

MILK

Milk has long been a popular beverage, not only for its flavor, but because of its unique nutritional package. Milk is one of the best sources of calcium in the American diet. It also provides high-quality protein, vitamins and other minerals.

VARIETIES

■ **Whole Milk** (3.25% fat) contains 150 calories and 8 grams (g) of fat per serving (8 fluid oz). Although not required, whole milk may be fortified with vitamin D at a level of 400 International Units (IU) per 1 quart. If vitamin D is added, the label must state this fact.

■ **2% Reduced-Fat Milk** (2% fat) contains 120 calories and 5 grams (g) of fat per serving (8 fluid oz). Vitamins A and D are removed with the milk fat. For this reason, these vitamins must be added to 2% reduced-fat milk so that it contains at least 2,000 IU of vitamin A and 400 IU of vitamin D per 1 quart. The addition of these vitamins must be stated on the label.

■ **1% Lowfat Milk** (also called Light Milk) (1% fat) contains 100 calories and 2.5 grams (g) of fat per serving (8 fluid oz). Vitamins A and D must be added to a level of at least 2,000 IU of vitamin A and 400 IU of vitamin D per 1 quart. The label must indicate the addition of these vitamins.

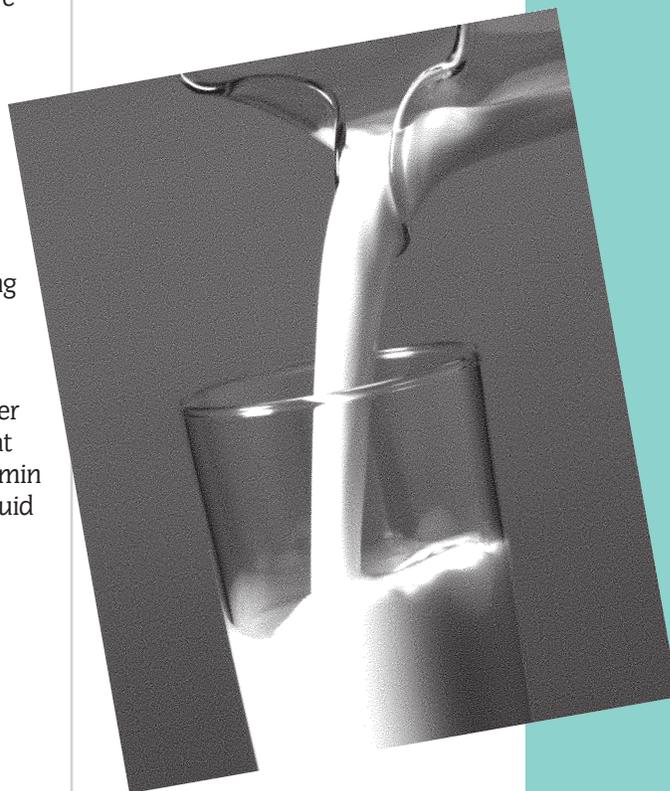
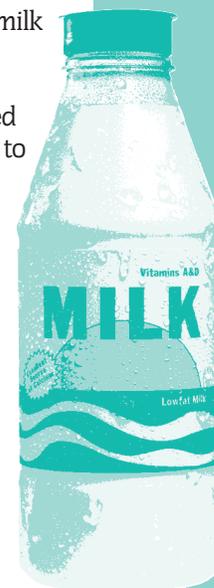
■ **Fat-Free Milk** (also called Skim or Nonfat Milk) (0% fat) contains 80 calories and 0 grams (g) of fat per serving (8 fluid oz). Vitamins A and D must be added to a level of at least 2,000 IU of vitamin A and 400 IU of vitamin D per 1 quart. The label must indicate the addition of these vitamins.

■ **Chocolate Milk** (fat-free, 1% lowfat, 2% reduced-fat, whole milk) is milk to which chocolate or cocoa and a sweetener have been added. This milk is just as nutritious as its unflavored counterpart. Compared to plain milk, chocolate milk contains about 60 more calories per serving (8 fluid oz).

■ **Evaporated Milk** (6.5% fat) is made by removing about 60% of the water from whole milk. The milk is then homogenized, fortified with vitamin D to a level of 25 IU per 1 fluid ounce, canned and heat sterilized. The addition of vitamin A is optional. If added, each fluid ounce must contain not less than 125 IU of vitamin A.

■ **Evaporated Fat-Free Milk** (0.5% fat or less) is a concentrated, fortified (vitamins A and D) fat-free (skim or nonfat) milk that is canned and sterilized.

■ **Sweetened Condensed Milk** (8% fat or less) is a canned milk concentrate of whole milk to which sugar has been added. The sweetener used (usually sucrose) prevents spoilage. Sweetened condensed fat-free milk contains no more than 0.5% milk fat.



MILK

PROCESSING TERMS EXPLAINED

What Is Pasteurization?

This is the process of heating raw milk at a high enough temperature for a sufficient length of time to make milk bacteriologically safe and increase its keeping quality. Most milk sold in the U.S. is pasteurized. Pasteurization has little effect on milk's nutritive value.

What Is Ultrapasteurization?

Milk that is ultrapasteurized has been heated to a higher temperature than pasteurized milk. Ultrapasteurized milk stays fresher longer under refrigeration than pasteurized milk. This process is often used for cream and eggnog.

How Does UHT or Ultra High Temperature Milk Differ from Ultrapasteurized Milk?

The major difference is that UHT milk is packaged in sterilized containers. UHT milk can be stored at room temperature for up to 3 months. Once opened, it should be refrigerated.

Why Is Milk Homogenized?

Homogenization breaks up and disperses milk fat throughout milk, resulting in a smooth, uniform texture. Most whole milk is homogenized to prevent the cream from rising to the top. Homogenization results in a softer curd in the stomach that aids digestion.



Why Are Some Milks Fortified?

Because few foods, including milk, naturally contain vitamin D, this vitamin is added to 98% of fluid milk marketed in the U.S. Because vitamin A is removed with the milk fat, this vitamin is added to 2% reduced-fat, 1% lowfat and fat-free milks. If vitamin D and/or A is added to any dairy product, it must be indicated on the label. Nonfat milk solids may be added to some fat-free milks to improve their appearance, flavor and nutritive value. The milk must be labeled **Protein Fortified** or **Fortified with Protein**. The addition of nonfat milk solids increases the calories from protein and carbohydrate and adds more calcium. Some milks may be fortified with calcium. If so, this must be indicated on the label.

NUTRITIONAL INFORMATION

Milk is a **nutrient-dense** food. This means that it provides a high level of essential nutrients compared to its calories. In fact, each serving of milk provides 10% or more of the recommended daily intake for calcium, vitamin D (if fortified), protein, potassium, vitamin A, vitamin B₁₂, riboflavin and phosphorus.

Milk is an excellent source of calcium. Regardless of its fat content, milk provides about 300 milligrams (mg) of calcium per serving (8 fluid oz). The chart below provides information on the calcium content of fluid milk products per serving.

An adequate intake of calcium helps to reduce the risk of osteoporosis, high blood pressure and colon cancer. It is difficult to obtain enough calcium without consuming milk (or other dairy foods). To help meet calcium needs, the following number of servings of milk (or its equivalent) is recommended each day:

Children 4-8	3 servings
Children 9-18	4 servings
Adults 19-50	3 servings
Adults 50+	4 servings

Milk is a good source of high-quality **protein**, which means it contains all essential amino acids, the “building blocks” of protein. In addition to calcium, milk provides other minerals like phosphorus, which helps strengthen bones; potassium, which regulates the body's fluid balance and helps maintain normal blood pressure; magnesium, which is found in bones and teeth; and zinc, which helps keep skin, bones and hair healthy. The major fat-soluble vitamins in milk are A, which helps maintain normal vision and skin, and D, which helps the body absorb calcium. Milk is also a good source of the water-soluble vitamins niacin and B₁₂. Niacin plays an important role in maintaining the normal function of enzymes in the body. Vitamin B₁₂ helps build red blood cells that carry oxygen from the lungs to working muscles. Milk is an excellent source of riboflavin (B₂), which helps convert food into energy and promotes skin and eye health.

A NUTRITIONAL LOOK AT MILK

1 cup (8 oz)	Calories Kcal	Fat g	Calcium mg
Whole	149	7.7	291
2% Reduced fat	121	4.4	296
1% Lowfat	104	2.2	312
Nonfat	90	0.5	316
Chocolate, Whole	208	8.0	280
Chocolate, 2% Reduced Fat	178	4.7	284
Chocolate, 1% Lowfat	157	2.3	286

Source: USDA Nutrient Database for Standard Reference.



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MILK

STORING AND HANDLING MILK

Milk is perishable. To preserve its safety and quality, the following tips are recommended:

- Refrigerate milk at 40°F or less as soon as possible after purchase and store in the original container.
- Return milk to the refrigerator immediately after pouring out the amount needed. Never return unused milk to the original container.
- Keep milk containers closed to prevent the absorption of other flavors. An absorbed flavor changes the taste, but the milk is still safe.
- Protect milk from exposure to strong light since light can reduce its riboflavin content and cause off-flavors.
- Look for the “sell by” or “pull” dates on milk cartons. If properly cared for, milk generally stays fresh for 2 to 3 days after this date. Some dairy processors guarantee their products for a specific time after this date. Ask your grocer for more details.
- Keep canned milks like evaporated and sweetened condensed milks in a cool dry place and invert the cans every 2 months. These milks generally keep for about a year at room temperature. Once opened, canned milks should be poured into an opaque covered container, refrigerated and used within a few days.
- Store dry milks in a cool, dry place and keep in an airtight container after opening. Once reconstituted, dry milk should be refrigerated and handled like other fluid milks.
- Freezing of milk is not recommended. It causes undesirable changes in milk’s texture and appearance.
- Microwaving milk is not recommended to extend milk’s shelf life or as a means of pasteurization.

COMMONLY ASKED QUESTIONS ABOUT MILK

When Can Infants Be Fed Cow’s Milk?

Infants can be fed whole milk, not lowfat or reduced-fat milks, beginning at 12 months of age, according to the American Academy of Pediatrics. Whole milk is recommended for toddlers until at least 2 years of age. After 2 years of age, lowfat milk may be fed, depending on the child’s caloric needs. Check with your doctor regarding the best choice of milk for your child.

Should I Be Concerned About Giving My Child Chocolate Milk?

No. Chocolate milk is just as nutritious as unflavored milk. Both milks are excellent sources of calcium, a nutrient low in many children’s diets. Because kids like chocolate milk, they are more likely to consume this beverage and, at the same time, boost their calcium intake. There is no scientific evidence that drinking chocolate milk increases children’s caffeine intake, causes hyperactivity or contributes to tooth decay.

If I’m Lactose Intolerant, Should I Avoid Milk?

Not necessarily. Many individuals who have difficulty digesting lactose (milk’s sugar) can consume a glass or two of milk a day with meals with few, if any, symptoms. Smaller portions of milk (4 oz) consumed more often may be better tolerated. Lactose-reduced or lactose-free milks are also an option. Lactose-reduced milk contains about 70% less lactose than regular milk. Lactose-free milk is 100% lactose reduced.

What Is Skim Deluxe or Skim Supreme Milk?

This fat-free milk looks like and has the mouth-feel of 2% reduced-fat milk as a result of the addition of a small amount of dietary fiber to the milk. This milk is an option for those who want the look and mouth-feel of 2% lowfat or whole milk without the extra calories and fat. Vitamin A Palmitate Is Listed on Some Milk Cartons.

What Is It and Does It Contain Palm Oil?

When added to milk, vitamin A is combined with palmitic acid, also known as retinyl palmitate, to make it stable. There is no palm oil, a highly saturated fatty acid, in vitamin A palmitate. Vitamin A is added to 2% reduced fat, 1% lowfat and fat-free milks.

Isn’t Milk Fattening?

Overweight results from consuming too many calories and getting too little exercise. There are a variety of milks with different calorie and fat contents. Take a look at the Nutrition Facts labels on milks. Fat-free milk, for example, has only 80 calories, no fat and all the calcium of other milks.



BUTTER

In earlier times, making or churning butter was a common practice on farms. When the first U.S. creamery was built in Iowa in 1871, making butter became a commercial production.

WHAT IS BUTTER?

Butter is a concentrated source of milk fat (80%) with some water and nonfat milk solids. It is made from milk, cream or both of these ingredients. Common salt may or may not be added. Lightly salted butter is often referred to as “sweet cream butter” and butter as “sweet butter.”

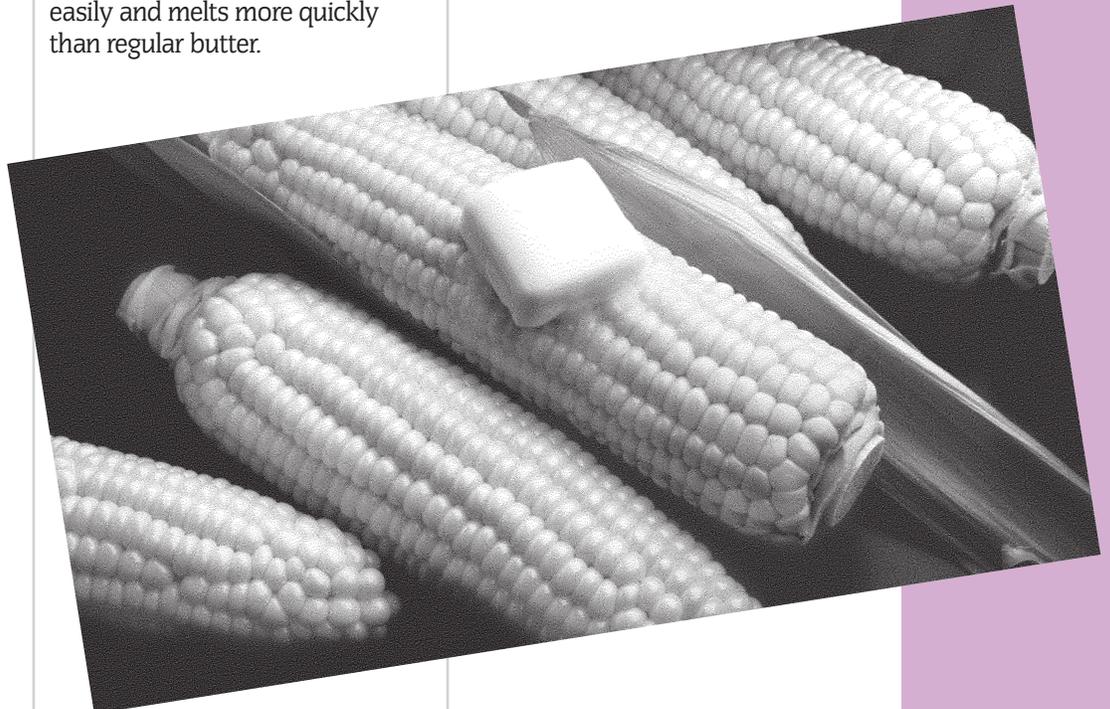
VARIETIES

■ **Traditional Butter** (80% milk fat) is made from pasteurized cream under approved conditions. The U.S. government grades butter on the basis of its flavor, body, color and salt content. The grades range from superior quality USDA Grade AA to standard quality Grade B. Most butter sold to consumers is USDA Grade AA. Grade B butter is used mainly for manufacturing purposes.

■ **Whipped Butter** is regular butter into which air or nitrogen gas has been whipped to increase its volume. Because its density or weight is not the same as an equal measure of butter, it should not be used as a substitute for regular butter in most recipes. Whipped butter spreads more easily and melts more quickly than regular butter.

■ **Reduced-Fat Butter** contains nonfat milk, water and/or gelatin.

This product contains 40% or less milk fat. Government regulations state that the product must not be nutritionally inferior to traditional butter. Its performance should also be similar. Because reduced-fat butter contains more moisture than traditional butter, it should not be substituted for traditional butter in baking or frying.



BUTTER

NUTRITIONAL INFORMATION

Butter is a source of vitamin A and certain essential fatty acids. Its caloric content is about 100 calories per tablespoon, which compares similarly to other spreads and fat ingredients.

USDA Nutrient Database for Standard Reference

STORING AND HANDLING BUTTER

To preserve butter's flavor and freshness, refrigerate opened butter in a covered dish in the butter compartment. Unopened, wrapped salted butter may be stored in the refrigerator for up to 2 months. Butter can be frozen in its original wrapper for several months. Unsalted butter is best kept frozen until ready to use. For longer freezer storage, wrap in foil or plastic. Unsalted butter can be kept frozen for about 5 months at 0°F. Salted butter can be frozen for about 6 to 9 months.

COMMONLY ASKED QUESTIONS ABOUT BUTTER

Different Recipes Call for Tablespoons, Sticks, Cups or Pounds of Butter.

What Are the Equivalencies for These Measurements?

2 cups = 4 sticks = 1 lb = 32 tbsp

1 cup = 2 sticks = ½ lb = 16 tbsp

½ cup = 1 stick = ¼ lb = 8 tbsp

¼ cup = ½ stick = ⅛ lb = 4 tbsp

How Can I Make Whipped Butter?

Cream slightly softened butter in a mixer or processor at medium speed or with on/off pulses of the processor until light in color and slightly fluffy. Continue mixing at high or process continuously until butter is fluffy.

What Is Clarified Butter and How Can I Make It?

Clarified or drawn butter is clear, melted butter separated from its milk solids and water. To clarify, melt butter in a heavy saucepan over medium heat. Remove white froth as it forms on top. When the milk solids separate and settle at the bottom of the pan, carefully pour off the clear, yellow butter and discard the milk solids.

Compared to regular butter, clarified butter can be heated to a higher temperature without burning and can be stored longer.

How Much Butter is Needed to Make Clarified Butter?

One pound of butter makes 12 ounces of clarified butter.

Can Butter be Softened or Melted in the Microwave Oven?

Yes. To soften butter, microwave one stick of butter on LOW for 1 to 1½ minutes. To melt, place butter in a glass or plastic cup and microwave on HIGH for about 1 minute per stick (½ cup).

How Can I Prevent Butter from Going Rancid?

Properly storing butter in the refrigerator or freezer and tightly wrapping butter to minimize its exposure to air help keep butter from going rancid. Exposure to oxygen increases the risk of rancidity. When oxygen comes in contact with the unsaturated fatty acids in butter, off-smelling and off-tasting compounds can develop. Rancid butter is not unsafe to eat.

Isn't Margarine Better for You Than Butter?

Not necessarily. Margarine has the same amount of calories and fat as butter and does not contain cholesterol. Yet, margarine contains trans fats which can increase blood cholesterol levels. Butter is low in trans fats. While butter contains a small amount of cholesterol (about 33 mg per tablespoon), it is well under the recommended limit of 300 mg per day. Small amounts of butter, margarine and other fat-containing foods can be included in a lowfat diet if total fat intake is kept within recommended limits.



CREAM

Cream was first used by the Romans in the 9th century A.D., but the credit for its modern-day popularity is attributed to the Viennese, who have been using it lavishly for the last 300 years.

WHAT IS CREAM?

Cream is the high-fat milk product separated from milk. Milk, concentrated milk, dry whole milk, nonfat milk, concentrated nonfat milk or nonfat dry milk may be added. Also included may be emulsifiers, stabilizers, nutritive sweeteners, flavorings and other optional ingredients. Cream must contain at least 18% milk fat. All cream products are pasteurized or ultrapasteurized.

VARIETIES

- **Half-and-Half** is a mixture of milk and cream containing at least 10.5% but not more than 18% milk fat. This product contains about 20 calories and nearly 2 grams (g) of fat per tablespoon.
- **Sour Half-and-Half** is half-and-half that has been soured with lactic acid-producing bacteria. **Acidified Sour Half-and-Half** is similar except that it is made by using acidifiers, with or without lactic acid-producing bacteria.
- **Light Cream (coffee cream, table cream)** contains at least 18% but less than 30% milk fat. This product provides about 30 calories and 3 grams (g) of fat per tablespoon.
- **Light Whipping Cream (whipping cream)** has at least 30% but not more than 36% milk fat. This product can be used as is (unwhipped) or whipped. Liquid (unwhipped) whipping cream contains about 44 calories and 5 grams (g) of fat per tablespoon.
- **Heavy Cream** must contain at least 36% milk fat. This product is readily whipped and can retain its whipped state longer than that of light whipping cream. Heavy cream provides about 52 calories and 6 grams (g) of fat per tablespoon.

- **Cream in Aerosol Cans** is whipped cream packaged in cans under pressure. Sugar, flavorings and a stabilizer may be added. One tablespoon contains about 8 calories and less than 1 gram (g) of fat. This product is a convenient alternative to whipping cream.
- **Sour Cream (cultured sour cream)** is the product resulting from adding lactic acid bacteria to pasteurized cream at least 18% milk fat. **Acidified Sour Cream** results from souring pasteurized cream with safe and suitable acidifiers, with or without lactic acid-producing bacteria. One tablespoon of sour cream contains about 26 calories and 2.5 grams (g) of fat.
- **Reduced-Fat Sour Cream** and **Acidified Sour Cream** contain at least 25% less fat per serving than a serving (2 tablespoons) of sour cream or acidified sour cream, respectively. Reduced-fat sour cream contains 20 calories and 1.8 grams (g) of fat per tablespoon.



CREAM

NUTRITIONAL INFORMATION

Cream is often thought to provide only fat, but it also contains vitamin A and some riboflavin (B₂) and calcium. One tablespoon of cream contains 10 to 30 milligrams (mg) of calcium, depending on the product. The Nutrition Facts panel on the label of cream and cream products provides nutritional information.

STORING AND HANDLING CREAM

To store cream, keep it refrigerated in its closed container at 40°F or lower. It should be used within one week. Ultrapasteurized cream keeps several weeks longer, but once opened, it should be handled like pasteurized cream.

Freezing is not recommended for unwhipped cream, but once whipped, cream may be frozen. Place dollops of whipped cream on waxed paper and freeze. When frozen, wrap individually for use as needed.

COMMONLY ASKED QUESTIONS ABOUT CREAM

How Much Whipping Cream Equals Whipped Cream?

One cup of whipping cream equals 2 cups of whipped cream.

What Can I Do to Make Cream Whip Better?

Both the amount of fat in cream and its temperature influence how well cream whips. Heavy whipping cream increases more in volume than light whipping cream. And light whipping cream whips to a greater volume than light cream. For best whipping results, choose a cream with a high fat content. Because the fat content of cream can vary among different brands, check product labels. Storing cream in the refrigerator for several hours and chilling the whipping bowl and beaters for 30 minutes in the freezer improve cream's whipping quality. If using an electric beater, chill only the detachable metal beaters. For best whipping results, cream should be as fresh as possible.



Can Ultrapasteurized Cream Be Used to Make Whipped Cream?

Yes, although it takes slightly longer to whip ultrapasteurized cream than regular (pasteurized) whipping cream.

When Is the Best Time During Whipping to Add Other Ingredients?

Other ingredients such as sugar or vanilla should be added near the end of whipping. If ingredients are added too early, the volume of cream whipped is reduced. If ingredients are added too late, or after the volume of whipped cream has reached its peak, the cream may be overwhipped causing some of it to turn into butter.

How Can I Prevent Cream from Curdling When Added to Coffee?

To avoid this situation, use fresh cream. As cream ages, its lactic acid content increases. Acid can curdle cream. The acid in coffee, along with coffee's heat, favor curdling of cream.



YOGURT

AND OTHER CULTURED DAIRY PRODUCTS

The aroma, body and flavor of yogurt and other cultured dairy products can vary depending on the type of culture and milk, amount of milk fat and nonfat milk solids, fermentation process and temperature used. These foods are made by adding specific cultures to fluid dairy products in order to convert some lactose (milk's sugar) into lactic acid. The word "acidified" in the product name means acidifiers were added to produce the lactic acid.

WHAT IS YOGURT?

Yogurt is a mixture of milk (whole, reduced-fat, lowfat or nonfat) and cream fermented by a culture of lactic acid-producing bacteria, **Lactobacillus bulgaricus** and **Streptococcus thermophilus**. Other bacteria (e.g., acidophilus) and other strains of the above bacteria may be added to the culture. Sweeteners (e.g., sugar, honey, aspartame), flavorings (e.g., vanilla, coffee) and other ingredients (e.g., fruits, preserves, stabilizers such as gelatin) may also be added. Yogurt contains at least 3.25% milk fat and 8.25% solids-not-fat. The mixture of dairy products and optional ingredients, except bulky flavorings, must be pasteurized or ultrapasteurized. The milk in most yogurts is also homogenized. Some yogurts carry a seal (below) on the label indicating that the yogurt contains a significant level of live, active cultures.



* Meets National Yogurt Association Criteria for Live and Active Culture Yogurt

VARIETIES

- **Lowfat Yogurt** is similar in composition to yogurt except that it contains either 0.5%, 1%, 1.5% or 2% milk fat.
- **Nonfat Yogurt** is similar in composition to yogurt and lowfat yogurt except that it contains less than 0.5% milk fat.
- **Yogurt Beverages** are available in a variety of flavors and in single-serve and larger containers.

OTHER CULTURED DAIRY FOODS

- **Buttermilk** is made by adding lactic acid-producing bacteria, usually **Streptococcus lactis**, to pasteurized or ultrapasteurized milk (whole, reduced-fat, lowfat, nonfat) with nonfat dry milk solids under controlled conditions. The product is heated until the desired acidity is achieved, then cooled to stop fermentation. Buttermilk flakes or liquid butter may be added to give cold milk the appearance of churned buttermilk. Salt, citric acid or sodium citrate may be added to enhance flavor. Today, depending on the level of milk fat in the product, buttermilk may be called **cultured buttermilk**, **cultured lowfat buttermilk**

or **cultured skim (nonfat) buttermilk**. Originally, buttermilk was the lowfat liquid remaining after churning cream into butter.

- **Acidophilus Milk** is typically a lowfat or nonfat milk to which active cultures of **Lactobacillus acidophilus** have been added. The mixture is heated until a curd forms and the desired acidity is reached. The milk is then refrigerated. Adding **Lactobacillus acidophilus** cultures to cold, lowfat or nonfat milk and then refrigerating the product to prevent further growth of the harmless bacteria produces **Sweet Acidophilus Milk**. Unlike fermented acidophilus milk, which has a slightly tart taste, this product has a sweet taste.



YOGURT AND OTHER CULTURED DAIRY PRODUCTS

NUTRITIONAL INFORMATION

The nutritional and caloric contents of yogurt, buttermilk and acidophilus milk are similar to those of the fluid milks from which they are made. Each is an important source of calcium, riboflavin (B₂) and protein. Check the Nutrition Facts panel on product labels for the nutritional content of specific products.

STORING AND HANDLING

Yogurt, buttermilk and acidophilus milk should be stored in closed containers in the refrigerator at 40°F to maintain their quality. Yogurt will keep for about a week and buttermilk and acidophilus milk will keep for about 2 weeks in the refrigerator. Freezing is not recommended for any of these cultured dairy foods.

COMMONLY ASKED QUESTIONS ABOUT YOGURT AND OTHER CULTURED DAIRY PRODUCTS

Does Yogurt Have Unique Health Benefits?

The main benefit of yogurt is that, like other dairy foods, it provides protein, calcium, vitamins and other minerals. Numerous health benefits beyond its nutritional value have been associated with consuming yogurt. Scientists have found that intake of yogurt with active cultures may aid digestion, ease diarrhea, boost immunity, fight infection and protect against cancer. These specific health benefits depend on the strain and viability of the culture in yogurt. This is why it is important to choose yogurt with a seal indicating that it contains live, active cultures.

A NUTRITIONAL LOOK AT YOGURT

Food 1 cup (8 oz)	Calories Kcal	Fat g	Calcium mg
Yogurt			
Whole milk, plain	150	8.0	296
Lowfat, plain	155	4.0	447
Lowfat, vanilla	209	3.0	419
Lowfat, fruit	243	3.0	339
Nonfat, plain	137	0.4	488
Buttermilk			
Lowfat	99	2.0	285

Source: USDA Nutrient Database for Standard Reference.

Why Is Yogurt Beneficial for Individuals with Lactose Intolerance?

Many yogurts contain lower amounts of lactose than milk. As yogurt ferments, some of the lactose (milk's sugar) changes to lactic acid. Importantly, starter cultures in yogurt may produce the enzyme lactase, which digests lactose. Yogurt's semi-solid state also contributes to improved tolerance to lactose.

Is Yogurt Fortified with Vitamin D?

Vitamin D-fortification of milk products is optional. If vitamin D is added to yogurt, it must be indicated on the product label.

Is Sweet Acidophilus Milk Advantageous for Lactose Intolerant Individuals?

The lactose in sweet acidophilus milk is tolerated about the same as that in regular milk. Sweet acidophilus milk, cultured buttermilk or yogurt without live, active cultures all have about the same amount of lactose as regular milk. Consuming these milk products with meals improves lactose digestion.

What Is a/B Milk?

This is a lowfat or nonfat milk to which acidophilus and bifidobacteria cultures have been added. Some cottage cheeses and light ice creams have a/B cultures added. Nutritionally, these products are similar to the milk from which they are made. There is some evidence that these cultures have unique health benefits such as improving lactose digestion, lowering blood pressure and promoting a better balance of bacteria in the gastrointestinal tract.



ICE CREAM

AND OTHER FROZEN DAIRY PRODUCTS

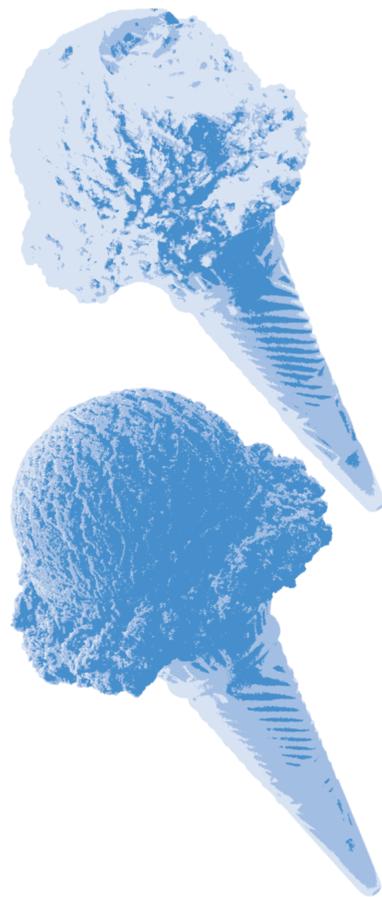
The delicious frozen dairy products of today evolved from the flavored ices popular with the Romans in the 4th century B.C. The hand-crank freezer, patented in 1846, led to the establishment of the first commercial ice cream plant in Baltimore in 1851. Frozen yogurt was introduced in the late 1960s, and has since enjoyed increased popularity.

VARIETIES

■ **Ice Cream** is made by stirring, while freezing, a pasteurized mix of one or more dairy ingredients—milk, concentrated fat-free milk, cream, condensed milk—sweetening agents, flavorings, stabilizers, emulsifiers and optional egg or egg yolk solids or other ingredients. Federal standards require ice cream to contain a minimum of 10% milk fat (about 7 grams (g) of fat per ½ cup serving) and 20% total milk solids by weight. Some premium ice creams contain 16% milk fat. Added flavoring must be identified on the label as naturally flavored (i.e., raspberry ice cream) or artificially flavored (i.e., raspberry-flavored ice cream or artificially flavored raspberry ice cream).

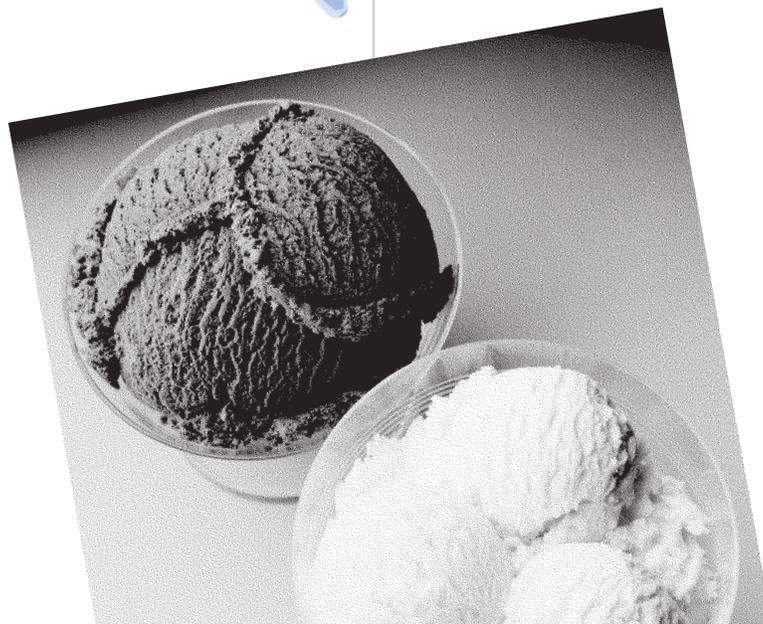
■ **Frozen Custard** (French ice cream, French custard ice cream) is similar to ice cream but contains a higher content of egg yolk solids.

■ **Reduced-Fat Ice Cream, Lowfat Ice Cream, Light Ice Cream and Fat-Free Ice Cream** all contain less fat per serving (½ cup) than regular (full fat) ice cream. Reduced-fat ice cream contains at least 25% less fat than the original product. Lowfat ice cream contains 3 grams (g) or less of fat per serving. Light ice cream contains at least 50% less fat, and fat-free ice cream contains less than 0.5 gram (g) of fat per serving.



■ **Sherbet** contains 1 to 2% milk fat and 2 to 5% total milk solids. Water, flavoring (e.g., fruit, chocolate, spices), sweetener and stabilizers are added. Sherbet has more sugar than ice cream.

■ **Frozen Yogurt** is made by freezing a mixture of pasteurized milk, with or without other milk products, flavorings, seasonings, stabilizers, emulsifiers and lactic acid cultures. Because there are no specific standards for frozen yogurt, its ingredients and characteristics can vary. Frozen yogurt is pasteurized before freezing so it generally does not contain live, active cultures like many unfrozen yogurts. Nonfat, lowfat and full fat varieties of frozen yogurt are available. Frozen yogurt may be soft (as in cones or sundaes) or hard-frozen.



ICE CREAM AND OTHER FROZEN DAIRY PRODUCTS



NUTRITIONAL INFORMATION

Ice cream and frozen yogurt are nutritious foods providing high-quality protein, riboflavin (B₂), calcium and other essential vitamins and minerals. The calorie and fat contents of these dairy foods vary depending on the type of milk used and the addition of cream, egg yolk solids or sweetening agents. Sherbet contains less fat, protein, calcium and vitamins than ice cream. However, their calorie content may be similar due to sherbet's higher sugar content. Refer to the Nutrition Facts panel on product labels for the nutritional contents of ice cream, sherbet and frozen yogurt.

STORING AND HANDLING

Store ice cream tightly covered in the freezer at 0°F. To avoid crystallization and volume loss, scoop ice cream, keeping the surface as level as possible. Cover the surface of ice cream with plastic wrap before reclosing and return to the freezer immediately. For ease in serving, soften ice cream by transferring it to the refrigerator 10 to 20 minutes before serving, or by microwaving* it on HIGH (100%) in the carton for the following amounts of time:

1 pint = 10 to 15 seconds

1 quart = 15 to 25 seconds

½ gallon = 30 to 40 seconds

*Since microwave ovens vary, cooking times may differ. Similar to ice cream, sherbet and frozen yogurt should be tightly covered and stored in the freezer at 0°F.

COMMONLY ASKED QUESTIONS ABOUT ICE CREAM AND OTHER FROZEN DAIRY PRODUCTS

What Is Overrun in Ice Cream?

Overrun is a measure of the volume of air whipped into the ice cream mix. Overrun does not have to be declared on the label. Quality ice creams have lower overruns than those of reduced quality. Generally the more overrun, the lower the cost of the ice cream.

Why Do Ice Crystals Form in Ice Cream?

Ice crystals form when some of ice cream's water separates from fat and eventually develops into larger ice crystals. The result is a grainy-textured ice cream. As long as water remains trapped in an emulsion with fat in ice cream, the original ice crystals do not get larger. To protect ice cream from developing large ice crystals, do not melt and refreeze ice cream, and do not store ice cream well below 0°F for a prolonged period.

Isn't Frozen Yogurt a Healthier Choice Than Ice Cream?

Both frozen yogurt and ice cream provide calcium, protein and other essential minerals. If you are concerned about calories or fat intake, check the Nutrition Facts panel on product labels. A variety of frozen yogurts and ice creams with different calorie and fat contents is available. It is also important to check portion sizes.

If I'm Lactose Intolerant, Can I Eat Ice Cream and Frozen Yogurt?

Individuals who have difficulty digesting milk's sugar, lactose, generally tolerate ice cream and frozen yogurt about the same as milk with a meal. Ice cream and frozen yogurt contain ingredients that mix with lactose, thereby "diluting" the lactose. Your body may be able to better handle lactose in a diluted than a concentrated form. Unlike unfrozen yogurt, frozen yogurt does not contain live, active cultures that help to digest lactose. Frozen yogurt is tolerated about the same as ice cream by individuals with lactose intolerance.



CHEESE

Cheese's immense popularity stems from its taste, versatility, many varieties and nutritional package.

WHAT IS CHEESE?

All cheese is made from milk, but different manufacturing and aging processes are used to produce the array of cheeses available today. Cheese is made by coagulating or curdling milk, stirring and heating the curd, draining off the whey (the watery part of milk), collecting and pressing the curd, and in some cases, ripening. Cheese can be made from whole, 2% lowfat, 1% lowfat or fat-free milk, or combinations of these milks. About one-third of all milk produced each year in the U.S. is used to make cheese. In 1998, 9.7 billion pounds of natural and processed cheeses were produced.

VARIETIES

More than 400 different varieties of cheese are available. Cheeses are categorized in several ways: natural versus process cheeses, unripened versus ripened and soft versus hard. Many cheeses are named for their place of origin, such as Cheddar cheese, which originated in Cheddar, England.

■ **Natural Cheeses.** These cheeses can be unripened or ripened. **Unripened** cheeses are made by coagulating milk proteins (casein) with acid. Examples include soft cheeses like cream cheese, cottage cheese and Neufchatel. **Ripened** cheeses are made by coagulating milk proteins with enzymes (rennet) and culture acids. These cheeses are then ripened (aged) by bacteria or mold. Cheddar, Swiss, Colby, brick and Parmesan are some examples of bacteria-ripened cheeses. Blue, Roquefort, Camembert and Brie are examples of mold-ripened cheeses.

Natural cheeses are often categorized according to their moisture or degree of softness or hardness:

Soft Cheeses:

Brie, Camembert, ricotta, cottage

Semi-Soft Cheeses:

Blue, brick, feta, Havarti, Monterey Jack, mozzarella, Meunster, provolone

Hard Cheeses:

Cheddar, Colby, Edam, Gouda, Swiss



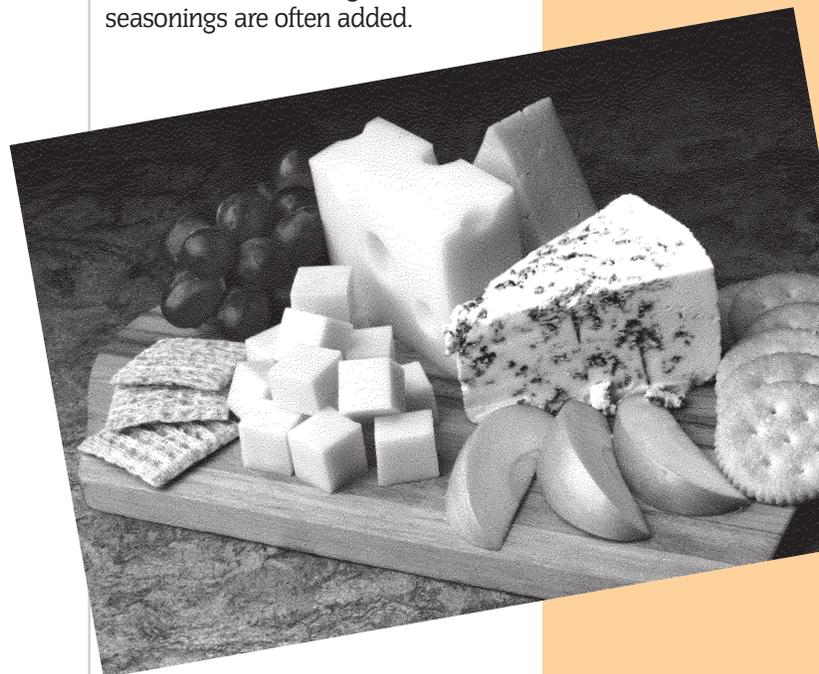
Very Hard Cheese:

Parmesan, Romano

■ **Process Cheeses.** These cheeses are made by blending one or more natural cheeses, heating and adding emulsifying salts. Process cheeses contain more moisture than natural cheeses.

Pasteurized process cheeses

include American cheese, cheese spreads and cheese foods. Cold-pack cheese is a blend of natural cheeses processed without heat. Flavoring and seasonings are often added.



CHEESE

NUTRITIONAL INFORMATION

Cheese is a concentrated source of many of milk's nutrients. Considering that it takes about 10 pounds (5 quarts) of milk to make 1 pound of whole milk cheese, cheese is a nutrient-dense food. Cheese provides calories; high-quality protein; vitamins such as A, riboflavin (B₂) and B₁₂; and minerals such as calcium, phosphorus and zinc.

The chart below gives the nutritional profile of some popular cheeses in common servings. The Nutrition Facts label on cheese products also provides nutritional information.

For individuals wishing to lower their calorie or fat intake, a variety of lowfat cheeses is available. These include:

Lowfat Cheese:

3 grams (g) or less of fat per reference amount (1 oz for most cheeses, 4 oz for cottage cheese)

Reduced-Fat Cheese:

25% less fat per reference amount than its full fat counterpart

Fat-Free Cheese:

less than 0.5 gram (g) of fat per reference amount

UNIQUE HEALTH BENEFITS

Consuming cheese immediately after meals or as a between-meal snack helps to reduce the risk of tooth decay. Certain cheeses—aged Cheddar, Swiss, blue, Monterey Jack, Brie, Gouda and processed American cheese—have been shown to help prevent tooth decay. Calcium, phosphorus and other components in cheese may contribute to this beneficial effect.

STORING AND HANDLING CHEESE

■ **Storing.** Cheese should be refrigerated at 40°F or below in the original wrapper or container, transparent wrap, aluminum foil or plastic wrap. Generally, harder (lower moisture) cheeses keep longer than softer (higher moisture) cheeses.

■ **Freezing.** Cheese can be frozen, but it may become mealy and crumbly when thawed. Thawed cheese is best used crumbled or shredded in salads, as toppings or in cooked dishes. Some cheeses are better frozen than others. Because blue cheese varieties like Roquefort and Gorgonzola are generally used crumbled, further change in their texture is of little consequence. Because other cheeses like Parmesan and Romano can be stored in the refrigerator for prolonged periods, freezing is unnecessary.

For best results:

- Freeze pieces of cheese in sizes of ½ pound or less.
- Package in moisture-proof, airtight wrapping.
- Freeze quickly and store at 0°F or lower.
- Thaw in the refrigerator.
- Use as soon as possible after thawing.

■ **Cooking.** Why is it difficult to melt some cheeses? If cheese is heated at too high a temperature or for too long, it may become tough, rubbery or stringy, and refuse to melt. To melt cheese, use a low temperature for a short time. Some cheeses like process American readily melt. Dry cheeses like Parmesan, if finely grated, melt better than higher moisture cheeses. Generally, lowfat cheeses are more suitable for serving cold than using in cooked dishes.

Tips to help melt cheese include:

- Shred, grate or cut cheese into small pieces.
- Add cheese topping to food at the end of baking or broiling, or just heat long enough to melt.
- When making a sauce, add cheese as the last ingredient and heat just until melted.
- To soften cheese in the microwave oven, remove wrapper and place cheese on a microwave-safe plate. Timing will vary according to desired softness and microwave conditions.

For accurate measurement, use the following:

- 4 oz = 1 cup shredded
- 3 oz = 1 cup grated (Parmesan or Romano)



A NUTRITIONAL LOOK AT CHEESE

Serving size	Calories Kcal	Fat g	Calcium mg
American, Pasteurized Process, 1 ounce	106	8.4	174
Cheddar, 1 ounce	114	8.9	204
Cottage, ½ cup	81	1.1	68
Cream Cheese, 1 ounce	98	9.3	22
Mozzarella, part-skim (low moisture), 1 ounce	79	4.6	207

Source: USDA Nutrient Database for Standard Reference.



CHEESE

COMMONLY ASKED QUESTIONS ABOUT CHEESE

Isn't Cheese Fattening?

Many lowfat, low-calorie cheeses are available. Check out the Nutrition Facts panel on product labels. For example, a serving (4 oz) of lowfat cottage cheese (1% milk fat) provides just 82 calories and 1 g fat, along with high-quality protein, riboflavin, calcium and other essential nutrients.

If I'm Lactose Intolerant, Shouldn't I Avoid Cheese?

No. Many aged cheeses like Cheddar and Swiss contain little, if any, lactose (milk's sugar). Most of the lactose is removed when these cheeses are made. Aged (ripened) cheeses like Cheddar generally have less lactose than unripened (fresh) cheeses like cream cheese. Due to the creaming mixture used, creamed cottage cheese has slightly more lactose than dry curd cottage cheese.

Is Cheese Made from Unpasteurized Milk Safe?

Most cheeses made in the U.S. are from pasteurized milk. If unpasteurized milk is used, government regulations require that the cheese be aged for at least 60 days before it is sold. Regulatory agencies recognize aging of cheese as equal to pasteurization for eliminating pathogenic bacteria. Safe handling and storage of cheese are key to ensuring its safety and quality.

Should Cheese with Mold Be Discarded?

Although most molds on cheese are harmless, some may produce toxins that can diffuse into the cheese. Many packages of natural and process cheeses contain mold inhibitors, such as sorbic acid, that increase the shelf life of these products. Properly wrapping cheese can help prevent the development of undesirable mold. If mold develops, remove the visible mold as well as an additional ½ inch of cheese on all sides of the mold to be safe (except with mold-ripened cheeses such as Roquefort and blue).

Why Does Cottage Cheese Have Less Calcium Than Many Other Cheeses?

Compared to most other cheeses, cottage cheese is a modest source of calcium. In the manufacturing of cottage cheese, 50 to 75% of milk's calcium is removed when the whey is drained. Cottage cheeses with extra calcium are available. Check product labels. Although cottage cheese may provide less calcium than some other cheeses, cottage cheese is high in protein, generally low in fat and a good source of riboflavin.

