215 %</i>

Per 1 ounce (28.35 g): Calories, 120; Protein, 1 g; Fat, 4.5 g (36% cal.); Cholesterol, 15 mg; Carbohydrates, 17 g; Fiber, 0 g; Sodium, 150 mg.

PROCEDURE

Mixing:

Creaming method.

Makeup:

Rolled method. Before cutting the rolled-out dough, wash with milk and sprinkle with sugar. Use greased or parchment-lined baking sheets.

Baking:

375°F (190°C), 8–10 minutes.

VARIATIONS

Lemon rind, extract, or emulsion may be used in place of vanilla.

Rolled Brown Sugar Cookies

Increase butter to 50% (1 lb 4 oz/625 g). Omit granulated sugar and use 60% (1 lb 8 oz/750 g) brown sugar.

Rolled Chocolate Cookies

Substitute 4 oz (125 g) cocoa for 4 oz (125 g) flour.

Shortbread Cookies

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter	1 lb 8 oz	750 g	75 %
Sugar	1 lb	500 g	50 %
Salt	0.25 oz (1½ tsp)	8 g (7 mL)	0.75 %
.....			
Egg yolks (see Note)	8 oz	250 g	25 %
Flavoring (optional; see Note)			
.....			
Pastry flour	2 lb	1000 g	100 %
.....			
<i>Yield:</i>	<i>5 lb</i>	<i>2508 g</i>	<i>250 %</i>

Per 1 ounce (28.35 g): Calories, 130; Protein, 2 g; Fat, 8 g (53% cal.); Cholesterol, 55 mg; Carbohydrates, 14 g; Fiber, 2 g; Sodium, 105 mg.

Note: Traditional Scottish shortbread is made with butter, flour, and sugar—no eggs, flavoring, or liquid. Because the dough is crumbly, it is not rolled out but rather pressed into pans or molds and baked, and then cut while still hot. For the recipe given here, you may make the cookies without added flavoring or flavor to taste with vanilla, almond, or lemon.

PROCEDURE

Mixing:

Creaming method.

Makeup:

Rolled method. Roll dough ¼ in. (0.5 cm) thick (this is thicker than most rolled cookies). Use greased or parchment-lined baking sheets.

Baking:

350°F (175°C), about 15 minutes.

Cinnamon Cookies

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter and/or shortening	1 lb	500 g	80 %
Granulated sugar	8 oz	250 g	40 %
Brown sugar	8 oz	250 g	40 %
Salt	1 tsp	5 g (5 mL)	0.9 %
Cinnamon	0.33 oz (1½ tbsp)	10 g	1.7 %
<hr/>			
Eggs	3 oz	90 g	15 %
Milk	1 oz	30 g	5 %
<hr/>			
Pastry flour	1 lb 4 oz	625 g	100 %
<i>Yield:</i>	<i>3 lb 8 oz</i>	<i>1760 g</i>	<i>282 %</i>

Per 1 ounce (28.35 g): Calories, 130; Protein, 1 g; Fat, 7 g (48% cal.); Cholesterol, 25 mg; Carbohydrates, 16 g; Fiber, 1 g; Sodium, 110 mg.

PROCEDURE

Mixing:

Creaming method.

Makeup:

Molded method. Roll cut pieces in cinnamon sugar before placing on greased baking sheets and pressing flat.

Baking:

375°F (190°C), about 10 minutes.

VARIATION

Chocolate Cinnamon Cookies

Substitute 4 oz (125 g) cocoa for 4 oz (125 g) flour.

Raisin Spice Bars

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Sugar	1 lb 4 oz	580 g	83 %
Butter and/or shortening	8 oz	230 g	33 %
Eggs	8 oz	230 g	33 %
Molasses	4 oz	115 g	17 %
Pastry flour	1 lb 8 oz	700 g	100 %
Cinnamon	2 tsp	3 g (10 mL)	0.5 %
Ground cloves	½ tsp	1 g (2 mL)	0.16 %
Ground ginger	1 tsp	2 g (5 mL)	0.3 %
Baking soda	¾ tsp	3 g (3 mL)	0.5 %
Salt	1 tsp	5 g (5 mL)	0.75 %
Raisins (see Note)	1 lb	470 g	67 %
<i>Yield:</i>	<i>5 lb</i>	<i>2339 g</i>	<i>335 %</i>

Per 1 ounce (28.35 g): Calories, 100; Protein, 1 g; Fat, 2.5 g (21% cal.); Cholesterol, 15 mg; Carbohydrates, 20 g; Fiber, 1 g; Sodium, 65 mg.

Note: If raisins are hard and dry, soak them in hot water 30 minutes, drain, and dry well before adding to the mix.

PROCEDURE

Mixing:

One-stage method.

Makeup:

Bar method. Egg-wash with whole eggs or egg whites.

Baking:

350°F (175°C), about 15 minutes.



Raisin Spice Bars

Peanut Butter Cookies

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter and/or shortening	12 oz	375 g	75 %
Brown sugar	8 oz	250 g	50 %
Granulated sugar	8 oz	250 g	50 %
Salt	1 tsp	5 g (5 mL)	1 %
Peanut butter	12 oz	375 g	75 %
<hr/>			
Eggs	4 oz	125 g	25 %
Vanilla extract	2 tsp	10 g	2 %
<hr/>			
Pastry flour	1 lb	500 g	100 %
Baking soda	1 tsp	5 g (5 mL)	1 %
<hr/>			
<i>Yield:</i>	<i>3 lb 12 oz</i>	<i>1895 g</i>	<i>379 %</i>

Per 1 ounce (28.35 g): Calories, 130; Protein, 2 g; Fat, 8 g (53% cal.); Cholesterol, 20 mg; Carbohydrates, 14 g; Fiber, 1 g; Sodium, 135 mg.

PROCEDURE

Mixing:

Creaming method. Cream the peanut butter with the fat and sugar.

Makeup:

Molded method. Use a fork instead of a weight to flatten the cookies. Use greased or parchment-lined baking sheets.

Baking:

375°F (190°C), 8–12 minutes, depending on size.

Icebox Cookies

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter and/or shortening	2 lb	1000 g	67 %
Granulated sugar	1 lb	500 g	33 %
Confectioners' sugar	1 lb	500 g	33 %
Salt	0.5 oz	15 g	1 %
<hr/>			
Eggs	8 oz	250 g	17 %
Vanilla	0.5 oz	15 mL	1 %
<hr/>			
Pastry flour	3 lb	1500 g	100 %
<hr/>			
<i>Yield:</i>	<i>7 lb 9 oz</i>	<i>3780 g</i>	<i>252 %</i>

Per 1 ounce (28.35 g): Calories, 120; Protein, 1 g; Fat, 6 g (44% cal.); Cholesterol, 25 mg; Carbohydrates, 16 g; Fiber, 1 g; Sodium, 110 mg.

PROCEDURE

Mixing:

Creaming method.

Makeup:

Icebox method. Scale dough strips to 1½ lb (750 g) each. Slice cookies ¼ in. (½ cm) thick. Bake on ungreased pans.

Baking:

375°F (190°C), about 12 minutes.

VARIATIONS

To reduce spread, use all confectioners' sugar.

Butterscotch Icebox Cookies

In place of sugars in basic recipe, use 67% (2 lb/1 kg) brown sugar and use only butter. Increase eggs to 25% (12 oz/375 g). Add 1 tsp (5 g or 5 mL) baking soda to the flour.

Chocolate Icebox Cookies

Add 17% (8 oz/250 g) melted unsweetened chocolate to the creamed butter and sugar.

Nut Icebox Cookies

Add 25% (12 oz/375 g) finely chopped nuts to the sifted flour in the basic recipe or the Butterscotch or Chocolate Cookie recipes.

Brownies

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Unsweetened chocolate	1 lb	450 g	100 %
Butter	1 lb 8 oz	675 g	150 %
Eggs	1 lb 8 oz	675 g	150 %
Sugar	3 lb	1350 g	300 %
Salt	0.25 oz (1½ tsp)	7 g (7 mL)	1.5 %
Vanilla	1 oz	30 mL	6 %
Cake flour	1 lb	450 g	100 %
Chopped walnuts or pecans	1 lb	450 g	100 %
<i>Yield:</i>	<i>9 lb 1 oz</i>	<i>4087 g</i>	<i>907 %</i>

Per 1 brownie: Calories, 190; Protein, 3 g; Fat, 12 g (54% cal.); Cholesterol, 45 mg; Carbohydrates, 20 g; Fiber, 1 g; Sodium, 95 mg.

PROCEDURE

Mixing:

Sponge method.

1. Melt chocolate and butter together in a double boiler. Stir so that the mixture is smooth. Let it cool to room temperature.
2. Blend the eggs, sugar, and salt until well mixed, but do not whip. Add the vanilla.
3. Blend in the chocolate mixture.
4. Sift the flour and fold it in.
5. Fold in the nuts.

Makeup:

Sheet method. Grease and flour the pans or line them with parchment. Quantity of basic recipe is enough for 1 full sheet pan, 18 × 26 in. (46 × 66 cm), 2 half-size sheet pans, 4 pans measuring 9 × 13 in. (23 × 33 cm), or 6 square pans measuring 9 in. (23 cm) per side.

If desired, batter may be sprinkled with an additional 50% (8 oz/255 g) chopped nuts after panning.

Baking:

325°F (165°C), about 60 minutes. For 2-in. (5-cm) square brownies, cut sheet pan 8 × 12 to yield 96 pieces.

VARIATION

Butterscotch Brownies or Blondies

Omit chocolate. Use brown sugar instead of granulated sugar. Increase flour to 1 lb 6 oz (600 g).

Almond Biscotti

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Eggs	10 oz	300 g	35 %
Sugar	1 lb 2 oz	550 g	65 %
Salt	0.4 oz (2 tsp)	12 g (10 mL)	2 %
Vanilla	0.3 oz (2 tsp)	8 mL	1 %
Grated orange zest	0.1 oz (1¼ tsp)	3 g	0.5 %
Pastry flour	1 lb 12 oz	850 g	100 %
Baking powder	0.7 oz	20 g	2.5 %
Blanched whole almonds	10 oz	300 g	35 %
<i>Yield:</i>	<i>4 lb 3 oz</i>	<i>2047 g</i>	<i>241 %</i>

Per 1 ounce (28.35 g): Calories, 110; Protein, 3 g; Fat, 4.5 g (36% cal.); Cholesterol, 15 mg; Carbohydrates, 15 g; Fiber, 2 g; Sodium, 110 mg.

PROCEDURE

Mixing:

Sponge method.

1. Combine the eggs, sugar, and salt. Stir over hot water to warm the mixture. Whip until thick and light.
2. Fold in the vanilla and orange zest.
3. Sift together the flour and baking powder. Fold in the egg mixture.
4. Mix in the almonds.

Makeup:

Bar method. Shape into logs 2–2½ in. (6 cm) thick. Dust your hands and the workbench with flour. The dough will be soft, sticky, and difficult to handle, but the logs do not have to be perfectly shaped. Egg-wash.

Baking:

325°F (160°C), 30–40 minutes, until light golden.

Finishing:

Let cool slightly. Slice diagonally about ½ in. (12 mm) thick. Place slices cut side down on sheet pans. Bake at 275°F (135°C) until toasted and golden brown, about 30 minutes.

TERMS FOR REVIEW

one-stage method	dropped cookies	molded cookies	bar cookies
creaming method	bagged cookies	icebox cookies	sheet cookies
sponge method	rolled cookies		

QUESTIONS FOR DISCUSSION

1. What makes cookies crisp, and how can you keep them crisp after they are baked?
2. If you baked some cookies that were unintentionally chewy, how would you correct the problem in the next batch?
3. Describe briefly the difference between the creaming method and the one-stage method.
4. Besides cost control, why are accurate scaling and uniform sizing important when making up cookies?

Chapter 34



Apple Pie with Streusel Topping, page 1014.

Pies and Pastries

On the North American frontier, it was not uncommon for the pioneer housewife to bake 21 pies a week—one for every meal. Pies were so important to the settlers that in winter, when fruits were unavailable, cooks would bake pies for dessert out of whatever materials were available, such as potatoes, vinegar, and soda crackers.

Few of us today eat pie at every meal. Nevertheless, pies are still a favorite dessert. Most customers will order and pay a higher price for a piece of chocolate cream pie than for chocolate pudding, even if the pie filling is the same as the pudding and even if they leave the crust uneaten.

In this chapter, we present the preparation of pie crusts and fillings. In addition, we discuss how to make puff pastry, éclair paste, meringues, and fruit desserts.

After reading this chapter, you should be able to

1. Prepare flaky pie dough and mealy pie dough.
2. Prepare crumb crusts and short, or cookie, crusts.
3. Assemble and bake pies.
4. Prepare the following pie fillings: fruit fillings using the cooked juice method, the cooked fruit method, and the old-fashioned method; custard or soft fillings; cream pie fillings; and chiffon fillings.
5. Prepare puff pastry dough and puff dough products.
6. Prepare éclair paste and éclair paste products.
7. Prepare standard meringues and meringue desserts.
8. Prepare fruit desserts.

PIES

Pie Doughs

Before you begin studying this section, it would be a good idea for you to review the section on gluten development in Chapter 29. Pie pastry is a simple product in terms of its ingredients: flour, shortening, water, and salt. Yet success or failure depends on how the shortening and flour are mixed and how the gluten is developed. The key to making pie dough is proper technique, and you will remember the techniques better if you understand why they work.

Ingredients

FLOUR

Pastry flour is the best choice for pie doughs. It has enough gluten to produce the desired structure and flakiness, yet is low enough in gluten to yield a tender product, if handled properly.

If stronger flours are used, the percentage of shortening should be increased to provide more tenderness.

FAT

Regular hydrogenated shortening is the most popular fat for pie crusts because it has the right plastic consistency to produce a flaky crust. It is firm and moldable enough to make an easily worked dough. Emulsified shortening should not be used because it blends too quickly with the flour, making a flaky pastry difficult to achieve.

Butter contributes excellent flavor to pie pastry, but it is not frequently used in volume production for two reasons: It is expensive, and it melts very easily, making the dough difficult to work.

It is desirable, if costs permit, to blend a quantity of butter into the shortening used for pie crusts to improve flavor. The quantity of pie crust dumped in the garbage after customers have eaten out the filling is evidence that many people are not satisfied with the taste of pie crusts made with shortening.

If all butter is used in place of shortening, the percentage of fat in the formula should be increased by about one-fourth. (If 1 pound shortening is called for, use 1 pound 4 ounces butter. If 500 grams shortening are called for, use 625 grams butter.) The liquid should be reduced slightly, as butter contains moisture.

Lard is an excellent shortening for pies because it is firm and plastic. Some people dislike its flavor, however, so it is not widely used in food service.

LIQUID

Water is necessary to develop some gluten in the flour and to give structure and flakiness to the dough. If too much water is used, the crust will become tough because of too much gluten development. If not enough water is used, the crust will fall apart.

Milk makes a rich dough that browns quickly. However, the crust is less crisp, and the production cost is higher.

Whether water or milk is used, it must be added cold (40°F/4°C or colder) to maintain proper dough temperature.

SALT

Salt has some tenderizing and conditioning effect on the gluten. However, its main contribution is to flavor.

Salt must be dissolved in the liquid before being added to the mix to ensure even distribution.

Temperature

Pie dough should be kept cool, about 60°F (15°C), during mixing and makeup for two reasons:

1. Shortening has the best consistency when cool. If it is warm, it blends too quickly with the flour. If it is very cold, it is too firm to be easily workable.
2. Gluten develops more slowly at cool temperatures than at warm temperatures.

Pie Dough Types

There are two basic types of pie dough: flaky and mealy.

The difference between the two is how the fat is blended with the flour. Complete mixing procedures are given later. First, it is important to understand the basic distinction between the two types.

FLAKY PIE DOUGH

For *flaky pie dough*, the fat is cut or rubbed into the flour until the particles of shortening are about the size of peas or hazelnuts. That is, the flour is not completely blended with the fat, and the fat is left in pieces. (Many bakers distinguish between this crust, which they call *short-flake*, and *long-flake* crusts, in which the fat is left in pieces the size of walnuts and the flour is even less coated with shortening.)

When water is added, the flour absorbs water and develops some gluten. When the dough is rolled out, the lumps of fat and moistened flour are flattened and become flakes of dough separated by layers of fat.

MEALY PIE DOUGH

For *mealy pie dough*, the fat is blended into the flour more thoroughly, until the mixture looks like coarse cornmeal. Because the flour is more completely coated with fat:

- The crust is very short and tender because less gluten can develop.
- Less water is needed in the mix because the flour won't absorb as much as in flaky dough.
- The baked dough is less likely to absorb moisture from the filling and become soggy.

Mealy dough is used for bottom crusts in baked fruit pies and soft or custard-type pies because it resists sogginess. Flaky doughs are used for top crusts and for prebaked pie shells.

TRIMMINGS

Reworked scraps or trimmings are tougher than freshly made dough. They may be combined with mealy dough and used for bottom crusts only.

Mixing Pie Doughs

Hand mixing is best for small quantities of dough, especially flaky dough, because it gives more control over the mixing. Quantities up to 10 pounds (5 kg) can be mixed almost as quickly by hand as by machine.

For machine mixing, use a pastry knife or paddle attachment and blend at low speed.

The mixing method for pie doughs is called the *rubbed dough method*. Although the procedure has several steps, the two main steps are characteristic of the method:

1. Rub the fat into the sifted dry ingredients.
2. Carefully mix the combined liquid ingredients into the dry ingredients.

The seven steps in the pie dough recipe that follows explain the rubbed dough method in more detail. Study this procedure well, because most pie doughs and several other basic pastries are mixed with this procedure or a variation. Also, compare this procedure with the biscuit method outlined on page 960. Although biscuit dough is softer and contains leavening, it is mixed with a similar procedure.

Procedures for rolling pie doughs and lining pie pans are discussed in the next section, "Assembly and Baking."

KEY POINTS TO REVIEW

- What are the steps in the rubbed dough method for mixing pie doughs?
- How do you mix pie doughs in order to get flaky dough? mealy dough?
- Flaky dough is best for what kind of pie crusts? Mealy dough is best for what kind of pie crusts?



Flaky Pie Dough



Mealy Pie Dough



INGREDIENTS	FLAKY		
	U.S.	METRIC	PERCENTAGE
Pastry flour	2 lb 8 oz	1000 g	100 %
Shortening	1 lb 12 oz	700 g	70 %
Salt	0.75 oz (4 tsp)	20 g	2 %
Water	12 oz	300 g	30 %
<i>Yield:</i>	<i>5 lb</i>	<i>2020 g</i>	<i>202 %</i>

Per 1 ounce (28.35 g): Calories, 130; Protein, 1 g; Fat, 10 g (65% cal.); Cholesterol, 0 mg; Carbohydrates, 11 g; Fiber, 20 g; Sodium, 105 mg.

U.S.	MEALY		PERCENTAGE
	METRIC	PERCENTAGE	
2 lb 8 oz	1000 g	100 %	
1 lb 10 oz	650 g	65 %	
0.75 oz (4 tsp)	20 g	2 %	
10 oz	250 g	25 %	
<i>4 lb 12 oz</i>	<i>1920 g</i>	<i>192 %</i>	

PROCEDURE

Mixing:

1. Collect all equipment.
2. Collect and scale ingredients.
3. Dissolve salt in water. Set aside.
4. Place flour and shortening in mixing bowl.
5. Rub or cut shortening into flour to the proper degree:
 - For mealy dough—until it resembles coarse cornmeal.
 - For flaky dough—until fat particles are the size of peas or hazelnuts.
6. Add salt and water. Mix very gently, just until water is absorbed. Do not overwork the dough.
7. Place the dough in pans, cover with plastic film, and place in refrigerator or retarder for several hours.

Other Pie Crusts

CRUMB CRUSTS

Graham cracker crusts are popular because they have an appealing flavor and are much easier to make than pastry crusts. For variation, vanilla or chocolate wafer crumbs or ginger-snap crumbs may be used instead of graham cracker crumbs. Ground nuts may be added for special desserts.

Crumb crusts are used only for unbaked pies, such as cream pies and chiffon pies. Be sure the flavor of the crust is compatible with the filling. Lime chiffon filling in a chocolate crumb crust is not an appealing combination. Some cream fillings are so delicate they would be overwhelmed by a crust that is too flavorful.

Baking the crust makes a firmer, less crumbly crust and increases flavor.

SHORT-DOUGH CRUSTS

Short pastry is actually a kind of cookie dough. It is richer than regular pie pastry and contains butter, sugar, and eggs. Because *short dough* is difficult to handle, it is used primarily for small fruit tarts.

KEY POINTS TO REVIEW

- What are the ingredients and procedure for making a graham cracker crust?
- How is mixing a short dough crust different from the rubbed-dough method for mixing pie crust?

Graham Cracker Crust

YIELD: 2 LB (900G) CRUSTS FOR: FIVE 8-IN. (20-CM) PIES
FOUR 9-IN. (23-CM) PIES
THREE 10-IN. (25-CM) PIES

U.S.	METRIC	INGREDIENTS
1 lb	450 g	Graham cracker crumbs
8 oz	225 g	Sugar
8 oz	225 g	Butter, melted

Per 1 ounce (28.35 g): Calories, 140; Protein, 1 g; Fat, 7 g (45% cal); Cholesterol, 15 mg; Carbohydrates, 18 g; Fiber, 0 g; Sodium, 140 mg.

VARIATIONS

Substitute chocolate or vanilla wafer crumbs or gingersnap crumbs for the cracker crumbs.

PROCEDURE

1. Mix crumbs and sugar in mixing bowl.
2. Add butter and mix until evenly blended and crumbs are all moistened by the melted butter.
3. Scale the mixture into pie pans: 8 oz (225 g) for 9-in. (23-cm) pans; 6 oz (175g) for 8-in. (20-cm) pans.
4. Spread mixture evenly on bottom and sides of pan. Press another pan on top to pack crumbs evenly.
5. Bake at 350°F (175°C) for 10 minutes.
6. Cool thoroughly before filling.

Short Dough

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Butter or butter and shortening	1 lb	500 g	67 %
Sugar	6 oz	180 g	25 %
Salt	0.12 oz (¼ tsp)	4 g	0.5 %
Eggs	4.5 oz	140 g	19 %
Pastry flour	1 lb 8 oz	750 g	100 %
<i>Yield</i>	<i>3 lb 2 oz</i>	<i>1574 g</i>	<i>211 %</i>

Per 1 ounce (28.35 g): Calories, 130; Protein, 2 g; Fat, 8 g (53% cal); Cholesterol, 30 mg; Carbohydrates, 14 g; Fiber, 2 g; Sodium, 100 mg.

PROCEDURE

1. Using the paddle attachment, mix the butter, sugar, and salt at low speed until smooth and evenly blended.
2. Add the eggs and mix just until absorbed.
3. Sift the flour and add it to the mixture. Mix just until evenly blended.
4. Chill several hours before using.

Procedure for Making Small Fruit Tarts

1. Roll out chilled short dough on a floured surface until it is slightly less than ¼ inch (5 mm) thick.
2. With a round cutter about ½ inch (1 cm) larger than the top diameter of your individual tart shells, cut the dough into circles.
3. For each shell, fit a circle of dough into a tin and press it well against the bottom and sides. If you are using fluted tins, make sure the dough is thick enough on the sides so it won't break apart at the ridges.
4. Fit paper liners inside the shells and fill with dried beans to keep the dough from blistering or puffing while baking.
5. Bake at 400°F (200°C) about 15 minutes, or until the shells are fully baked. Remove the paper liners and the beans.
6. Cool the shells completely and remove them from the tins.
7. Fill the shells half full of vanilla pastry cream (see Chapter 35).
8. Arrange well-drained fresh, cooked, or canned fruits over the pastry cream.
9. Brush the top with apricot glaze, melted currant jelly, or other desired glaze (see Chapter 32).
10. Keep refrigerated until service.

Assembly and Baking

Types of Pies

Pies may be classified into two groups based on method of assembling and baking.

1. Baked pies.

Raw pie shells are filled and then baked. *Fruit pies* contain fruit fillings and usually have a top crust. *Soft pies* are those with custard-type fillings or, in other words, liquid fillings that become firm when their egg content coagulates. They are usually baked as single-crust pies.

2. Unbaked pies.

Baked pie shells are filled with a prepared filling, chilled, and served when the filling is firm enough to slice. *Cream pies* are made with pudding or boiled custard-type fillings. *Chiffon pies* are made with fillings that are lightened by the addition of beaten egg white.

Baking a pie or tart shell without a filling is called *baking blind*.

Procedure for Rolling Pie Dough and Lining Pans

1. Scale the dough.

8 ounces (225 g) for 9-inch (23-cm) bottom crusts

6 ounces (175 g) for 8-inch (20-cm) bottom crusts

6 ounces (175 g) for 9-inch (23-cm) top crusts

5 ounces (150 g) for 8-inch (20-cm) top crusts

Experienced bakers are able to roll crusts using less dough because less must be trimmed when the dough is rolled to a perfect circle of the exact size needed.

2. Dust the bench and rolling pin lightly with flour.

Too much dusting flour toughens the dough. Use no more than needed to prevent sticking.

3. Roll out the dough.

Flatten the dough lightly and roll it out to a uniform $\frac{1}{8}$ -inch (3-mm) thickness. Use even strokes and roll from the center outward in all directions. Lift the dough frequently to make sure it is not sticking. The finished dough should form a perfect circle.

4. Place the dough in a pan.

To lift the dough without breaking it, roll it lightly around the rolling pin. Allow the dough to drop into the pan and press it into the corners without stretching it. Stretched dough shrinks during baking. There should be no air bubbles between the dough and the pan.

5. For single-crust pies, flute the edges, if desired, and trim off excess dough.

Some bakers feel that fluted edges add to the appearance of the product. Others feel that fluting takes too much time and produces only a rim of heavy dough that customers leave on their plates.

6. For two-crust pies:

Fill with cold filling, place the second crust on top, and seal the top and bottom crusts together at edges. Flute, if desired, and trim excess dough. Apply desired wash or glaze to top.

7. Bake as directed in the recipe.

The Soggy Bottom

A common pie fault is an underbaked bottom crust or a crust that soaks up moisture from the filling. Soggy bottoms can be avoided in several ways.

1. Use mealy dough for bottom crusts. Mealy dough absorbs less liquid than flaky dough.
2. Use high bottom heat, at least at the beginning of baking, to set the crust quickly. Bake the pies at the bottom of the oven.
3. Do not add hot fillings to unbaked crusts.
4. Use dark metal pie tins, which absorb heat. (If you use disposable aluminum pans, choose pans with the bottoms colored black.)

Procedure for Preparing Baked Pies

Note: For pies without a top crust, omit steps 3 through 7.

1. Line the pie pan with pie dough as in the basic procedure (Figure 34.1).
2. Fill with *cooled* filling. See Table 34.1 for scaling instructions. Do not drop filling on the rim of the pie shell; this makes it hard to seal the rim to the top crust. To avoid spilling custard filling, place the empty shell on the rack in the oven and then pour in the filling.
3. Roll out the dough for the top crust.
4. Perforate the top crust to allow steam to escape during baking.
5. Moisten the rim of the bottom crust to help seal it to the top crust.
6. Fit the top crust in place. Seal the edges together firmly and trim excess dough. An easy way to do this is to press the rim with the tines of a fork. Alternatively, the rim may be fluted. An efficient way to trim excess dough is to rotate the pie tin while pressing on the edges with the palms of the hands.
7. Brush the top with the desired wash: milk, cream, eggs and milk, or water. Sprinkle with granulated sugar if desired.
8. Place the pie on the lower level of an oven preheated to 425° to 450°F (220° to 230°C). The high initial heat helps set the bottom crust to avoid soaking. Fruit pies are usually baked at this high heat until done. For custard pies, reduce the heat to 325° to 350°F (165° to 175°C) after 10 minutes to avoid overcooking and curdling the custard. Custard pies include those containing large quantities of egg, such as pumpkin pie and pecan pie.

Table 34.1 Scaling Guidelines for Baked Pies

PIE SIZE		WEIGHT OF FILLING	
U.S.	METRIC	U.S.	METRIC
8 in.	20 cm	26–30 oz	750–850 g
9 in.	23 cm	32–40 oz	900–1150 g
10 in.	25 cm	40–50 oz	1150–1400 g

Note: Weights are guidelines only. Exact weights may vary, depending on the filling and the depth of the pans.

Figure 34.1 Preparing baked pies.



(a) Line the pie pans with the pie dough.



(b) Fill with cooled fillings.



(c) Fit the top crusts in place.



(d) Seal the top crust to the rim and trim the dough from the edges.

Procedure for Preparing Unbaked Pies

1. Line a pie pan with pie dough as in the basic procedure.
2. Dock the crust well with a fork to prevent blistering.
3. Place another pan inside the first one so the dough is between two pans. This is called *double-panning*.
4. Place the pans upside down in an oven preheated at 450°F (230°C). Baking upside down helps keep the dough from shrinking down into the pan.
Some bakers like to chill the crusts before baking to relax the gluten and help reduce shrinkage.
5. Bake at 450°F (230°C) for 10 to 15 minutes. The top pan may be removed during the last part of baking so the crust can brown.
6. Cool the baked crust completely.
7. Fill with cream or chiffon filling. Fill as close as possible to service time to prevent soaking the crust.
8. Chill the pie until it is set enough to slice.

KEY POINTS TO REVIEW

- What are the steps in the procedure for rolling pie dough and lining pans?
- What are the steps in the procedure for preparing baked pies?
- What are the steps in the procedure for preparing unbaked pies?

Fillings

Starches for Fillings

Many kinds of pie filling, especially fruit fillings and cream fillings, depend on starch for their thick texture.

TYPES

Cornstarch is used for cream pies because it sets up into a firm gel that holds its shape when sliced. Cornstarch may also be used for fruit pies.

Waxy maize and other *modified starches* are best for fruit pies because they are clear when set and make a soft paste rather than a firm gel. Waxy maize should be used for pies that are to be frozen because it is not broken down by freezing.

Flour, tapioca, and other starches are used less frequently. Flour has less thickening power than other starches and makes the product cloudy.

Instant starch or *pregelatinized starch* needs no cooking because it has already been cooked. When used with certain fruit fillings, it eliminates the need to cook the filling before making up the pie. It has no advantage, however, if the filling contains such ingredients as raw fruit or eggs and so must be cooked.

Starches differ in thickening power, so follow the formulas exactly.

COOKING STARCHES

To avoid lumping, starches must be mixed with a cold liquid or sugar before being added to a hot liquid.

Sugar and *strong acids* reduce the thickening power of starch. When possible, all or part of the sugar and strong acids like lemon juice should be added *after the starch has thickened*.

Fruit Fillings

Fruit pie fillings consist of fruits and fruit juices, sugar, spices, and a starch thickener.

FRUITS FOR PIE FILLINGS

Fresh fruits make excellent pies if they are at their seasonal peak. Fresh apples are used extensively for high-quality pies. But the quality of fresh fruits can vary considerably, and fresh fruit pies require a lot of labor.

Frozen fruits are widely used for pies because they are consistent in quality and readily available.

Canned fruits can also be of high quality. Solid pack (with little juice) gives a higher yield of fruit per can than syrup or water pack.

Dried fruits must be rehydrated by soaking and, usually, simmering before they are made into pie fillings.

Fruits must have sufficient acid (tartness) to make flavorful fillings. If they lack natural acid, you may need to add lemon, orange, or pineapple juice to supply the acid.

COOKED JUICE METHOD

The advantage of the *cooked juice method* is that only the juice is cooked. The fruit retains better shape and flavor because it is subjected to less heat and handling. This method is used when the fruit requires little or no cooking before filling the pie. Examples: cherry, peach, most frozen or canned fruits. Fresh berries can also be prepared by this method. Some of the berries are cooked or puréed to provide juice. The remaining berries are mixed with the finished gel.

COOKED FRUIT METHOD

The *cooked fruit method* is used when the fruit requires cooking or there is not enough liquid for the cooked juice method. Examples: fresh apple, raisin, rhubarb.

Procedure: Cooked Juice Method

1. Drain the juice from the fruit.
2. Measure the juice and, if necessary, add water or other fruit juice to bring it to the desired volume.
3. Bring the juice to a boil.
4. Dissolve the starch in cold water and stir it into the boiling juice. Return the juice to the boil and cook until it is clear and thickened.
5. Add sugar, salt, and flavorings, and stir until dissolved.
6. Pour the thickened juice over the drained fruit and mix gently. Be careful not to break or mash the fruit.
7. Cool.

Procedure: Cooked Fruit Method

1. Bring the fruit and its juice or water to a boil. Some sugar may be added to the fruit to draw out juices.
2. Dissolve the starch in cold water and stir it into the fruit. Return the fruit mixture to a boil and cook until it is clear and thickened. Stir while cooking.
3. Add sugar, salt, flavorings, and other ingredients and stir until dissolved.
4. Cool as quickly as possible.

Variation

Some fruits, such as fresh apples, may be cooked in butter rather than boiled in water for better flavor.

OLD-FASHIONED METHOD

This method is best suited to pies made with fresh apples or peaches. It is not as widely used in food service as the other methods because it is more difficult to control the thickening of the juices.

Procedure: Old-Fashioned Method

1. Mix the starch and spices with the sugar until uniformly blended.
2. Mix the fruit with the sugar mixture.
3. Fill the unbaked pie shell with the fruit.
4. Place lumps of butter on top of the filling.
5. Cover with a top crust or with Streusel (p. 950) and bake.

KEY POINTS TO REVIEW

- What are the steps in the cooked juice method for making fruit pie fillings?
- What are the steps in the cooked fruit method for making fruit pie fillings?
- What are the steps in the old-fashioned method for making fruit pie fillings?

Cooked Juice Method



Apple Pie Filling (Canned Fruit)



YIELD: ABOUT 9½ LB (4.5 KG) FIVE 8-IN. (20-CM) PIES
FOUR 9-IN. (23-CM) PIES
THREE 10-IN. (25-CM) PIES

U.S.	METRIC	INGREDIENTS	PROCEDURE
6 lb 8 oz as needed	3 kg as needed	Canned apples (1 No. 10 can) Water	1. Drain the apples, reserving the juice. 2. Add enough water to the juice to measure 1½ pt (750 mL).
8 fl oz 3 oz	250 mL 90g	Water, cold Cornstarch or modified starch	3. Mix the cold water and starch. 4. Bring the juice mixture to a boil. 5. Stir in the starch mixture and return to a boil.
1 lb 4 oz ¼ oz (1¼ tsp) ¼ oz (3½ tsp) 1 tsp 3 oz	575 g 7 g (6 mL) 7 g (17 mL) 2 g (5 mL) 90 g	Sugar Salt Cinnamon Nutmeg Butter	6. Add the sugar, salt, cinnamon, nutmeg, and butter. Simmer until the sugar is dissolved. 7. Pour the syrup over the apples and mix gently. Cool completely. 8. Fill pie shells. Bake at 425°F (220°C) for 30–40 minutes.

Per 1 ounce (28.35 g): Calories, 30; Protein, 0 g; Fat, 0.5 g (14% cal.); Cholesterol, 0 mg; Carbohydrates, 7 g; Fiber, 0 g; Sodium, 25 mg.

VARIATIONS

Dutch Apple Pie Filling

Simmer 8 oz (250 g) raisins in water. Drain and add to Apple Pie Filling.

Cherry Pie Filling

Use 1 No. 10 can sour cherries instead of apples. Increase starch to 4 oz (125 g). Add 1½ fl oz (45 mL) lemon juice in step 6. Increase the sugar to 1 lb 12 oz (800 g). Omit cinnamon and nutmeg. Add almond extract to taste (optional). If desired, color with 2–3 drops red coloring.

Peach Pie Filling

Use 1 No. 10 can sliced peaches, preferably solid or heavy pack, instead of apples. Omit cinnamon and nutmeg.

Pineapple Pie Filling

Use 1 No. 10 can crushed pineapple instead of apples. Increase liquid in step 1 to 1 qt (1 L). Increase starch to 4 oz (125 g). Use 1 lb 8 oz (700 g) sugar and 8 oz (250 g) corn syrup. Omit cinnamon and nutmeg.



Apple Pie with Streusel Topping

Blueberry Pie Filling (Frozen Fruit)

**YIELD: ABOUT 7 LB 8 OZ (3375 G) FOUR 8-IN. (20-CM) PIES
THREE 9-IN. (23-CM) PIES**

U.S.	METRIC	INGREDIENTS	PROCEDURE
5 lb as needed 6 oz	2250 g as needed 175 g	Frozen unsweetened blueberries Water Sugar	1. Thaw blueberries in original container without opening. 2. Drain the berries, reserving juice. Add enough water to the juice to measure 12 oz (250 mL). Stir in the first quantity of sugar.
6 fl oz 3 oz	190 mL 90 g	Water, cold Cornstarch or modified starch	3. Mix the cold water and cornstarch. 4. Bring the juice mixture to a boil. Stir in the starch. Return to a boil to thicken.
14 oz ¼ oz (1¼ tsp) ⅓ oz (2 tsp) 1.5 fl oz	412 g 8 g (7 mL) 4 g (10 mL) 45 mL	Sugar Salt Cinnamon Lemon juice	5. Stir in the second quantity of sugar and the salt, cinnamon, and lemon juice. Stir over heat until the sugar is dissolved. 6. Pour the syrup over the drained blueberries. Mix gently. Cool completely. 7. Fill pie shells. Bake at 425°F (220°C) about 30 minutes.

Per 1 ounce (28.35 g): Calories, 30; Protein, 0 g; Fat, 0 g (0% cal.); Cholesterol, 0 mg; Carbohydrates, 8 g; Fiber, 1 g; Sodium, 20 g.

VARIATIONS

Apple Pie Filling

Use 5 lb (2.25 kg) frozen apples instead of blueberries. Reduce second quantity of sugar to 8 oz (225 g). Reduce starch to 1½ oz (45 g). Add ½ tsp (2 mL) nutmeg and 3 oz (87 g) butter in step 5.

Cherry Pie Filling

Use 5 lb (2.25 kg) frozen cherries instead of blueberries. Increase liquid in step 2 to 1 pt (500 mL). Decrease starch to 2½ oz (75 g). Reduce second quantity of sugar to 10 oz (285 g). Omit cinnamon and reduce lemon juice to ¾ fl oz (22 mL).

Fresh Strawberry Pie Filling

**YIELD: ABOUT 6 LB (2.75 KG) THREE 8-IN. (20-CM) PIES
TWO 10-IN. (25-CM) PIES**

U.S.	METRIC	INGREDIENTS	PROCEDURE
4 lb 8 oz 8 fl oz	2050 g 250 mL	Fresh whole strawberries Water, cold	1. Hull, wash, and drain the berries. Set aside 3 lb 8 oz (1.6 kg) berries. These may be left whole if small or cut in halves or quarters if large. 2. Mash or purée the remaining 1 lb (450 g) berries. Mix with the water. (If a clear filling is desired, this mixture may be strained.)
14 oz 2 oz ½ tsp 1 fl oz	400 g 60 g 2 mL 30 mL	Sugar Cornstarch or modified starch Salt Lemon juice	3. Mix the sugar, starch, and salt. Stir into the cold juice and water mixture until no lumps remain. 4. Bring to a boil, stirring constantly. Cook until thickened. 5. Remove from heat and stir in the lemon juice. 6. Cool to room temperature, but do not chill. 7. Stir to eliminate lumps. Fold in the reserved berries. 8. Fill baked pie shells and chill (do not bake).

Per 1 ounce (28.35 g): Calories, 25; Protein, 0 g; Fat, 0 g (0% cal.); Cholesterol, 0 mg; Carbohydrates, 6 g; Fiber, 0 g; Sodium, 10 mg.

Cooked Fruit Method

Rhubarb Pie Filling

**YIELD: ABOUT 5 LB 8 OZ (2.5 KG) THREE 8-IN. (20-CM) PIES
TWO 10-IN. (25-CM) PIES**

U.S.	METRIC	INGREDIENTS	PROCEDURE
3 lb 8 oz	1.6 kg	Fresh rhubarb	1. Cut the rhubarb into 1-in. (2.5-cm) pieces. 2. Combine the rhubarb, first quantity of water, and sugar in a saucepan. Bring to a boil and simmer 2 minutes.
8 fl oz	250 mL	Water	
8 oz	225 g	Sugar	3. Mix the second quantity of water and starch. Stir into the rhubarb and boil until thick and clear.
4 fl oz	125 mL	Water	
2 oz	60 g	Cornstarch	4. Add the remaining ingredients. Stir gently until the sugar is dissolved and the butter is melted. 5. Cool completely. 6. Fill pie shells. Bake at 425°F (220°C), 30–40 minutes.
8 oz	225 g	Sugar	
1 tsp	5 mL	Salt	
1 oz	30 g	Butter	
<p>Per 1 ounce (28.35 g): Calories, 30; Protein, 0 g; Fat, 5 g (14% cal.); Cholesterol, 0 mg; Carbohydrates, 7 g; Fiber, 0 g; Sodium, 30 mg.</p>			<p>VARIATION</p> <p>Fresh Apple Pie Filling Use 5 lb (2.25 kg) fresh peeled and sliced apples instead of rhubarb. Flavor with 1½ tsp (7 mL) cinnamon, ½ tsp (2 mL) nutmeg, and ½–1 fl oz (15–30 mL) lemon juice during step 4.</p>

Raisin Pie Filling

YIELD: ABOUT 2 LB (1 KG) ONE 9-IN. (23-CM) PIE

U.S.	METRIC	INGREDIENTS	PROCEDURE
13 oz	360 g	Raisins	1. Combine the raisins and water in a saucepan. Simmer 5 minutes.
13 fl oz	400 mL	Water	
2 fl oz	50 mL	Water, cold	2. Mix the cold water and starch. Stir into the raisins and simmer until thickened.
½ oz	15 g	Cornstarch or modified starch	
4 oz	114 g	Sugar	3. Add the remaining ingredients. Stir until sugar is dissolved and mixture is uniform. 4. Cool thoroughly. 5. Fill pie shells. Bake at 425°F (220°C) for 30–40 minutes.
½ tsp	2 mL	Salt	
3½ tsp	18 mL	Lemon juice	
½ tsp	2 mL	Grated lemon zest	
½ tsp	1 mL	Cinnamon	
0.6 oz	18 g	Butter	
<p>Per 1 ounce (28.35 g): Calories 50, Protein, 0 g; Fat, 0 g; (0% cal.); Cholesterol, 0 mg. Carbohydrates, 12 g; Fiber, 5 g; Sodium, 35 mg.</p>			

Old-Fashioned Method

Old-Fashioned Apple Pie Filling

YIELD: ABOUT 11 LB (5 KG) SIX 8-IN. (20-CM) PIES
FIVE 9-IN. (23-CM) PIES
FOUR 10-IN. (25-CM) PIES

U.S.	METRIC	INGREDIENTS	PROCEDURE
9 lb EP 2 fl oz	4.1 kg EP 60 mL	Fresh peeled, sliced apples Lemon juice	1. Select firm, tart apples. 2. Combine apple slices and lemon juice in a large mixing bowl and toss to coat apples with the juice.
2 lb 3 oz ¼ oz (1¼ tsp) ¼ oz (3½ tsp) 1 tsp	900 g 90 g 7 g (6 mL) 7 g (17 mL) 5 mL	Sugar Cornstarch Salt Cinnamon Nutmeg	3. Mix the sugar, starch, salt, and spices. 4. Add to the apples and toss gently until well mixed.
3 oz	90 g	Butter	5. Fill pie shells. Dot the filling with butter before setting the top crusts in place. Bake at 400°F (200°C) about 45 minutes.

Per 1 ounce (28.35 g): Calories, 40; Protein, 0 g; Fat, 0.5 g (11% cal.); Cholesterol, 0 mg; Carbohydrates, 9 g; Fiber, 0 g; Sodium, 20 mg.

APPLES FOR PIES

What varieties of apples are best for making pies?

Two criteria are important: taste and texture.

First, the apples should have a good flavor and a good level of acidity. Apples that are very mild make pies with little flavor. The sugar content, or sweetness, of the apple, is less important, as the sugar in the recipe can be adjusted.

Second, the apples should hold their shape when cooked. Apples that turn to mush, such as McIntosh, are better for applesauce than for pies.

Popular apple varieties that have good taste and texture for use in pie fillings include Granny Smith, Jonathan, Jonagold, Newton Pippin, Rome, Macoun, Pink Lady, Stayman-Winesap, and Golden Delicious.

Custard or Soft Fillings

Custard, pumpkin, pecan, and similar pies are made with an uncooked liquid filling containing eggs. The eggs coagulate when the pie is baked, setting the filling.

The greatest difficulty in cooking soft pies is cooking the crust completely yet not overcooking the filling. Start the pie at the bottom of a hot oven (425° to 450°F/220° to 230°C) for first 10 minutes to set the crust. Then reduce the heat to 325° to 350°F (165° to 175°C) to cook the filling slowly.

To test for doneness:

1. Shake the pie very gently. If it is no longer liquid, it is done. The center will still be slightly soft but will continue cooking in its own heat after the pie is removed from the oven.
2. Insert a thin knife 1 inch (2.5 cm) from the center. It will come out clean if the pie is done.

Custard Pie Filling

**YIELD: 8 LB (3.6 KG) FIVE 8-IN. (20-CM) PIES
FOUR 9-IN. (23-CM) PIES
THREE 10-IN. (25-CM) PIES**

U.S.	METRIC	INGREDIENTS
2 lb	900 g	Eggs
1 lb	450 g	Sugar
1 tsp	5 mL	Salt
1 fl oz	30 mL	Vanilla

2½ qt	2.5 L	Milk (see Note)
1–1½ tsp	5–7 mL	Nutmeg

Per 1 ounce (28.35 g): Calories, 35; Protein, 2 g; Fat, 1.5 g (33% cal.); Cholesterol, 35 mg; Carbohydrates, 5 g; Fiber, 0 g; Sodium, 35 mg.

Note: For a richer custard, use part milk and part cream.

PROCEDURE

1. Beat the eggs lightly. Add sugar, salt, and vanilla. Blend until smooth. Do not whip air into the mixture.
2. Stir in the milk. Skim off any foam.
3. Pour into the unbaked pie shells.
4. Sprinkle tops with nutmeg.
5. Bake at 450°F (230°C) for 15 minutes. Reduce heat to 325°F (165°C) and bake until set, about 20–30 minutes more.

VARIATION

Coconut Custard Pie Filling

Use 10 oz (275 g) unsweetened, flaked coconut. Sprinkle coconut into pie shells before adding custard mixture. Coconut may be toasted lightly in oven before adding to pies, if desired. Omit nutmeg.

Pecan Pie Filling

YIELD: 2 LB 8 OZ (1640 G) FILLING PLUS 10 OZ (285 G) PECANS TWO 9-IN. (23-CM) PIES

U.S.	METRIC	INGREDIENTS
14 oz	400 g	Sugar (see Note)
4 oz	120 g	Butter
½ tsp	2 mL	Salt

14 oz	400 g	Eggs
1 lb 8 oz (about 17 fl oz)	700 g	Dark corn syrup
½ fl oz	15 mL	Vanilla

10 oz 285 g Pecans

Per 1 ounce (28.35 g): Calories, 120; Protein, 1 g; Fat, 5 g (38% cal.); Cholesterol, 35 mg; Carbohydrates, 17 g; Fiber, 0 g; Sodium, 70 mg.

Note: Brown sugar may be used if darker color and stronger flavor are desired.

PROCEDURE

1. Using the paddle attachment at low speed, blend the sugar, butter, and salt until evenly blended.
2. With the machine running, add the eggs, a little at a time, until they are all absorbed.
3. Add the syrup and vanilla. Mix until well blended.
4. To assemble pies, distribute pecans evenly in pie shells. Fill with syrup mixture.
5. Bake at 450°F (230°C) for 10 minutes. Reduce heat to 325°F (165°C). Bake about 40 minutes more, or until set.

Pumpkin Pie Filling

YIELD: ABOUT 4¼ LB (2 KG) TWO 9-IN. (23-CM) PIES

U. S.	METRIC	INGREDIENTS	PROCEDURE
1 lb 10½ oz	750 g	Pumpkin purée, 1 No. 2½ can	1. Place pumpkin purée in the bowl of a mixer fitted with a whip attachment.
1 oz	30 g	Pastry flour	2. Sift together the flour, spices, and salt.
2 tsp	10 mL	Cinnamon	3. Add the flour mixture and sugar to the pumpkin. Mix at 2nd speed until smooth and well blended.
¼ tsp	1 mL	Nutmeg	
¼ tsp	1 mL	Ground ginger	
⅓ tsp	0.5 mL	Ground cloves	
⅓ tsp	3 mL	Salt	
10 oz	290 g	Brown sugar	
10 oz	300 g	Eggs	4. Add the eggs and mix in. Scrape down the sides of the bowl.
2 oz	60 g	Corn syrup or half corn syrup and half molasses	5. Turn the machine to low speed. Gradually pour in the syrup-molasses mixture, then the milk. Mix until evenly blended.
1 pt 4 oz	600 mL	Milk	6. Fill the pie shells. Bake at 450°F (230°C) for 15 minutes. Lower heat to 350°F (175°C) and bake until set, about 30–40 minutes more.
<p>Per 1 ounce (28.35 g): Calories, 30; Protein, 1 g; Fat, 0.5 g (14% cal.); Cholesterol, 10 mg; Carbohydrates, 6 g; Fiber, 0 g; Sodium, 45 mg.</p>			<p>VARIATIONS</p> <p>Sweet Potato Pie Filling Substitute canned sweet potatoes, drained and puréed, for the pumpkin.</p> <p>Squash Pie Filling Substitute puréed squash for the pumpkin.</p>

Cream Pie Fillings

Cream pie fillings are the same as puddings, which, in turn, are the same as basic pastry creams with added flavorings such as vanilla, chocolate, or coconut. Lemon filling is made by the same method, using water and lemon juice instead of milk.

The one difference between puddings and pie fillings you should note is that *cream pie fillings are made with cornstarch* so slices hold their shape when cut. Puddings may be made with flour, cornstarch, or other starches.

Techniques and recipes for these fillings are included in Chapter 35, along with other basic creams and puddings.

Chiffon Pies

Chiffon fillings are made by adding gelatin to a cream filling or to a thickened fruit and juice mixture and then folding in egg whites and/or whipped cream. The mixture is then poured into baked pie shells and allowed to set.

These preparations are the same as chiffon desserts, bavarians, and some mousses and cold soufflés. To avoid unnecessary repetition, techniques and recipes for these products are included in Chapter 35 with other puddings and creams.

PASTRIES, MERINGUES, AND FRUIT DESSERTS

In addition to pie dough, two other pastries have great importance in bakeshops and kitchens: *puff pastry*, used for such products as napoleons and turnovers, and *éclair or choux paste*, used for éclairs and cream puffs. These products are also used in the hot food kitchen and the pantry in the preparation of a number of hors d'oeuvres, entrées, and side dishes.

Meringues and fruit desserts are also covered in this section. Meringues are not only important as pie toppings but also can be formed, baked until crisp, and used in many of the same ways as pastry shells for desserts.

Puff Pastry

Puff pastry is one of the most remarkable products of the bakeshop. Although it includes no added leavening agent, it can rise to 8 times its original thickness when baked.

Puff pastry is a rolled-in dough, like Danish and croissant dough. This means it is made up of many layers of fat sandwiched between layers of dough. Unlike Danish dough, however, puff pastry contains no yeast. Steam, created when the moisture in the dough layers is heated, is responsible for the spectacular rising power of puff pastry.

Puff pastry or puff dough is one of the most difficult of all bakery products to prepare. Because it consists of over 1,000 layers, many more than Danish dough, the rolling-in procedure requires a great deal of time and care.

As for so many other products, there are nearly as many versions of puff pastry as there are bakers. Both formulas and rolling-in techniques vary. The formula provided here contains no eggs, for example, although some bakers add them.

The folding-in technique used here differs somewhat from that used by European pastry chefs, although it is widely used by American bakers. (See Figure 34.2.)

Butter is the preferred fat for rolling in because of its flavor and melt-in-the-mouth quality. Special puff pastry shortening is also available. This shortening is much easier to work with than butter because it is not as hard when refrigerated and doesn't soften and melt as easily as butter at warm temperatures. It is also less expensive than butter. However, puff pastry shortening can be unpleasant to eat because it tends to congeal and coat the inside of the mouth.

Skill at producing puff pastry requires careful attention to your instructor and diligent practice. Take special note of alternative methods your instructor may present.

Puff Pastry

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Bread flour	1 lb 8 oz	750 g	75 %
Cake flour	8 oz	250 g	25 %
Butter, soft	4 oz	125 g	12.5 %
<hr/>			
Salt	0.5 oz	15 g	1.5 %
Water, cold	1 lb 2 oz	562 g	56 %
<hr/>			
Butter	2 lb	1000 g	100 %
Bread flour (see Note)	4 oz	125 g	12.5 %
<hr/>			
<i>Yield:</i>	<i>5 lb 10 oz</i>	<i>2827 g</i>	<i>282 %</i>

Per 1 ounce (28.35 g): Calories, 120; Protein, 1 g; Fat 9 g (69% cal.); Cholesterol, 25 mg; Carbohydrates, 8 g; Fiber, 0 g; Sodium, 150 mg.

Note: The purpose of the 4 oz (125 g) bread flour is to absorb some of the moisture of the butter. Omit if puff paste shortening is used instead of butter.

PROCEDURE

Mixing:

- Place the first quantities of flour and butter in a mixing bowl. With a paddle attachment, mix at low speed until well blended.
- Dissolve the salt in the cold water.
- Add the salted water to the flour and mix at low speed until a soft dough forms. Do not overmix.
- Remove the dough from the mixer and let rest in the refrigerator 20 minutes.
- Cream the last quantities of butter and flour at low speed in the mixer until the mixture is about the same consistency as the dough, neither too hard nor too soft.
- Roll the butter into the dough following the procedure shown in **Figure 34.2**. Give the dough 4 four-folds or 5 three-folds.

Figure 34.2 Rolling-in procedure for puff pastry.



(a) Dust the bench lightly with flour. Roll dough to a rectangle about 3 times as long as it is wide and about $\frac{1}{2}$ in. (1–1.5 cm) thick. Make the corners as square as possible. Form the butter into a rectangle two-thirds the size of the dough, leaving room around the edges, and place on the dough as shown.



(b) Fold the third without fat over the center third.



(c) Fold the remaining third on top. Fold all ends and corners evenly and squarely. This procedure, enclosing the butter in the dough, does not count as one of the folds. The folding procedure starts with the next step.



(d) Turn the dough 90 degrees on the bench so the length becomes the width. This step must be taken before each rolling-out so the gluten is stretched in all directions, not just lengthwise. Failure to do this results in products that deform or shrink unevenly when they bake. Before rolling, beat the dough lightly as shown so the butter is evenly distributed. Roll the dough into a rectangle. Make sure the corners are square. Roll smoothly and evenly. Do not press down when rolling, or the layers may stick together and the product not rise properly.



(e) Brush excess flour from the top of the dough.



(f) Fold the top edge of the dough to the center. Make sure the corners are square and even. Again brush off excess flour.



(g) Fold the bottom edge to the center.



(h) Fold the dough in half like closing a book. You have now given the dough 1 *four-fold*. Refrigerate the dough 15 to 20 minutes to relax the gluten. Do not refrigerate it too long, or the butter will become too hard. (If it does, let it soften a few minutes at room temperature before proceeding.)



(i) Give the dough another 3 *four-folds*, as in steps f to h. After another rest, the dough is ready to be rolled out and made up into the desired products. (Alternative method: Instead of giving the dough 4 *four-folds*, you may give it 5 *three-folds*.) See Figure 30.3 for the three-fold method.

Blitz Puff Pastry

Blitz puff pastry is much easier and quicker to make than classic puff dough. (*Blitz* is German for “lightning.”) It does not rise nearly as high as true puff pastry, so it is not suitable for patty shells and other products where a high, light pastry is desirable. However, it bakes up crisp and flaky and is perfectly suitable for napoleons and similar desserts that are layered with cream fillings.

Blitz puff paste, as you will see, is actually a flaky pie dough that is rolled and folded like regular puff dough.

Blitz Puff Pastry

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Bread flour	1 lb	500 g	50 %
Pastry flour	1 lb	500 g	50 %
Butter, slightly softened	2 lb	1000 g	100 %
.....			
Salt	0.5 oz	15 g	1.5 %
Water, cold	1 lb	500 g	50 %
.....			
<i>Yield:</i>	<i>5 lb</i>	<i>2515 g</i>	<i>250 %</i>

Per 1 ounce (28.35 g): Calories, 120; Protein, 1 g; Fat 9 g (69% cal.); Cholesterol, 25 mg; Carbohydrates, 8 g; Fiber, 1 g; Sodium, 160 mg.

VARIATION

Reduce the butter to 75% (1 lb 8 oz/750 g).

PROCEDURE

Mixing:

1. Sift the two flours together into a mixing bowl.
2. Cut the butter into the flour as for pie dough, but leave the fat in very large lumps, 1 in. (2.5 cm) across.
3. Dissolve the salt in the water.
4. Add the water to the flour-butter mixture. Mix until the water is absorbed.
5. Let the dough rest for 15 minutes. Refrigerate if the bakeshop is warm.
6. Dust the bench with flour and roll out the dough into a rectangle. Give the dough 3 four-folds.

General Guidelines for Makeup of Puff Dough Products

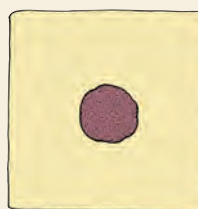
1. The dough should be cool and firm when it is rolled and cut. If it is too soft, the layers may stick together at the cuts, preventing proper rising.
2. Cut with straight, firm, even cuts. Use a sharp cutting tool.
3. Avoid touching the cut edges with your fingers; this can make the layers stick together.
4. For best rising, place units upside down on baking sheets. Even sharp cutting tools may press the top layers of dough together. Baking upside down puts the stuck-together layers at the bottom.
5. Avoid letting egg wash run down the edges. Egg wash can cause the layers to stick together at the edges.
6. Rest made-up products for 30 minutes in a cool place or in the refrigerator before baking. This relaxes the gluten and reduces shrinkage.
7. Press trimmings together, keeping the layers in the same direction. After being rolled out and given another three-fold, they may be used again, although they will not rise as high.
8. Baking temperatures of 400° to 425°F (200° to 220°C) are best for most puff dough products. Cooler temperatures do not create enough steam in the products to leaven them well. Higher temperatures set the crust too quickly.

Procedure for Making Turnovers

See Figure 34.3.

1. Roll out puff pastry dough to $\frac{1}{8}$ inch (3 mm) thick.
2. Cut the dough into 4-inch (10-cm) squares. Wash the edges of each with water.
3. Portion the desired filling into the center of each square.
4. Fold diagonally and press the edges together.
5. Puncture the tops with a knife in two or three places to allow steam to escape. Let rest 30 minutes.
6. Brush the tops with egg wash, if desired, or brush with milk or water and sprinkle with sugar.
7. Bake at 400°F (200°C) until crisp and brown.

Figure 34.3 Makeup of turnovers.



(a) Cut the dough into 4-in. (10-cm) squares. Wash the edges with water and place filling in the center of each square.



(b) Fold over diagonally and press the edges together. Puncture two or three steam holes in top.

Procedure for Making Pinwheels

See Figure 34.4.

1. Roll out puff dough to $\frac{1}{8}$ inch (3 mm) thick.
2. Cut the dough into 5-inch (12-cm) squares.
3. Wash the centers with water.
4. Cut diagonally from the corners to about 1 inch (2.5 cm) from the centers.
5. Fold every other corner into the centers and press in place.
6. Bake at 400°F (200°C).
7. Let cool. Spoon desired fruit filling into the centers. Dust lightly with confectioners' sugar. (Pinwheels may also be filled before baking if the filling is thick and not likely to burn.)

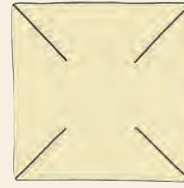
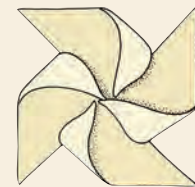
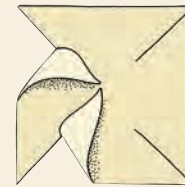
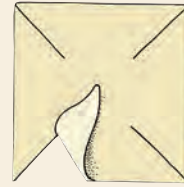


Figure 34.4 Makeup of pinwheels.

(a) Cut the dough into 5-in. (12-cm) squares. Wash the centers with water. Cut diagonally from the corners to 1 in. (2.5 cm) from center.

(b, c, d) Fold every other corner to the center and press down. Fill the center with fruit filling before or after baking.



Procedure for Making Patty Shells

See Figure 34.5.

1. Roll out puff dough to $\frac{1}{8}$ inch (3 mm) thick.
2. Roll a second piece of dough to $\frac{1}{4}$ inch (6 mm) thick.
3. Cut out the same number of circles from each piece of dough with a round 3-inch (7.5-cm) cutter.
4. Using a 2-inch (5-cm) cutter, cut out the centers of the thick circles.
5. Wash the thin circles with water or egg wash and place a ring on top of each. Wash the top carefully with egg wash (do not drip wash down the edges). Let rest 30 minutes.
6. Place a sheet of greased parchment over the tops of the shells to prevent their toppling over while baking.
7. Bake at 400°F (200°C) until brown and crisp.

Figure 34.5 Makeup of patty shells.



(a) Roll 1 sheet of puff dough $\frac{1}{8}$ in. (3 mm) thick and another sheet $\frac{1}{4}$ in. (6 mm) thick. Cut an equal number of 3-in. (7.5-cm) circles from each. Cut out the centers of the thick circles with a 2-in. (5-cm) cutter.

(b) Wash the thin circles with water or egg wash and place the thick circles on top.

Procedure for Making Cream Horns

See Figure 34.6.

1. Roll out puff dough into a sheet $\frac{1}{8}$ inch (3 mm) thick and about 15 inches (38 cm) wide.
2. Cut out strips $1\frac{1}{4}$ inches (3 cm) wide by 15 inches (38 cm) long.
3. Wash the strips with water.
4. With the washed side out, roll the strips diagonally onto cream horn tubes, making a spiral. Overlap the edges by about $\frac{3}{8}$ inch (1 cm). If you are using conical tubes, start at the small end.
5. Roll in granulated sugar and lay on baking sheets. The end of the dough strip should be on the bottom so it does not pop up during baking. Let rest 30 minutes.
6. Bake at 400°F (200°C) until brown and crisp.
7. Slip out the tubes while still warm.
8. Just before service, fill the horns from both ends with whipped cream or pastry cream, using a pastry bag with a star tip. Dust with confectioners' sugar.

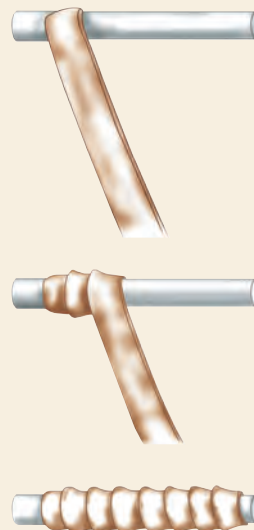


Figure 34.6 Makeup of cream horns.

(a) Roll puff dough to $\frac{1}{8}$ in. (3 mm) thick and cut it into strips $1\frac{1}{4}$ in. (3 cm) wide and 15 in. (38 cm) long. Wash the strips with water and press one end (washed side out) onto one end of a cream horn tube as shown.

(b) Roll the dough strip in a spiral by turning the tube. Overlap the edges by about $\frac{3}{8}$ in. (1 cm). Do not stretch the dough.

(c) Roll completely and press the end in place to seal.

Procedure for Making Napoleons

1. Roll puff dough into a very thin sheet about the size of a sheet pan. Blitz puff paste or rerolled trimmings may be used.
2. Place on sheet pan and let rest 30 minutes.
3. Dock with a fork to prevent blistering.
4. Bake at 400°F (200°C) until brown and crisp.
5. Trim the edges of the pastry sheet and cut with a serrated knife into equal strips 4 inches (10 cm) wide. Set the best one aside for the top layer. (If one of the strips breaks, don't be upset. It can be used as the middle layer.)
6. Spread one rectangle with Vanilla Pastry Cream (p. 1037) or with a mixture of pastry cream and whipped cream.
7. Top with a second sheet of pastry.
8. Spread with another layer of pastry cream.
9. Place a third pastry rectangle on top, flattest side up.
10. Ice top with fondant (p. 981).
11. To decorate, pipe 4 strips of chocolate fondant lengthwise on the white fondant. Draw a spatula or the back of a knife across the top in opposite directions, 1 inch (2.5 cm) apart, as shown in Figure 34.7.
12. Cut into strips 2 inches (5 cm) wide.

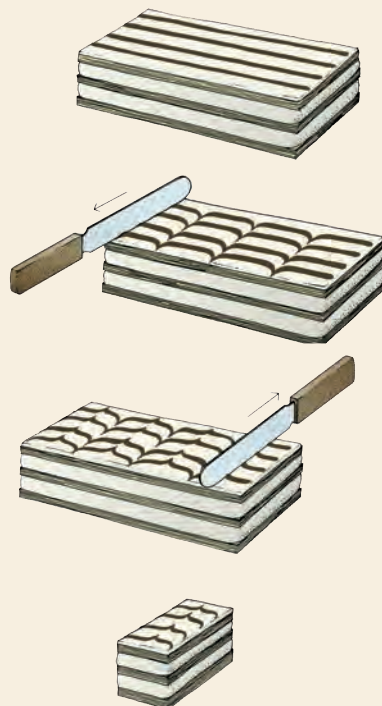


Figure 34.7 Decorating napoleons.

(a) Spread the top of the assembled napoleon with white fondant. With a paper cone, pipe 4 strips of chocolate fondant.

(b) Draw a spatula or the back of a knife across the icing at 2-in. (5-cm) intervals.

(c) Draw the spatula in the opposite direction in the center of these 2-in. (5-cm) intervals as shown.

(d) Cut the napoleon into strips 2 in. (5 cm) wide.

Éclair Paste

Éclairs and cream puffs are made from a dough called *éclair paste* or *choux paste*. The French name *pâte à choux* (pot a shoo) means “cabbage paste,” referring to the fact that cream puffs look like little cabbages.

Unlike puff pastry, éclair paste is extremely easy to make. The dough itself can be prepared in just a few minutes. This is fortunate because for best baking results, the dough should not be prepared ahead of time.

In principle, éclair paste is similar to popover batter, even though one is a thick dough and the other a thin batter. Both products are leavened by steam, which expands the product rapidly and forms large holes in the center. The heat of the oven then coagulates the gluten and egg proteins to set the structure and make a firm product. A strong flour is necessary for sufficient structure.

Éclair paste must be firm enough to hold its shape when piped from a pastry bag. Occasionally, you may find a formula that produces too slack a dough. Correct such a formula by reducing the water or milk slightly.

Proper baking temperatures are important. Start at a high temperature (425° to 475°F/ 215° to 245°C) for the first 10 minutes to develop steam. Then reduce the heat to 375° to 425°F (190° to 215°C) to finish baking and set the structure. The products must be firm and dry before being removed from the oven. If they are removed too soon or cooled too quickly, they may collapse. Some bakers like to leave them in a turned-off oven with the door ajar. However, if the oven must be heated again for other products, this may not be the best idea, especially in these times of high energy costs. It may be better to bake the products thoroughly, remove them carefully from the oven, and let them cool slowly in a warm place.

Éclair Paste or Pâte à Choux

INGREDIENTS	U.S.	METRIC	PERCENTAGE
Water, milk, or half water and half milk	1 lb	500 g	133 %
Butter or regular shortening	8 oz	250 g	67 %
Salt	1 tsp	5 g (5 mL)	1.5 %
Bread flour	12 oz	375 g	100 %
Eggs	1 lb 4 oz	625 g	167 %
<i>Yield:</i>	<i>3 lb 8 oz</i>	<i>1755 g</i>	<i>468 %</i>

Per 1 ounce (28.35 g): Calories, 70; Protein, 2 g; Fat, 4 g (56% cal.); Cholesterol, 35 mg; Carbohydrates, 5 g; Fiber, 0 g; Sodium, 90 mg.

PROCEDURE

Mixing:

1. Combine liquid, butter, and salt in a heavy saucepan and bring to a boil.
2. Remove pan from heat and add the flour all at once. Stir quickly.
3. Return the pan to moderate heat and stir vigorously until the dough forms a ball and pulls away from the sides of the pan.
4. Transfer the dough to the bowl of a mixer. If you wish to mix by hand, leave it in the saucepan.
5. With the paddle attachment, mix at low speed until the dough has cooled slightly. It should be about 140°F (60°C)—still very warm, but not too hot to touch.
6. At medium speed, beat in the eggs, a little at a time. Add no more than one-fourth of the eggs at once, and wait until each quantity is completely absorbed before adding the next. When all the eggs are absorbed, the paste is ready to use.

Procedure for Making Cream Puffs and Profiteroles

1. Line sheet pans with silicone paper, or butter them lightly.
2. Fit a large pastry bag with a plain tube. Fill the bag with the choux paste.
3. For cream puffs, pipe round mounds of dough about 1½ inches (4 cm) in diameter onto the lined baking sheets (see Figure 34.8).
For profiteroles, pipe round mounds of dough about ¾ inch (2 cm) in diameter. If you prefer, you may drop the dough from a spoon.
4. Bake at 425°F (215°C) for 10 minutes. Lower the heat to 375°F (190°C) until the puffs are well browned and very crisp.
5. Remove from the oven and cool slowly in a warm place.
6. When cool, cut a slice from the top of each puff. Fill with whipped cream, Vanilla Pastry Cream (p. 1037), or desired filling, using a pastry bag with a star tube.
7. Replace the tops and dust with confectioners' sugar.
8. Fill the puffs as close to service as possible. If cream-filled puffs must be held, refrigerate them.
9. Unfilled and uncut puffs, if they are thoroughly dry, may be held in plastic bags in the refrigerator for 1 week. Recrisp in the oven for a few minutes before use.



Figure 34.8 For cream puffs or profiteroles, pipe choux paste into bulbs of desired size onto greased sheet pans, or onto pans that have been lined with parchment.

Procedure for Making Éclairs

1. Proceed as for cream puffs, except pipe the dough into strips about ¾ inch (2 cm) wide and 3 to 4 inches (8 to 10 cm) long (see Figure 34.9). Bake as for cream puffs.
2. Fill baked, cooled éclair shells with pastry cream. Two methods may be used:
 - Make a small hole in one end of the shell and fill using a pastry bag or a doughnut-filling pump.
 - Cut a slice lengthwise from the top and fill using a pastry bag.
3. Dip the tops of the éclairs in chocolate fondant (p. 981).
4. For service and holding, see cream puffs procedure.

Variation: Frozen Éclairs or Profiteroles

1. Fill éclairs or profiteroles with ice cream. Keep frozen until service.
2. At service time, top with chocolate syrup.



Figure 34.9 For éclairs, pipe choux paste into fingers of desired size onto greased sheet pans, or onto pans that have been lined with parchment.

Procedure for Making French Crullers or French Doughnuts

1. Cut sheets of parchment paper to the same width as your deep fryer.
2. Using a pastry bag with a star tube, pipe choux paste onto the parchment in circles (doughnut shapes) about 2 inches (5 cm) across.
3. Slide the paper with the paste into a deep fryer heated to 375°F (190°C). Remove the paper as the doughnuts release and float free.
4. Fry the doughnuts on both sides until golden brown. French doughnuts must be completely fried, or they may collapse when cooling. Remove and drain on absorbent paper.
5. When cooled, drizzle fondant icing over the tops.

Meringues

Meringues are beaten egg whites sweetened with sugar. Their most frequent use in North America is for pie toppings and cake icings (known as *boiled icing*). They are also used to give volume and lightness to buttercream icings and to such preparations as dessert soufflés.

Another excellent use for meringues is to bake them in a slow oven until crisp. In this form, they can be used in place of cake layers or pastry shells to make light, elegant desserts. Chopped nuts may be folded into meringue before forming and baking to make these desserts more flavorful.

Basic rules for beating egg whites are discussed in Chapter 24, page 815. Please review this section before attempting to make any of the following preparations. We repeat one rule here because it is so important:

Make sure that all equipment is free of any trace of fat or grease, and that the egg whites have no trace of yolk in them. Even a small trace of fat will prevent the whites from foaming properly.

Soft meringues, used for pie topping, may be made with as little as 1 pound (500 g) sugar per pound (500 g) of egg whites. **Hard meringues**, baked until crisp, are made with up to twice as much sugar as egg whites.

Basic Meringues

The stiffness to which meringues are beaten may vary, as long as they are not beaten until they are too stiff and dry. For most purposes, they are beaten until they form stiff, or nearly stiff, moist peaks.

1. **Common 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.
2. **Swiss meringue** is made from egg whites and sugar warmed over a double boiler while beating. Warming gives this meringue better volume and stability.
3. **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 actually cooked by the heat of the syrup. When flavored with vanilla, this meringue is also known as *boiled icing*. It is also used in meringue-type buttercream icings.



Meringue



INGREDIENTS

Egg whites
Sugar
Water

COMMON MERINGUE

1 lb/500 g
2 lb/1 kg
—

SWISS MERINGUE

1 lb/500 g
2 lb/1 kg
—

ITALIAN MERINGUE

1 lb/500 g
2 lb/1 kg
8 fl oz/250 mL

Per 1 ounce (28.35 g): Calories, 80; Protein, 1 g; Fat, 0 g (0% cal.); Cholesterol, 0 mg; Carbohydrates, 19 g; Fiber, 0 g; Sodium, 15 mg.

Note: For soft meringues to top pies, use half the amount of sugar.

PROCEDURE

Common Meringue:

1. With the whip attachment, beat the egg whites at high speed until they form soft peaks.
2. Gradually add the sugar with the machine running.
3. Continue to beat until the meringue forms stiff but moist peaks.

Swiss Meringue:

1. Place the egg whites and sugar in a stainless-steel bowl or 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 and whip at high speed until stiff peaks form.

Italian Meringue:

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 mixture registers 240°F (115°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 the hot syrup into the egg whites.
4. Continue beating until the meringue forms firm peaks.

Meringue Desserts

Procedure for Making Pie Topping

1. Make common meringue or Swiss meringue using equal parts sugar and egg whites. Beat until just stiff.
2. Spread a generous amount (2–3 cups/500–700 mL) of meringue on still-warm pies. Mound it slightly, and be sure to attach it to the edge of the crust all around. If this is not done, the meringue may slide around on the finished pie. Leave the meringue in ripples or peaks.
3. Bake at 400°F (200°C) until the surface is attractively browned.
4. Remove from oven and cool.

Procedure for Making Baked Meringue Shells

1. Beat common or Swiss meringue until stiff.
2. Using a pastry bag or a spoon, form the meringue into small nest shapes on a parchment-lined baking sheet.
3. Bake at 200° to 225°F (about 100°C) until crisp but not browned. This will take 1 to 3 hours.
4. Cool the shells and remove from the parchment. Be careful, as they may be fragile.
5. Use in place of pastry shells for fruit tarts, fill with whipped cream and fresh strawberries or raspberries, or fill with a scoop of ice cream and garnish with chocolate or raspberry sauce. Crisp meringues with ice cream make a dessert called *meringue glacée* (glah say).

Procedure for Making Japonaise Meringues

Japonaise (zhah po nez) meringues are used like cake layers. They may be filled and iced with light buttercream, chocolate mousse, whipped cream, or similar light icings and creams.

1. Prepare 1 recipe (1 lb/500 g egg whites plus 2 lb/1 kg sugar) Swiss meringue.
2. Quickly but carefully fold in 1 pound (500 g) finely chopped hazelnuts.
3. With a pastry bag, form circles of the desired diameter and about ½ inch (1.5 cm) thick on parchment-lined sheet pans, as shown in Figure 34.10.
4. Bake as for meringue shells.

Figure 34.10 To make meringue layers, mark a circle on a sheet of parchment and pipe the meringue in a spiral to fill the circle.



Procedure for Making Baked Alaska

1. Pack softened ice cream into a dome-shaped mold of the desired size. Freeze solid.
2. Prepare a layer of sponge cake the same size as the flat side of the mold and about ½ inch (1.5 cm) thick.
3. Unmold the frozen ice cream onto the cake layer so the cake forms a base for the ice cream.
4. With a spatula, cover the entire dessert with a thick layer of meringue. If desired, decorate with more meringue forced from a pastry bag.
5. Bake at 450°F (230°C) until the meringue is golden brown.
6. Serve immediately.

Fruit Desserts

Fruit desserts are included here because many are similar to pies or pie fillings. Special favorites include cobblers, which are much like fruit pies made in large baking pans without a bottom crust; crisps, which are like cobblers, but with brown-sugar streusel topping instead of a pastry crust; and betties, which have alternate layers of rich cake crumbs and fruit. Also, don't overlook fresh fruits for dessert, served plain, lightly sweetened, or with cream.

KEY POINTS TO REVIEW

- What are the steps in the rolling-in procedure for making puff pastry dough?
- What are the steps in mixing éclair paste or pâte à choux?
- What are the three basic types of meringue? Describe how to prepare each.

Fruit Cobbler

YIELD: 1 PAN, 12 X 20 IN. (30 X 50 CM) **PORTION:** 48 **PORTION SIZE:** ABOUT 5 OZ (150 G)

U.S.	METRIC	INGREDIENTS
12–15 lb	5.5–7 kg	Fruit pie filling (apple, cherry, blueberry, peach, etc.)
2 lb	1 kg	Flaky pie pastry

Per serving: Calories, 200; Protein, 1 g; Fat, 7 g (29% cal.); Cholesterol, 0 mg; Carbohydrates, 37 g; Fiber, 2 g; Sodium, 115 mg.

Note: If possible, use stainless-steel pans instead of aluminum pans. The acid of the fruit will react with aluminum and create an undesirable flavor.

PROCEDURE

1. Place fruit filling in a baking pan measuring 12 × 20 in. (30 × 50 cm) (see Note).
2. Roll out the pastry in a rectangle to fit the top of the baking pan. Place the pastry on the filling and seal the edge to the side of the pan. Pierce small holes in the pastry to allow steam to escape.
3. Bake at 425°F about 30 minutes, or until the top is browned.
4. Cut the dessert 6 × 8 to make 48 portions. Serve warm or cold.

Apple Betty

YIELD: 1 PAN, 12 X 20 INCHES (30 X 50 CM) PORTIONS: 48 PORTION SIZE: 4 OZ (125 G)

U. S.	METRIC	INGREDIENTS
8 lb EP	4 kg EP	Apples, peeled and sliced
1 lb 8 oz	750 g	Sugar
1½ tsp	7 mL	Salt
1 tsp	5 mL	Nutmeg
1 tsp	15 mL	Grated lemon zest
2 fl oz	60 mL	Lemon juice

PROCEDURE

1. Combine the apples, sugar, salt, nutmeg, lemon zest, and lemon juice in a bowl. Toss gently until well mixed.
2. Place one-third of the apple mixture in an even layer in a well-buttered baking pan measuring 12 × 20 in. (30 × 50 cm).
3. Top with one-third of the cake crumbs.
4. Continue layers until all the apples and crumbs have been used. You will have 3 layers of fruit and 3 layers of crumbs.
5. Pour the melted butter evenly over the top.
6. Bake at 350°F (175°C) about 1 hour, or until fruit is tender.

2 lb	1 kg	Yellow or white cake crumbs
8 oz	250 g	Melted butter

Per serving: Calories, 200; Protein, 1 g; Fat, 7 g (30% cal); Cholesterol, 20 mg; Carbohydrates, 36 g; Fiber, 2 g; Sodium, 180 mg.

Apple Crisp

YIELD: 1 PAN, 12 X 20 IN. (30 X 50 CM) PORTION: 48 PORTION SIZE: 4 OZ (125 G)

U. S.	METRIC	INGREDIENTS
8 lb EP	4 kg EP	Apples, peeled and sliced
4 oz	125 g	Granulated sugar
2 fl oz	60 mL	Lemon juice
1 lb	500 g	Butter
1 lb 8 oz	750 g	Brown sugar
2 tsp	10 mL	Cinnamon
1 lb 8 oz	750 g	Pastry flour

PROCEDURE

1. Toss the apple gently with the granulated sugar and lemon juice.
2. Spread the apples evenly in a baking pan measuring 12 × 20 in. (30 × 50 cm) (see Note).
3. Rub the butter, brown sugar, cinnamon, and flour together until well blended and crumbly.
4. Sprinkle evenly over the apples.
5. Bake at 350°F (175°C) about 45 minutes, or until the top is browned and the apples are tender.

Per serving: Calories, 180; Protein, 2 g; Fat, 8 g (37% cal); Cholesterol, 20 mg; Carbohydrates, 28 g; Fiber, 2 g; Sodium, 85 mg.

Note: If possible, use stainless-steel pans instead of aluminum pans. The acid of the fruit will react with aluminum and create an undesirable flavor.

VARIATION

Peach, Cherry, or Rhubarb Crisp

Substitute the indicated fruit for the apples. If rhubarb is used, increase the sugar in step 1 to 12 oz (350 g).



Apple Crisp

Poached Pears



PORTIONS: 24 PORTION SIZE: 2 PEAR HALVES

U.S. METRIC INGREDIENTS

2 qt	2 L	Water
3 lb	1.5 kg	Sugar
4 tsp	20 mL	Vanilla

24	24	Pears
----	----	-------

Per serving: Calories, 320; Protein, 1 g; Fat, 0.5 g (1% cal.); Cholesterol, 0 mg; Carbohydrates, 82 g; Fiber, 4 g; Sodium, 5 mg.

VARIATIONS

Pears in Wine

Substitute red or white table wine for the water. Omit vanilla. Add 1 sliced lemon to the syrup. Peel the pears, but leave them whole.

Poached Peaches

Substitute peaches for pears in basic recipe.

Peaches in Wine

Substitute peaches for pears in recipe for Pears in Wine.

PROCEDURE

1. Combine the water and sugar in a trunion kettle or large saucepot. Bring to a boil, stirring until the sugar is dissolved.
2. Remove from heat and add the vanilla.
3. Peel the pears. Cut them in half and remove the cores with a melon ball cutter.
4. Add the pears to the syrup and simmer very slowly until just tender.
5. Let the pears cool in the syrup. When cool, refrigerate in the syrup until needed for service.

Raspberry or Cherry Gratin

PORTIONS: 1

U.S. METRIC INGREDIENTS

3 oz	90 g	Raspberries or sweet, pitted cherries
1	1	Genoise layer (see step 2)

2 oz	60 g	Pastry cream
1 oz	30 g	Whipped cream
to taste	to taste	Optional flavoring: kirsch, orange liqueur, or raspberry or cherry brandy

¼ oz	7 g	Sliced almonds
¼ oz	7 g	Melted butter
as needed	as needed	Confectioners' sugar

Per serving: Calories, 480; Protein, 7 g; Fat, 27 g (50% cal.); Cholesterol, 165 mg; Carbohydrates, 53 g; Fiber, 7 g; Sodium, 145 mg.

PROCEDURE

1. Select a shallow gratin dish or other heatproof dish large enough to hold the fruit in a shallow layer.
2. Cut a thin slice of genoise, about $\frac{3}{8}$ in. (1 cm) thick, to cover the bottom of the dish.
3. Arrange the fruit on top of the genoise.
4. Combine the pastry cream, whipped cream, and flavoring. Spread the mixture over the fruit to cover completely.
5. Mix the almonds and butter and sprinkle over the pastry cream. Dredge the top heavily with confectioners' sugar.
6. Place under a broiler or in the top of a hot oven for a few minutes to brown the top. Serve hot.



Raspberry Gratin

TERMS FOR REVIEW

flaky pie dough	soft pie	cooked fruit method	hard meringue
mealy pie dough	cream pie	puff pastry	common meringue
rubbed dough method	chiffon pie	blitz puff pastry	Swiss meringue
crumb crust	baking blind	éclair paste	Italian meringue
short dough	instant starch	pâte à choux	meringue glacée
fruit pie	cooked juice method	soft meringue	

QUESTIONS FOR DISCUSSION

1. Discuss the factors that affect tenderness, toughness, and flakiness in pie dough. Why should emulsified shortening not be used for pie dough?
2. What kind of crust or crusts would you use for a pumpkin pie? an apple pie? a banana cream pie?
3. What would happen to a flaky pie dough if you mixed it too long before adding the water? after adding the water?
4. How can you prevent shrinkage when baking pie shells?
5. What are the remedies for soggy or undercooked bottom pie crusts?
6. What starch would you use to thicken apple pie filling? chocolate pie filling? lemon pie filling? peach pie filling?
7. Why is lemon juice added to lemon pie filling after the starch has thickened the water? Wouldn't this thin the filling?
8. Why is it important to bake cream puffs and éclairs thoroughly and to cool them slowly?
9. Briefly describe the difference between common, Swiss, and Italian meringues.

Chapter 35

FOOD SERVICE INDUSTRY SANITATION AND SAFETY TOOLS AND EQUIPMENT BASIC PRINCIPLES OF FOOD SCIENCE MANAGEMENT NUTRITION MIS EN PLACE STOCKS AND SAUCES SOUPS UNDERSTANDING MEATS AND GAME UNDERSTANDING POULTRY AND GAME BIRDS COOKING POULTRY AND GAME BIRDS UNDERSTANDING FISH AND SHELLFISH COOKING FISH AND SHELLFISH UNDERSTANDING



Creams, Custards, Puddings, Frozen Desserts, and Sauces

A quick glance at this last chapter may give you the impression that you will be overwhelmed with a great many recipes and techniques within a few pages. Among the subjects covered are custard sauces, pastry cream, puddings, custards, mousses, bavarians, soufflés, ice cream, and dessert sauces.

It's all much simpler than it seems. Once you have learned three basic preparations—vanilla custard sauce, pastry cream, and baked custard—you will have learned most of the rest. Vanilla custard sauce, also called *crème anglaise* or *English cream*, is the basis for bavarians, ice cream, and some dessert sauces. Pastry cream, with a variety of flavorings, is also used for pie fillings and puddings and is the basis for some soufflés. Many baked puddings are baked custard with added starch or fruit ingredients.

There seems little point in giving you recipes for cream pie fillings in the pie section, a recipe for pastry cream filling for napoleons in the puff pastry section, and recipes for boiled puddings in the pudding section, and never telling you they are all basically the same preparation. You are not just learning a collection of unrelated recipes; you are learning to cook and to understand what you are cooking.

After reading this chapter, you should be able to

1. Cook sugar syrups to the seven stages of hardness.
2. Prepare *crème anglaise*, pastry cream, and baked custard.
3. Prepare starch-thickened puddings and baked puddings.
4. Prepare bavarians, chiffons, mousses, and dessert soufflés.
5. Assemble frozen desserts.
6. Prepare dessert sauces.

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. 1026).

Basic Principles

The principle of sugar cooking is fairly simple. A solution or syrup of sugar and water is boiled to evaporate part of the water. As the water is boiled off, the temperature of the syrup gradually rises. When all the water has evaporated, what you have left is melted sugar. The sugar then begins to caramelize or turn brown and to 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 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 part water (by weight) is enough to dissolve and cook 3 to 4 parts sugar. There is no point in adding more water than is necessary because you just have to boil it off.

Simple Syrup

Simple syrup is a solution of equal weights of sugar and water. Combine equal weights of water and granulated sugar in a saucepan, stir, and bring to a boil to dissolve the sugar. Cool the syrup.

Dessert syrup is a flavored simple syrup used to moisten and flavor some cakes (see p. 972). (Many chefs use 2 or 3 parts water to 1 part sugar for a less sweet syrup.) Flavorings may be extracts, such as vanilla, or liquors, such as rum or kirsch. Add flavorings after the syrup has cooled because flavor may be lost if they are added to hot syrup. Syrups may also be flavored by boiling them with lemon or orange rind.

Crystallization

Graininess is a common fault in many candies and desserts. Graininess results when cooked sugar *crystallizes*, or 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.

To avoid crystallization during the first stages of boiling, use one of the following techniques:

1. Wash down the sides of the saucepan with a brush dipped in water. This removes crystals that may seed the whole batch.
2. When first bringing the syrup to a boil, cover the pan and boil for several minutes. Condensed steam will wash down the sides of the pan. Uncover and finish cooking without stirring.

Sometimes an acid such as cream of tartar is added to a syrup before cooking. Acids change some of the sugar to *invert sugar*, which resists crystallizing. Corn syrup is sometimes added for the same reason.

Stages of Sugar Cooking

Testing the temperature with a candy thermometer is the most accurate way to determine the desired doneness of a syrup.

In the old days, syrups were tested by dropping a little bit 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. Table 35.1 lists these stages of sugar cooking.

Table 35.1 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 Custards and Creams

The three preparations presented in this section are among the most basic and useful preparations in the bakeshop. All three can be classified as custards because they consist of a liquid thickened by the coagulation of eggs.

Crème anglaise (krem awn glezz), or vanilla custard sauce, is a stirred custard. It consists of milk, sugar, and egg yolks (and vanilla) stirred over very low heat until lightly thickened.

Pastry cream contains starch thickeners as well as eggs, resulting in a much thicker and more stable product. It is used as a cake and pastry filling, as a filling for cream pies, and as a pudding. With additional liquid, it is used as a custard sauce.

Baked custard, like vanilla custard sauce, consists of milk, sugar, eggs, and flavoring (usually whole eggs are used for greater thickening power). But, unlike the sauce, it is baked rather than stirred over heat, so it sets and becomes firm. Baked custard is used as a pie filling, as a dessert by itself, and as a basis for many baked puddings.

All of these preparations are subject to a wide range of variation. Because they are based on eggs, it would be helpful for you to review the basic egg cooking principles discussed in Chapter 24.

Crème Anglaise

The following recipe gives the method for preparing vanilla custard sauce, or crème anglaise. Special care is necessary in preparing this sauce because the eggs can curdle easily if overcooked. The following guidelines will help you succeed.

1. Use clean, sanitized equipment, and follow strict sanitation procedures. Egg mixtures are good breeding grounds for bacteria that cause food poisoning.
2. 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. Using a stainless-steel bowl for this step makes the cooking and stirring easier in step 5.
3. Heat the milk to scalding (just below simmering) before combining with the egg yolks. This makes the final cooking much shorter. To avoid scorching, you can set the pan of milk in a pan of boiling water. This takes longer than using direct heat, but the pan can be left unattended for a few minutes while you perform other tasks.
4. *Slowly* beat the hot milk into the beaten eggs and sugar. This raises the temperature of the eggs gradually and helps prevent curdling.
5. Set the bowl containing the egg mixture in a pan of simmering water and stir constantly to prevent curdling.
6. To test for doneness, two methods are available. Keep in mind that this is a very light sauce, so you can't expect a lot of thickening.



Figure 35.1 Crème anglaise coating the back of a spoon.

- Check the temperature with a thermometer. When it reaches 185°F (85°C), the sauce is cooked. Never let the temperature go above 190°F (87°C).
- When the mixture lightly coats the back of a spoon instead of running off like milk, the sauce is cooked (Figure 35.1).

7. *Immediately* cool the sauce by setting the pan or bowl in ice water. Stir occasionally to cool it evenly.
8. If the sauce 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.

Crème Anglaise (Vanilla Custard Sauce)

YIELD: ABOUT 2½ PT (1.25 L)

U. S.	METRIC	INGREDIENTS	PROCEDURE
12 8 oz	12 250 g	Egg yolks Sugar	1. Review the guidelines for preparing vanilla custard sauce preceding this recipe. 2. Combine the egg yolks and sugar in a stainless-steel bowl. Whip until thick and light.
1 qt	1 L	Milk	3. Scald the milk in a boiling-water bath or over direct heat. 4. Very gradually pour the scalded milk into the egg yolk mixture while stirring constantly with the whip. 5. Set the bowl over simmering water. Heat it slowly, stirring constantly, until it thickens enough to coat the back of a spoon (or until it reaches 185°F/85°C).
1 tbsp	15 mL	Vanilla	6. Immediately remove the bowl from the heat and set it in a pan of cool water. Stir in the vanilla. Stir the sauce occasionally as it cools.

Per 1 fl oz (29.57 mL): Calories, 60; Protein, 2 g; Fat, 2.5 g (38 % cal.); Cholesterol, 65 mg; Carbohydrates, 7 g; Fiber, 0 g; Sodium, 15 mg.

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. Scrape the pulp from inside the bean with a paring knife (Figure 35.2). Add the pulp and the split bean to the milk before heating in step 3.

Chocolate Crème Anglaise

Melt 6 oz (175 g) sweetened chocolate. Stir into the crème anglaise while it is still warm (not hot).

Figure 35.2 Vanilla bean technique.



(a) Split the bean in half lengthwise.



(b) Scrape the pulp from inside the bean with a paring knife.

Pastry Cream

Although it requires more ingredients and steps, pastry cream is easier to make than custard because it is less likely to curdle. Pastry cream 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.

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, and do not taste it 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 following recipe. Note that the basic steps are similar to those for custard sauce. In this case, however, a starch is mixed with the eggs and half the sugar to make a smooth paste. (In some recipes 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 sugar helps protect the milk from scorching on the bottom of the pan).

The egg mixture is then tempered with some of the hot milk, 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 given here seems to give better protection against lumping and curdling.



Vanilla Pastry Cream

YIELD: ABOUT 2¼ QT (2.25 L)

U.S.	METRIC	INGREDIENTS	PROCEDURE
8 oz	250 g	Sugar	1. In a heavy saucepan or trunion kettle, dissolve the sugar in the milk and bring just to a boil.
2 qt	2 L	Milk	
8	8	Egg yolks	2. With a whip, beat the egg yolks and whole eggs in a stainless-steel bowl.
4	4	Whole eggs	
5 oz	150 g	Cornstarch	3. Sift the starch and sugar into the eggs. Beat with the whip until perfectly smooth.
8 oz	250 g	Sugar	
4 oz	125 g	Butter	6. When the mixture comes to a boil and thickens, remove from the heat.
1 fl oz	30 mL	Vanilla	

Per 1 fl oz (29.57 mL): Calories, 70; Protein, 2 g; Fat, 3 g (38% cal.); Cholesterol, 45 mg; Carbohydrates, 9 g; Fiber, 0 g; Sodium 30 mg.

VARIATIONS

For a lighter pastry cream filling, fold whipped heavy cream into the chilled pastry cream. Quantities may be varied to taste. For every 2 qt (2 L) pastry cream, whip 1–2 cups (250–500 mL) heavy cream.

Chocolate Pastry Cream

Melt together 4 oz (125 g) sweetened chocolate and 4 oz (125 g) unsweetened chocolate. Stir into the hot pastry cream.

Coffee Pastry Cream

Add 4 tbsp (60 mL) instant coffee powder to the milk in step 1.

CREAM PIE FILLINGS

Quantities for four 8-inch (20-cm) pies

Vanilla Cream Pie Filling

This is the same as Vanilla Pastry Cream. Fill prebaked pie shells with cooled but not chilled filling.

Coconut Cream Pie Filling

Add 8 oz (250 g) toasted unsweetened coconut to Vanilla Pastry Cream.

Banana Cream Pie Filling

Using Vanilla Cream Pie Filling, pour half of the filling into the pie shells, cover with sliced bananas, and fill with remaining filling. (Bananas may be dipped in lemon juice to help prevent browning.)

Chocolate Cream Pie Filling I

This is the same as Chocolate Pastry Cream, above.

Chocolate Cream Pie Filling II

In step 1, use only 3½ pt (1.75 L) milk. Add 3 oz (90 g) cocoa to dry ingredients (sugar and cornstarch) in basic Vanilla Pastry Cream recipe. Add 8 fl oz (250 mL) cold milk to the eggs.

Butterscotch Cream Pie Filling

Combine 2 lb (900 g) brown sugar and 10 oz (300 g) butter in a saucepan over low heat. Heat and stir until butter is melted and ingredients are blended. Omit all the sugar from the basic Vanilla Pastry Cream recipe (steps 1 and 3). Increase the starch to 6 oz (175 g). As the mixture is nearing a boil in step 5, gradually stir in the brown sugar mixture. Finish as in basic recipe.

Lemon Pie Filling

Follow the procedure for Vanilla Pastry Cream, but make the following ingredient adjustments:

1. Use water instead of milk.
2. Increase sugar in step 1 to 1 lb (450 g).
3. Increase the cornstarch to 6 oz (175 g).
4. Add the grated zest of 2 lemons to the egg mixture.
5. Add 8 fl oz (250 mL) lemon juice to the finished, hot cream in place of the vanilla.

CREAM PUDDINGS

Vanilla Pudding

Coconut Pudding

Banana Cream Pudding

Chocolate Pudding I and II

Butterscotch Pudding

For each of these puddings, prepare the corresponding pie filling but use only half the cornstarch.

PASTRY CREAM VARIATIONS

Cream pie fillings and puddings are actually pastry cream flavored with various ingredients.

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. Remember that twice as much flour as cornstarch is required for the same thickening power. Other variations are possible, as you will see in the recipes. Sometimes whipped cream is folded into cold pastry cream to lighten it and make it creamier.

Lemon pie filling is also a variation of pastry cream. It is made with water instead of milk, and it is flavored with lemon juice and grated lemon rind.

Baked Custard

Baked custard is a mixture of eggs, milk, sugar, and flavorings that is baked until the eggs coagulate and the custard is set. A good custard holds a clean, sharp edge when cut.

The following recipe gives the procedure for making baked custard. Note these points in particular:

1. Scald the milk before beating it slowly into the eggs. This reduces cooking time and helps the product cook more evenly.
2. Remove any foam, which would mar the appearance of the finished product.
3. Bake at 325°F (165°C). High temperatures increase the risk of overcooking and curdling.
4. Bake in a water bath so the outside edges are not overcooked before the inside is set.
5. To test for doneness, insert a thin-bladed knife 1 to 2 inches (3–5 cm) from the center. If it comes out clean, the custard is done. The center may not be completely set, but the custard will continue to cook in its own heat after removal from the oven.

KEY POINTS TO REVIEW

- What is the proper procedure to cook a sugar syrup so it doesn't crystallize? How do you tell when a syrup is cooked to the proper stage?
- What is the procedure for cooking crème anglaise?
- What is the procedure for cooking pastry cream?
- What is the procedure for cooking a plain baked custard?

Baked Custard

PORTIONS: 12 PORTION SIZE: 5 OZ (150 G)

U.S.	METRIC	INGREDIENTS	PROCEDURE
1 lb	500 g	Eggs	1. Combine the eggs, sugar, salt, and vanilla in a mixing bowl. Mix until thoroughly blended, but do not whip.
8 oz	250 g	Sugar	
½ tsp	2 mL	Salt	
½ fl oz	15 mL	Vanilla	
2½ pt	1.25 L	Milk	
<p>Per serving: Calories, 190; Protein, 8 g; Fat, 7 g (33% cal.); Cholesterol, 175 mg; Carbohydrates, 24 g; Fiber, 0 g; Sodium, 190 mg.</p>			2. Scald the milk in a double boiler or in a saucepan over low heat. 3. Gradually pour the milk into the egg mixture, stirring constantly. 4. Skim off all foam from the surface of the liquid. 5. Arrange custard cups in a shallow baking pan. (Butter the insides of the cups if the custards are to be unmolded.) 6. Carefully pour the custard mixture into the cups. If any bubbles form during this step, skim them off. 7. Set the baking pan on the oven shelf. Pour enough hot water into the pan around the cups so the level of the water is about as high as the level of the custard mixture. 8. Bake at 325°F (165°C) until set, about 45 minutes. 9. Carefully remove from the oven and cool. Store, covered, in refrigerator.
<p>VARIATION</p> <p>Crème Caramel Cook 12 oz (375 g) sugar and 2 fl oz (60 mL) water until it caramelizes (see the section on sugar cooking at the beginning of this chapter). Line the bottoms of the custard cups with the hot caramel. (Be sure the cups are clean and dry.) Fill with custard and bake as in basic recipe. When done, cool and refrigerate overnight. Unmold onto a plate for service.</p>			

Puddings

It is difficult to give a definition of *pudding* that includes everything called by that name. The term is used for such different dishes as chocolate pudding, blood sausages (blood puddings), and steak-and-kidney pudding. In this chapter, however, we consider only the more popular dessert puddings.

Two kinds of pudding, starch-thickened and baked, are the most frequently prepared in food-service kitchens. These are the types we discuss here. A third type, steamed pudding, is less often served, and then mainly in cold weather, because steamed puddings are usually rather heavy and filling.

Starch-Thickened Puddings

These are also called *boiled puddings* because they are boiled in order to cook the starch that thickens them.

1. Cornstarch pudding or *blancmange*.

Cornstarch pudding consists of milk, sugar, and flavorings and is thickened with cornstarch (or, sometimes, another starch). If enough cornstarch is used, the hot mixture may be poured into molds, chilled, and unmolded for service.

2. Cream puddings.

Cream puddings, as you learned in the previous section, are the same as pastry cream. Puddings are usually made with less starch, however, and may contain any of several flavoring ingredients, such as coconut or chocolate. Butterscotch pudding is given its flavor by using brown sugar instead of white sugar.

If you look again at the recipe for Vanilla Pastry Cream (p. 1037), you will see the only difference between cornstarch puddings and cream puddings is that the latter contain eggs. In fact, cream puddings may be made by stirring hot cornstarch pudding into beaten eggs, then heating the entire mixture to just below the simmer. Care must be taken to avoid curdling the eggs if this method is used.

A basic recipe for cornstarch pudding follows. Recipes for cream puddings are included among the variations following the recipe for Vanilla Pastry Cream.

Blancmange, English Style

PORTIONS: 12 PORTION SIZE: 4 OZ (125 G)

U. S.	METRIC	INGREDIENTS	PROCEDURE
1 qt	1 L	Milk	1. Combine the milk, sugar, and salt in a heavy saucepan and bring to a simmer.
6 oz	190 g	Sugar	
¼ tsp	1 mL	Salt	
4 oz	125 g	Cornstarch	2. Mix the cornstarch and cold milk until perfectly smooth. 3. Pouring in a thin stream, add about 1 cup (250 mL) hot milk to the cornstarch mixture. 4. Stir this mixture back into the hot milk. 5. Stir over low heat until the mixture thickens and comes to a boil.
8 fl oz	250 mL	Milk, cold	
1½ tsp	7 mL	Almond or vanilla extract	6. Remove from heat and add desired flavoring. 7. Pour into ½-cup (125-mL) molds. Cool, then chill. Unmold for service.
<p>Per serving: Calories, 150; Protein, 3 g; Fat, 3.5 g (20% cal.); Cholesterol, 15 mg; Carbohydrates, 28 g; Fiber, 0 g; Sodium, 100 mg.</p> <p>Note: French blancmange is very different from English. The French style is made with almond milk and gelatin.</p>			<p>VARIATIONS</p> <p>Blancmange or cornstarch pudding may be flavored in any way cream puddings are. See the variations following the Vanilla Pastry Cream recipe (p. 1037).</p>

Baked Puddings

Baked puddings are custards that contain additional ingredients, usually in large quantities. Bread pudding, for example, is made by pouring a custard mixture over pieces of bread in a pan and baking it in the oven. Rice pudding, another popular item, is made of cooked rice and custard.

The procedure for making baked puddings is the same as for making baked custard. A water bath may not be necessary if the starch content of the pudding is high.

Soft pie fillings, such as pumpkin, could also be considered baked puddings.

Rice Pudding

PORTIONS: 12 PORTION SIZE: 5 OZ (150 G)

U.S.	METRIC	INGREDIENTS	PROCEDURE
8 oz	225 g	Rice (medium- or long-grain)	<ol style="list-style-type: none"> 1. Wash the rice well. Drain. 2. Combine the rice, milk, vanilla, and salt in a heavy saucepan. Cover and simmer over very low heat until the rice is tender, about 30 minutes. Stir occasionally to be sure the mixture doesn't scorch on the bottom. Remove from heat when cooked.
1½ qt	1.5 L	Milk	
1 tsp	5 mL	Vanilla	
¼ tsp	1 mL	Salt	
1	1	Whole egg	<ol style="list-style-type: none"> 3. Combine the egg, yolks, sugar, and cream in a mixing bowl. Mix until evenly combined.
2	2	Egg yolks	
8 oz	250 g	Sugar	<ol style="list-style-type: none"> 4. Ladle some of the hot milk from the cooked rice into this mixture and mix well. Then very slowly stir the egg mixture into the hot rice.
8 fl oz	250 mL	Light cream	
as needed	as needed	Cinnamon	<ol style="list-style-type: none"> 5. Pour into a buttered baking pan, 12 × 20 in. (30 × 50 cm). Sprinkle the top with cinnamon. 6. Bake in a water bath at 350°F (175°C) for 30–40 minutes, or until set. Serve warm or chilled.

Per serving: Calories, 270; Protein, 7 g; Fat, 9 g (30 % cal.); Cholesterol, 80 mg; Carbohydrates, 40 g; Fiber, 0 g; Sodium, 120 mg.

VARIATION

Raisin Rice Pudding

Add 8 oz (250 g) raisins to the cooked rice and milk mixture.

Bread and Butter Pudding

PORTIONS: 12 PORTION SIZE: 6½ OZ (200 G)

U.S.	METRIC	INGREDIENTS	PROCEDURE
1 lb	500 g	White bread, in thin slices	<ol style="list-style-type: none"> 1. Cut each slice of bread in half. Brush both sides of each piece with melted butter. 2. Arrange the bread overlapping in a buttered baking pan, 12 × 20 in. (30 × 50 cm).
4 oz	125 g	Melted butter	
1 lb	500 g	Eggs	<ol style="list-style-type: none"> 3. Mix the eggs, sugar, salt, and vanilla until thoroughly combined. 4. Gradually stir in the milk.
8 oz	250 g	Sugar	
½ tsp	2 mL	Salt	<ol style="list-style-type: none"> 5. Pour the custard mixture over the bread slices in the pan. Let stand, refrigerated, 1 hour or longer, so the bread absorbs the custard mixture.
½ fl oz	15 mL	Vanilla	
2½ pt	1.25 L	Milk	<ol style="list-style-type: none"> 6. Sprinkle the top lightly with cinnamon and nutmeg. 7. Set the pan in a larger pan containing about 1 in. (3 cm) hot water. 8. Place in an oven preheated to 350°F (175°C). Bake about 1 hour, or until set. 9. Serve warm or cold with whipped cream or light custard sauce, or dusted with confectioners' sugar.
as needed	as needed	Cinnamon	
as needed	as needed	Nutmeg	

Per serving: Calories, 350; Protein, 11 g; Fat, 16 g (41% cal.); Cholesterol, 190 mg; Carbohydrates, 41 g; Fiber, 1 g; Sodium, 440 mg.

Bavarians, Chiffons, Mousses, and Soufflés

All the preparations in this section have one thing in common: They all have a light, fluffy, or puffed texture created by the addition of whipped cream, beaten egg whites, or both.

Although these particular products may be new to you, you should have little trouble learning to prepare them if you have already studied the previous chapter and the first part of this chapter. Once you have learned to prepare *crème anglaise*, pastry cream, starch-thickened fruit fillings, meringues, and whipped cream and have learned to work with gelatin (read p. 755 if you have not yet studied gelatin), all you have to do is combine these products in different ways to make bavarians, chiffons, mousses, and soufflés.

Let's look at these four items separately to see what they are made of. Afterward, we examine the procedures for assembling them.

Bavarians

A *bavarian*, also known as *bavarian cream* or *bavarois*, is made of three basic elements: *crème anglaise* (flavored as desired), gelatin, and whipped cream.

That's all there is to it. Gelatin is softened in cold liquid, stirred into the hot *crème anglaise* until dissolved, and chilled until almost set. Whipped cream is then folded in, and the mixture is poured into a mold until set. It is unmolded for service.

Accurate measuring of the gelatin is important. If not enough gelatin is used, the dessert will be too soft to hold its shape. If too much is used, it will be too firm and rubbery.

Chiffons

Chiffons are most popular as fillings for chiffon pies, but they may also be served more simply as puddings and chilled desserts.

The major difference between chiffons and bavarians is that beaten egg whites are used in place of or in addition to whipped cream. In other words, chiffons are made of a base plus gelatin plus beaten egg whites. (Some chiffons also contain whipped cream.)

Bases for chiffons include the following three main types:

1. Thickened with starch.

The procedure is the same as for fruit pie fillings made by the cooked juice or cooked fruit method, except the fruit is finely chopped or puréed. Most fruit chiffons are made this way.

2. Thickened with egg.

The procedure is the same as for custard sauce or *crème anglaise*. Many chocolate chiffons are made this way, as is pumpkin chiffon.

3. Thickened with egg and starch.

The procedure is the same as for pastry cream. Lemon chiffon is usually made this way.

Mousses

There are so many varieties of mousse that it is impossible to give a rule for all of them. In general, we define a *mousse* as any soft or creamy dessert made light and fluffy by the addition of whipped cream, beaten egg whites, or both. Note that bavarians and chiffons both fit this description. In fact, they are often served as mousses, but with the gelatin reduced or left out so the mousse is softer.

Many kinds of base are used for mousses. The base may be nothing more than melted chocolate or puréed fresh fruit, or it may be more complex, like the bases for chiffons.

Some mousses contain both beaten egg whites and whipped cream. When this is the case, most chefs prefer to fold in the egg whites first, even though they may lose some volume. The reason is that if the cream is added first, there is more danger it will be overbeaten and turn to butter during the folding and mixing procedure.

If egg whites are folded into a *hot* base, they will cook or coagulate, and the mousse will be firmer and more stable. Whipped cream should never be folded into hot mixtures, or it will melt and deflate.

Dessert Soufflés

Soufflés are lightened with beaten egg whites, then baked. Baking causes the soufflé to rise like a cake because the air in the egg foam expands when heated.

To understand the structure of dessert soufflés, we can divide their preparation into four stages:

1. Base.

Many kinds are used for dessert soufflés. Most are heavy, starch-thickened preparations, such as pastry cream or sweetened white sauce.

2. Egg yolks.

When used, these are added to the base.

3. Egg whites.

Whenever possible, egg whites should be whipped with some of the sugar. This makes dessert soufflés more stable than entrée soufflés.

4. Baking.

Review the section on entrée soufflés (pp. 822–824) so you understand the general principles of baking soufflés.

Summary and Comparison

1. Bavarian

Base: Custard sauce

Gelatin

Whipped cream

2. Chiffon

Base: Starch-thickened
(fruit filling type)

Egg-thickened (custard type)

Egg- and starch-thickened
(pastry cream type)

Gelatin

Egg whites

(Optional whipped cream)

3. Mousse

Base: Many varieties

Little or no gelatin

Egg whites and/or whipped cream

4. Soufflé

Base: Many varieties, usually
containing egg yolk

Egg whites

Baked

General Procedure for Making Bavarians, Chiffons, Mousses, and Soufflés

The following is a general procedure only. It is not a detailed method for one specific dessert, but it will give you a basic understanding that will help you tackle many recipes. These basic steps apply to most bavarians, chiffons, mousses, and soufflés.

1. Prepare the base.
2. If gelatin is used, soften it in cold liquid and stir it into the hot base until dissolved. Chill until almost set.
3. Fold in the beaten egg whites and/or whipped cream.
4. Chill (bavarians, chiffons, and mousses) or bake (soufflés).

KEY POINTS TO REVIEW

- What is the difference between a cornstarch pudding and a cream pudding?
- Rice pudding and bread pudding are made the same way as which of the three basic custard preparations discussed in the previous section?
- In what ways are bavarians, chiffons, and mousses similar? In what ways are they different?
- What are the four basic components of a baked soufflé?

Bavarian Cream

PORTIONS: 24 PORTION SIZE: 3 OZ (90 G)

U.S.	METRIC	INGREDIENTS	PROCEDURE
1½ oz 10 oz	45 g 300 mL	Gelatin (unflavored) Cold water	1. Soak the gelatin in cold water.
12 8 oz 1 qt 1 tbsp	12 250 g 1 L 15 mL	Crème anglaise: Egg yolks Sugar Milk Vanilla	2. Prepare the crème anglaise; Whip the egg yolks and sugar until thick and light. Scald the milk and slowly stir it into the egg-yolk mixture, beating constantly. Add vanilla. Cook in a hot-water bath, stirring constantly, until it just thickens slightly. (Review pp. 1035–1036 for details on making crème anglaise.) 3. While the sauce is still hot, add the softened gelatin. Stir until the gelatin is dissolved. 4. Cool in the refrigerator or over crushed ice, stirring occasionally to keep the mixture smooth.
1 qt	1 L	Heavy cream	5. While the custard sauce is cooling, whip the cream until it forms soft, not stiff, peaks. Do not overwhip. 6. When the custard sauce is very thick but not yet set, fold in the whipped cream. 7. Pour into molds or into serving dishes. 8. Chill until completely set. If prepared in molds, unmold for service.
Per serving: Calories, 240; Protein, 5 g; Fat, 19 g (70% cal.); Cholesterol, 165 mg; Carbohydrates, 13 g; Fiber, 0 g; Sodium, 45 mg.			

VARIATIONS

Chocolate Bavarian Cream

Add 12 oz (350 g) sweetened chocolate, chopped or grated, to the hot crème anglaise. Stir until completely melted and blended in.

Coffee Bavarian Cream

Add 3 tbsp (45 mL) instant coffee powder to the hot crème anglaise.

Strawberry Bavarian Cream

Reduce the milk to 1 pt (500 mL) and the sugar to 6 oz (175 g) when making the crème anglaise. Mash 1 lb (500 g) strawberries with 6 oz (175 g) sugar, or use 1½ lb (700 g) frozen, sweetened strawberries. Stir this purée into the custard sauce before adding the whipped cream.

Raspberry Bavarian Cream

Prepare like Strawberry Bavarian Cream, using raspberries.

Strawberry Chiffon Dessert or Pie Filling

YIELD: 6 LB 8 OZ (3 KG) **SIX 8-IN. (20-CM) PIES**
FIVE 9-IN. (23-CM) PIES
FOUR 10-IN. (25-CM) PIES

U.S.	METRIC	INGREDIENTS
4 lb	1800 g	Frozen sweetened strawberries (see Note)
1 tsp	5 mL	Salt
1 oz	30 g	Cornstarch
4 fl oz		125 mL Water
<hr/>		
1 oz	30 g	Gelatin
8 fl oz	250 mL	Water, cold
1 fl oz	30 mL	Lemon juice
<hr/>		
1 lb	450 g	Egg whites
12 oz	350 g	Sugar

Per 1 ounce (28.35 g): Calories, 40; Protein, 1 g; Fat, 0 g (0% cal.);
 Cholesterol, 0 mg; Carbohydrates, 9 g; Fiber, 0 g; Sodium, 30 mg.

Note: To use fresh strawberries, slice or dice 3 lb (1.4 kg) fresh, hulled strawberries and mix with 1 lb (450 g) sugar. Let stand 2 hours in refrigerator. Drain and reserve juice. Proceed as in basic recipe.

PROCEDURE

1. Thaw and drain the strawberries, reserving the juice. Chop the strawberries coarsely.
2. Place the reserved juice and salt in a saucepan. Bring to a boil.
3. Dissolve the cornstarch in the water and stir into the strawberry juice. Cook until thick. Remove from heat.
4. Soften the gelatin in the water. Add to the hot, thickened fruit juice and stir until completely dissolved.
5. Stir in the lemon juice and the drained strawberries.
6. Chill the mixture until thickened but not set.
7. Beat the egg whites until they form soft peaks.
8. Gradually add the sugar and continue to beat until a thick, glossy meringue is formed.
9. Fold the meringue into the fruit mixture.
10. Portion into individual serving dishes or fill baked pie shells.
11. Chill until set.

VARIATIONS

For a creamier chiffon, reduce egg whites to 12 oz (350 g). Whip 1 pt (500 mL) heavy cream and fold it in after the meringue.

Raspberry Chiffon Dessert or Pie Filling

Substitute raspberries for strawberries in basic recipe.

Pineapple Chiffon Dessert or Pie Filling

Use 3 lb (1.4 kg) crushed pineapple. Mix the drained juice with an additional 1 pt (500 mL) pineapple juice and add 8 oz (225 g) sugar.

Frozen Strawberry or Raspberry Mousse

Omit gelatin and second quantity of water from basic recipe or from raspberry variation. Reduce egg whites to 8 oz (225 g). Whip 1½ pt (750 mL) heavy cream and fold it in after the meringue. Pour into molds or other containers and freeze.

Chocolate Chiffon Dessert or Pie Filling

YIELD: 7 LB (3.2 KG) SIX 8-IN. (20-CM) PIES
FIVE 9-IN. (23-CM) PIES
FOUR 10-IN. (25-CM) PIES

U. S.	METRIC	INGREDIENTS	PROCEDURE
10 oz 1½ pt	300 g 750 mL	Unsweetened chocolate Water	1. Combine the chocolate and water in a heavy saucepan. Bring to a simmer, stirring constantly until smooth.
1 lb 1 lb	450 g 450 g	Egg yolks Sugar	2. Beat the egg yolks and sugar together with the whip attachment until thick and light. 3. With the mixer running, gradually pour in the chocolate mixture. 4. Return the mixture to the saucepan and stir over very low heat until thickened. Remove from heat.
1 oz 8 fl oz	30 g 250 mL	Gelatin Water, cold	5. Soften the gelatin in the cold water. Add to the hot chocolate mixture and stir until the gelatin is completely dissolved. 6. Chill until thick but not set.
1 lb 4 oz 1 lb 8 oz	575 g 700 g	Egg whites Sugar	7. Beat the egg whites until they form soft peaks. 8. Gradually beat in the sugar. Continue beating until a firm, glossy meringue is formed. 9. Fold into the chocolate mixture. 10. Pour into serving dishes or into baked pie shells. Chill until set.

Per 1 ounce (28.35 g): Calories, 70; Protein, 2 g; Fat, 2.5 g (30% cal.); Cholesterol, 50 mg; Carbohydrates, 11 g; Fiber, 0 g; Sodium, 10 mg.

VARIATION

Chocolate Cream Chiffon Pie Filling

For a creamier chiffon, reduce the egg whites to 1 lb (450 g). Whip 1 pt (500 mL) heavy cream and fold it in after the meringue.

Lemon Chiffon Dessert or Pie Filling

YIELD: 7 LB (3.2 KG) SIX 8-IN. (20-CM) PIES
FIVE 9-IN. (23-CM) PIES
FOUR 10-IN. (25-CM) PIES

U.S.	METRIC	INGREDIENTS	PROCEDURE
1½ pt 8 oz	750 mL 250 g	Water Sugar	1. Dissolve the sugar in the water and bring to a boil.
12 oz 4 fl oz 3 oz 8 oz ¾ oz (3 tbsp)	375 g 125 mL 90 g 250 g 22 g (45 mL)	Egg yolks Water, cold Cornstarch Sugar Grated lemon zest	2. Beat together the egg yolks, cold water, cornstarch, sugar, and lemon zest until smooth. 3. Gradually beat in the boiling sugar water in a thin stream. 4. Return the mixture to the heat and bring to a boil, beating constantly with a whip. 5. As soon as the mixture thickens and boils, remove it from the heat.
1 oz 8 fl oz 12 fl oz	30 g 250 mL 350 mL	Gelatin Water, cold Lemon juice	6. Soften the gelatin in the second quantity of cold water. 7. Add the gelatin to the hot lemon mixture. Stir until it is dissolved. 8. Stir in the lemon juice. 9. Chill until thick but not set.
1 lb 1 lb	450 g 450 g	Egg whites Sugar	10. Beat the egg whites until they form soft peaks. 11. Gradually add the sugar and continue to beat until a thick, glossy meringue is formed. 12. Fold the meringue into the lemon mixture. 13. Pour into individual serving dishes or fill baked pie shells. 14. Chill until set.
<p>Per 1 ounce (28.35 g): Calories, 50; Protein, 1 g; Fat, 1 g (18% cal.); Cholesterol, 40 mg; Carbohydrates, 9 g; Fiber, 0 g; Sodium, 10 mg.</p>			

VARIATIONS

Lime Chiffon Dessert or Pie Filling

Substitute lime juice and zest for the lemon.

Orange Chiffon Dessert or Pie Filling

Use orange juice instead of water in step 1 and omit the first 8 oz (250 g) sugar. Substitute orange zest for the lemon zest. Reduce the lemon juice to 4 fl oz (125 mL).

Frozen Lemon Mousse

Omit the gelatin and the water used to dissolve it. Decrease egg whites to 12 oz (350 g). Whip 1 qt (1 L) heavy cream and fold it in after meringue. Pour into molds or other containers and freeze.

Pumpkin Chiffon Dessert or Pie Filling

YIELD: 7 LB 12 OZ (3.4 KG) SIX 8-IN. (20-CM) PIES
FIVE 9-IN. (23-CM) PIES
FOUR 10-IN. (25-CM) PIES

U.S.	METRIC	INGREDIENTS	PROCEDURE
2½ lb	1.2 kg	Pumpkin purée	<ol style="list-style-type: none"> 1. Combine the pumpkin, brown sugar, milk, egg yolks, salt, and spices. Mix until smooth and uniform. 2. Place in a double boiler. Cook, stirring frequently, until thickened or until the temperature of the mixture reaches 185°F (85°C). Remove from heat.
1 lb 4 oz	600 g	Brown sugar	
12 oz	350 g	Milk	
12 oz	350 g	Egg yolks, beaten	
1 tsp	5 mL	Salt	
4 tsp	20 mL	Cinnamon	
2 tsp	10 mL	Nutmeg	
1 tsp	5 mL	Ground ginger	<ol style="list-style-type: none"> 3. Soften the gelatin in the water. 4. Add it to the hot pumpkin mixture and stir until dissolved. 5. Chill until very thick but not set.
1 oz	30 g	Gelatin	
8 fl oz	250 mL	Water, cold	
1 lb	450 g	Egg whites	<ol style="list-style-type: none"> 6. Beat egg whites until they form soft peaks. 7. Gradually add the granulated sugar and continue to beat until a thick meringue is formed. 8. Fold the meringue into the pumpkin mixture. 9. Portion into individual serving dishes or fill baked pie shells. Chill until set.
1 lb	450 g	Granulated sugar	

Per 1 ounce (28.35 g): Calories, 50; Protein, 1 g; Fat, 1 g (18% cal.); Cholesterol, 35 mg; Carbohydrates, 9 g; Fiber, 0 g; Sodium, 30 mg.

VARIATION

Pumpkin Cream Chiffon

Reduce the egg whites to 12 oz (350 g). Whip 1 pt (500 mL) heavy cream and fold it in after the meringue.

Vanilla Soufflé

PORTIONS: 10 PORTION SIZE: 4½ OZ (125 G)

U.S.	METRIC	INGREDIENTS	PROCEDURE
3 oz	90 g	Flour	1. Work the flour and butter together to form a smooth paste.
3 oz	90 g	Butter	
4 oz	125 g	Sugar	2. Dissolve the sugar in the milk and bring to a boil. Remove from the heat.
1 pt	500 mL	Milk	
as needed	as needed	Butter	3. With a wire whip, beat in the flour paste. Beat vigorously to make sure there are no lumps.
as needed	as needed	Sugar	
8	8	Egg yolks	4. Return the mixture to the heat and bring to a boil, beating constantly. Simmer for several minutes, until the mixture is very thick and no starchy taste remains.
2 tsp	10 mL	Vanilla	
8–10	8–10	Egg whites	5. Transfer the mixture to a mixing bowl. Cover and let cool 5–10 minutes.
2 oz	60 g	Sugar	
Per serving: Calories, 270; Protein, 8 g; Fat, 13 g (44% cal.); Cholesterol, 195 mg; Carbohydrates, 29 g; Fiber, 0 g; Sodium, 150 mg.			6. While the mixture is cooling, butter the soufflé dishes well and coat with sugar. For 1 recipe, use 1 dish, 10 in. (25 cm) in diameter; 2 dishes, 7 in. (18 cm) in diameter; or 10 single-portion dishes.
			7. Quickly beat the egg yolks and vanilla into the milk mixture.
			8. Beat the egg whites until they form soft peaks. Add the sugar and beat until the mixture forms firm, moist peaks.
			9. Fold the egg whites into the soufflé base.
			10. Pour the mixture into the prepared baking dishes and smooth the tops.
			11. Bake at 375°F (190°C). Approximate baking times are 45–50 minutes for a 10-in. (25-cm) dish, 30–40 minutes for a 7-in. (18-cm) dish, and 15 minutes for single-portion dishes.

VARIATIONS

Chocolate Soufflé

Add 3 oz (90 g) melted unsweetened chocolate and 1 oz (30 g) melted sweet chocolate to the base after step 5.

Lemon Soufflé

Instead of vanilla, use the grated zest of 2 lemons for flavoring.

Liqueur Soufflé

Flavor with 2–3 fl oz (60–90 mL) liqueur, such as kirsch or Grand Marnier, added after step 5.

Coffee Soufflé

Flavor with 2 tbs (30 mL) instant coffee powder, added to the milk in step 2.

Chocolate Mousse

YIELD: ABOUT 2¾ LB (1.25 KG) OR 2½ PT (1.25 L) PORTIONS: 12 PORTION SIZE: 4½ FL OZ (145 ML)

U. S.	METRIC	INGREDIENTS	PROCEDURE
1 lb	500 g	Bittersweet chocolate	<ol style="list-style-type: none"> 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 yolk completely before adding the next.
4 oz	125 g	Butter	
6 oz	180 g	Egg yolks	
8 oz	250 g	Egg whites	<ol style="list-style-type: none"> 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.
2½ oz	75 g	Sugar	
8 fl oz	250 mL	Heavy cream	<ol style="list-style-type: none"> 6. Whip the heavy cream until it forms soft peaks. Fold it into the chocolate mixture. 7. Spoon the mousse into serving dishes, or use a pastry bag fitted with a star tube. 8. Chill the mousse well before serving.
<p>Per serving: Calories, 380; Protein, 6 g; Fat, 29 g (64% cal.); Cholesterol, 220 mg; Carbohydrates, 30 g; Fiber, 2 g; Sodium, 120 mg.</p> <p>Note: This mixture may also be used as a filling for cakes, pastries, and baked meringues. For another, very different chocolate mousse recipe, see the variation following the recipe for Chocolate Chiffon earlier in this chapter.</p>			

Frozen Desserts

The popularity of ice cream needs no explanation. Whether a plain scoop of vanilla ice cream in a dish or an elaborate assemblage of fruits, syrups, toppings, and numerous flavors of ice cream and sherbet, frozen desserts appeal to just about everyone.

Classification

1. Ice cream.

Ice cream is a smooth, frozen mixture of milk, cream, sugar, flavorings, and, sometimes, eggs. **Philadelphia-style ice cream** contains no eggs, while **French-style ice cream** contains egg yolks. The eggs add richness and help make a smoother product because of the emulsifying properties of the yolks.

Ice milk is like ice cream, but with a lower butterfat content.

Frozen yogurt contains yogurt in addition to the normal ingredients for ice cream or ice milk.

2. Sherbet.

Sherbets and **ices** are made from fruit juices, water, and sugar. American sherbets usually contain milk or cream and, sometimes, egg whites. The egg whites increase smoothness and volume. Ices, also called **water ices**, contain only fruit juice, water, sugar, and, sometimes, egg whites. They do not contain milk products. The French word **sorbet** (sor bay) is sometimes used for these products. **Granité** (grah nee tay) is a coarse, crystalline ice made without egg white.

3. Still-frozen dessert.

Ice cream and sherbet are churn-frozen, meaning they are mixed constantly while being frozen. If they were not churned, they would freeze into solid blocks of ice. The churning keeps the ice crystals small and incorporates air into the ice cream.

Frozen soufflés and **frozen mousses** are made like chilled mousses and bavarians—that is, whipped cream, beaten egg whites, or both are folded in to give them lightness. This allows them to be still-frozen in an ordinary freezer.

Production and Quality

Until recently, few establishments made their own ice cream because of the labor involved, the equipment required, and the convenience of commercially made products. Also, in some areas, strict health codes made it difficult for all but large producers to make ice cream. Today, more and more restaurants are making their own ice creams and sorbets.

A basic ice cream mix is simply a *crème anglaise* or custard sauce mixed with 1 or 2 parts heavy cream for every 4 parts milk used in the sauce. This base is flavored as desired with vanilla, melted chocolate, instant coffee, crushed strawberries, and so on. It is then chilled thoroughly and then frozen according to the instructions for the equipment being used.

When the mix has frozen, it is transferred to containers and placed in a deep-freeze at below 0°F (−18°C) to harden. (Soft-frozen or soft-serve ice creams are served directly as they come from the churn freezer without being hardened.)

Whether you make ice cream or buy it, you should be aware of the following quality factors:

1. **Smoothness** is related to the size of the ice crystals in the product. Ice cream should be frozen rapidly and churned well during freezing so large crystals don't have a chance to form.

Rapid hardening helps keep crystals small. So do eggs and emulsifiers or stabilizers added to the mix.

Large crystals may form if the ice cream is not stored at a low enough temperature (below 0°F/−18°C).

2. **Overrun** is the increase in volume due to the incorporation of air when freezing ice cream. It is expressed as a percentage of the original volume of the mix. For example, if the ice cream doubles in volume, the amount of increase is equal to the original volume and the overrun is 100 percent.

Some overrun is necessary to give a smooth, light texture. Ice cream with too much overrun is airy and foamy and lacks flavor. It was once thought ice cream should have from 80 to 100 percent overrun and that less would make it heavy and pasty. This may be true for ice creams containing gums and other stabilizers. However, some high-quality manufacturers produce rich (and expensive) ice cream with as little as 20 percent overrun.

3. **Mouthfeel** or *body* depends, in part, on smoothness and overrun as well as on other qualities. Good ice cream melts in the mouth to a smooth, not too heavy liquid. Some ice creams have so many stabilizers they never melt to a liquid. Unfortunately, many people have become so accustomed to these products that an ice cream that actually does melt strikes them as not rich enough.

Storage and Service

1. Store ice creams and sherbets at 0°F (−18°C) or lower. This low temperature helps prevent the formation of large ice crystals.
2. For service, temper frozen desserts at 8° to 15°F (−13° to −9°C) for 24 hours so they are soft enough to serve.
3. When serving, avoid packing the ice cream. The best method is to draw the scoop across the surface of the product so the product rolls into a ball in the scoop.
4. Use standard scoops for portioning ice cream. Normal portions for popular desserts are as follows:

Parfait	3 No. 30 scoops
Banana split	3 No. 30 scoops
À la mode topping for pie or cake	1 No. 20 scoop
Sundae	2 No. 20 scoops
Plain dish of ice cream	1 No. 10, 12, or 16 scoop

5. Measure syrups, toppings, and garnishes for portion control. For syrups, use pumps that dispense measured quantities, or use standard ladles.

Popular Ice Cream Desserts

1. **Parfaits** are made by alternating layers of ice cream and fruit or syrup in a tall, narrow glass. They are usually named after the syrup or topping. For example: a *chocolate parfait* comprises three scoops of vanilla or chocolate ice cream alternating with layers of chocolate syrup and topped with whipped cream and shaved chocolate.
2. **Sundaes** or **coupes** consist of one or two scoops of ice cream or sherbet in a dish or glass and topped with syrups, fruits, toppings, and garnishes. They are quick to prepare, unlimited in variety, and as simple or as elegant as you could wish—served in an ordinary soda fountain glass, a silver cup, or a crystal champagne glass.

Two sundaes have become classics:

Peach Melba. Vanilla ice cream topped with a fresh, poached, or canned peach half, napped with sweetened raspberry purée (Melba sauce), and garnished with slivered almonds.

Pear Belle Hélène. Vanilla ice cream topped with a poached or canned pear half, napped with chocolate sauce, and garnished with toasted sliced almonds.

3. **Bombes** are ice cream molds made by lining a chilled mold with softened ice cream, freezing it hard, and then filling the center with another flavor of ice cream or sherbet and freezing it again. (More than two flavors may be used.) The dessert is unmolded onto a cold platter for service and decorated as desired with whipped cream, fruits, and/or confections.
4. **Meringue glacée.** See discussion of meringues, page 1027.
5. **Baked Alaska.** See discussion of meringues, page 1028.
6. **Frozen éclairs** and **profiteroles.** See discussion of éclair pastries, page 1025.

Dessert Sauces

Most dessert sauces fall into one of three categories.

1. Custard sauces.

Vanilla custard sauce, or *crème anglaise*, is presented early in this chapter. It is among the most basic preparations in dessert cookery. Chocolate or other flavors may be added to create varieties. See recipe on page 1036.

2. Fruit purées.

These are simply purées of fresh or cooked fruits, sweetened with sugar. Other flavorings and spices are sometimes added. Some fruit sauces are thickened with cornstarch or other starch.

Raspberry sauce and strawberry sauce, two popular items, can be made by simply puréeing frozen sweetened berries or by puréeing fresh berries and adding sugar to taste. See also the recipe for Applesauce (p. 213).

3. Syrups.

This is a broad category that includes such products as chocolate sauce and caramel sauce. An understanding of sugar cooking is necessary to produce many of these sauces.

The following recipes are popular examples of this category of sauce.

KEY POINTS TO REVIEW

- What are the key temperatures for storing ice cream and for holding it for service?
- How do you control portion size when preparing standard ice cream desserts?
- What are the three main categories of dessert sauce?

Chocolate Sauce

YIELD: 1 QT (1 L)

U.S.	METRIC	INGREDIENTS
1 pt	500 mL	Water
2 lb	1 kg	Sugar
6 oz	190 g	Corn syrup
8 oz	250 g	Unsweetened chocolate, melted
2 oz	60 g	Butter

Per 1 fl oz (29.57 mL): Calories, 170; Protein, 1 g; Fat, 5 g (24% cal.); Cholesterol, 5 mg; Carbohydrates, 34 g; Fiber, 1 g; Sodium, 25 mg.

PROCEDURE

1. Combine the water, sugar, and corn syrup and bring to a boil, stirring to dissolve the sugar.
2. Boil 1 minute and remove from heat. Let cool 1–2 minutes.
3. Melt the chocolate and butter together over low heat. Stir until smooth.
4. Very slowly stir the hot syrup into the chocolate.
5. Place over moderate heat and bring to a boil. Boil 4 minutes.
6. Remove from heat and cool.

Caramel Sauce

YIELD: 1½ QT (1.5 L)

U.S.	METRIC	INGREDIENTS
1 lb	500 g	Sugar
4 oz	125 g	Water
1½ tsp	7 mL	Lemon juice
12 fl oz	375 mL	Heavy cream
8 fl oz	250 mL	Milk

Per 1 fl oz (29.57 g): Calories, 130; Protein, 1 g; Fat, 6 g (39% cal.); Cholesterol, 20 mg; Carbohydrates, 20 g; Fiber, 0 g; Sodium, 10 mg.

PROCEDURE

1. Combine the sugar, water, and lemon juice in a heavy saucepan. Bring to a boil, stirring to dissolve the sugar.
2. When the sugar is dissolved, cover the pan and boil 2 minutes.
3. Uncover and cook to the caramel stage (see pp. 1034–1035). Toward the end of the cooking time, turn the heat very low to avoid burning the sugar or getting it too dark. It should be a golden color.
4. Remove from heat and cool 5 minutes.
5. Bring the heavy cream to a boil. Add a few ounces (50–100 mL) of the heavy cream to the caramel.
6. Stir and continue to add the cream slowly.
7. Return to the heat and stir until all the caramel is dissolved.
8. Let cool completely.
9. Stir the milk into the cooled caramel to thin it.

VARIATIONS

Hot Caramel Sauce

Prepare as directed through step 7. Omit the milk.

Clear Caramel Sauce

Substitute 5–6 fl oz (150–175 mL) water for the heavy cream and omit the milk. If the sauce is too thick when cool, add more water.



Clear caramel sauce and caramel sauce with cream

TERMS FOR REVIEW

simple syrup	baked pudding	ice milk	overrun
dessert syrup	bavarian	frozen yogurt	parfait
crystallize	chiffon	sherbet	sundae
crème anglaise	mousse	ices	coupe
pastry cream	ice cream	water ices	Peach Melba
baked custard	Philadelphia-style ice cream	sorbet	Pear Belle Hélène
blancmange	French-style ice cream	granité	bombe
cream pudding			

QUESTIONS FOR DISCUSSION

- How can you avoid unwanted crystallization when cooking sugar syrups?
- Crème anglaise and pastry cream both contain eggs. Why is it possible to boil pastry cream but not custard sauce?
- Explain the importance of sanitation in the production of pastry cream. What specific steps should you take to ensure a safe product?
- Crème anglaise, pastry cream, and baked custard are made with basic techniques that are also used for the following preparations. Identify which of the three techniques is used for each.

Coconut cream pie	French vanilla ice cream
Baked rice pudding	Pumpkin pie
Butterscotch pudding	Custard pie
Chocolate bavarian	Lemon meringue pie
- Briefly describe the differences among bavarians, chiffons, mousses, and soufflés.
- When making dessert soufflés, what is the advantage of beating the egg whites with part of the sugar?
- What difficulty would you encounter, when making a bavarian or a chiffon, if you chilled the gelatin mixture too long before folding in the whipped cream or egg whites?