Chapter 2 The Products

Key Points

- Ice cream and other frozen desserts can be analyzed in several different ways but most depend on the types of ingredients and the method of production used.

- Ice cream and frozen desserts can be broadly classified as comprising four types of products: ice cream, including gelato and frozen custard; frozen yogurt; sherbet/sorbet/ices; and frozen novelties—packaged single-serve units of any of the above.

- Several frozen desserts are described in detail in Title 21 of the U.S. Code of Federal Regulations (CFR). Specifically, 21CFR135.110 offers the government’s legal description of ice cream and frozen custard as created by the U.S. Food and Drug Administration (FDA).

- At the present time, the Food and Drug Administration (FDA) is reviewing comments on use of the term “natural” on food labeling. The FDA took this action in part because it received three Citizen Petitions asking that the agency define the term “natural” for use in food labeling and one Citizen Petition asking that the agency prohibit the term “natural” on food labels.

- While size and shape play a part in distinguishing product quality types, the artwork on containers of all quality levels has seen improvement over the last several years with several premium brands affecting a superpremium style in their graphic presentation. In addition, representation of the flavor sources—fruits, nuts, etc.—has become more common and more appealing through recent years.

- Another development that has occurred across the board among packaged food products has been an increase in the number and prominence of nutrition and ingredient tags, especially those related to the product’s free-from qualities such as being non-GMO, gluten-free, and made without rBGH milk.
Product Breakouts

Ice cream and other frozen desserts can be analyzed in several different ways, but most depend on the types of ingredients and the method of production used.

Product Types

Ice cream and frozen desserts can be broadly classified as comprising four types of products: ice cream, including gelato and frozen custard; frozen yogurt; sherbet/sorbet/ices; and frozen novelties—packaged single-serve units of any of the above. In terms of market accounting, frozen novelties also encompass frozen dessert specialties such as cakes or pies in which ice cream/frozen dessert is a key component.

- Ice cream and frozen yogurt are dairy-based.
- Sherbets also qualify as a dairy product because they include a small amount of milkfat.
- Sorbets and water ices are water-based.
- Non-dairy frozen desserts are vegetable-based, using rice, soy, or other non-dairy ingredients to mimic the texture of ice cream. Historically, they have been provided as a substitute for ice cream to consumers who are lactose-intolerant or who for religious or ethical reasons avoid dairy products.

Product Categories

IRI, which tracks ice cream sales through U.S. supermarkets, grocery stores, drugstores, mass merchandisers, convenience stores and other outlets organizes its findings in the following useful categories:

- Ice Cream
- Frozen Novelties
- Frozen Yogurt/Tofu (and other non-dairy frozen desserts)
- Ice Cream/Ice Milk Desserts
- Sherbet/Sorbet/Ices
- Ice Pop Novelties (including frozen and shelf-stable varieties)
Product Classifications

The products addressed in this report are additionally classified in five ways:

By the primary category—this includes the legal and generally accepted industry names of ice cream, frozen yogurt, sherbet, sorbet, water ice, and non-dairy frozen desserts. Two frozen dessert products—frozen custard and gelato—are essentially sub-categories of ice cream with distinguishing characteristics distinct enough from ice cream to allow them their own identities;

By the quality of the products, which ranges from economy to superpremium;

By whether they are hard-frozen or soft-serve;

By the form in which the product is sold to the consumer (i.e., packaged vs. sold from bulk containers through foodservice);

By whether the product is multi-serve or single-serve, with the latter referred to as frozen novelties.

Another way in which frozen dessert products can be classified is whether they are dairy-based or non-dairy products. Products can be further distinguished in terms of their fat content, type of sweetener used, and whether or not the ingredients are “all natural” or organic.

All Natural Definition in the Works

The use of the “all natural” description has been subject to legal dispute in the ice cream industry and other food categories. In January 2014, for example, a U.S. district judge denied a motion for class certification in a lawsuit filed in September 2010 alleging Ben & Jerry’s misled consumers by labeling as “all natural” products containing alkalized cocoa, made by adding alkalizing agents such as potassium carbonate to cocoa solids to neutralize acids and reduce bitterness. (Alkalized cocoa is also referred to as “dutched” cocoa.) Despite the victory in the lawsuit, Ben & Jerry’s continued with its three-year old voluntary decision to stop using the term “all natural” on its products.

Other companies continue to use the “all natural” tag as a key sales point, including Breyers, which, like Ben & Jerry’s, is a Unilever brand. [Illustration 2-1]
Ingredients fitting within the current accepted FDA parameters include milk, cream, sugar, whey, natural tara gum, natural flavor, and chocolate flavored chips (sugar, coconut oil, cocoa (processed with alkali), milk fat, soy lecithin, natural flavor). The description does emphasize the word “natural.”

Illustration 2-1
Breyers “All Natural” Chocolate “Real” Ice Cream

Source: www.breyers.com

At the present time, the Food and Drug Administration (FDA) is reviewing comments on use of the term “natural” on food labeling that have come at the agency’s request. In a statement released early in 2016, the FDA explained, “Because of the changing landscape of food ingredients and production, and in direct response to consumers who have requested that the FDA explore the use of the term ‘natural,’ the agency asked the public to provide information and comments on the use of this term in the labeling of human food products.”

The FDA took this action in part because it received three Citizen Petitions asking that the agency define the term “natural” for use in food labeling and one Citizen Petition asking that the agency prohibit the term “natural” on food labels. The agency also noted that some federal courts, as a result of litigation between private parties, have requested administrative determinations from the FDA regarding whether food products containing ingredients produced using genetic engineering or foods containing high fructose corn syrup may be labeled as “natural.”

The FDA has long considered the term “natural” to mean that nothing artificial or synthetic (including all color additives regardless of source) has been included in, or has been added to, a food that would not normally be expected to be in that food. But the agency notes that “this policy was not intended to address food production methods, such as the use of pesticides, nor did
it explicitly address food processing or manufacturing methods, such as thermal technologies, pasteurization, or irradiation. The FDA also did not consider whether the term ‘natural’ should describe any nutritional or other health benefit.” The comment period closed May 10, 2016.

Specifically, the FDA asked for information and public comment on questions such as:

- Whether it is appropriate to define the term “natural,”
- If so, how the agency should define “natural,” and
- How the agency should determine appropriate use of the term on food labels.

**Code of Federal Regulation Provides Legal Descriptions**

Several frozen desserts are described in detail in Title 21 of the U.S. Code of Federal Regulations (CFR). Specifically, 21CFR135.110 offers the government’s legal description of ice cream and frozen custard as created by the U.S. Food and Drug Administration (FDA).

Other descriptions set forth in the CFR cover goat’s milk ice cream (21CFR135.115), sherbet (21CFR135.140), and water ices (21CFR135.160). The CFR descriptions set minimums for the amount of milkfat in the products, what other ingredients can be included and in what amounts, and how all ingredients, such as flavorings and bulking agents, must be described in a product’s labeling.

The CFR does not include a description for frozen yogurt despite numerous requests from industry participants that one be set. Several individual states offer descriptions for frozen yogurt in their state codes. [Table 2-1]
### Table 2-1

**Frozen Dessert Product Definitions**

<table>
<thead>
<tr>
<th>Product</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ice Cream</td>
<td>A dairy-based frozen dessert that contains a minimum of 10% milkfat and weighs not less than 4.5 pounds per gallon. Many ice creams also include air (overrun) to a maximum of 50% of the product's total volume (standard of identity).</td>
</tr>
<tr>
<td>Gelato</td>
<td>Similar to ice cream, but typically contains little or no overrun (generally accepted industry name).</td>
</tr>
<tr>
<td>Frozen Yogurt</td>
<td>A dairy-based frozen dessert that differs from ice cream in that it uses lactic acid-producing bacteria to create a cultured yogurt base (generally accepted industry name).</td>
</tr>
<tr>
<td>Sherbet</td>
<td>A water and either fruit or other flavored ice product that contains 1% to 2% milkfat and weighs not less than 6 pounds per gallon (standard of identity).</td>
</tr>
<tr>
<td>Sorbet</td>
<td>A frozen dessert with similarities to sherbet and water ice (generally accepted industry name).</td>
</tr>
<tr>
<td>Water Ice</td>
<td>A water and either fruit or other flavored ice product that contains no dairy ingredients and weighs not less than 6 pounds per gallon (standard of identity).</td>
</tr>
<tr>
<td>Frozen Custard</td>
<td>Similar to ice cream, but also contains at least 1.4% egg yolks (standard of identity).</td>
</tr>
<tr>
<td>Frozen Novelties</td>
<td>Single-serving units of ice cream, frozen yogurt, sherbet, sorbet, water ice, or a combination of one or more of these frozen desserts.</td>
</tr>
<tr>
<td>Frozen Specialties</td>
<td>Cakes, pies, and other frozen desserts made with any of the above products.</td>
</tr>
<tr>
<td>Ice Pops</td>
<td>Flavored water-based products that generally are packaged in cellophane tubes without sticks. They usually are sold in shelf-stable liquid form and require the consumer to freeze them at home. Some retailers choose to sell them already frozen for immediate consumption.</td>
</tr>
</tbody>
</table>

**Source:** Packaged Facts

### Quality Grades

There are four quality grades to describe frozen desserts: economy, regular, premium and superpremium. These grades are not determined by any government agency or department but instead are industry-generated for competitive and marketing purposes. Grades typically reflect the quality and amount of ingredients in the formulation. Grades originally correlated to the amount of milkfat in frozen desserts, but as manufacturers improved the quality of lower-fat products, grades have less to do with milkfat content and more to do with overall product quality based on the other ingredients, including flavors and mix-ins, as well as the amount of air in the mix, a factor referred to as overrun.
Components Affecting Quality Classifications

**Fat Content**

By federal law, ice cream must contain a minimum of 10% milkfat. Prior to 1990, a product with less than that 10% minimum was referred to as ice milk or frozen dairy dessert. However, since the passage of the 1990 Nutrition Labeling and Education Act (NLEA), a variety of ice cream products that contain less fat than regular “full fat” ice cream have been available under labels such as:

- Reduced-fat ice cream, which contains 25% less fat than ‘full fat” ice cream;
- Low-fat ice cream, which contains 3 grams or less fat per serving than “full fat” ice cream
- Light ice cream, reduced in fat by at least 50% or more from “full fat” ice cream
- Fat-free ice cream, which contains less than 0.5 grams milkfat per serving.

Going in the other direction, when the milkfat content increases above 10%, ice creams become thicker and richer. Premium ice creams tend to have a milkfat content of about 12% to 14%. Superpremium ice creams have between 14% and 16% milkfat content.

**Overrun**

Although it is not listed among frozen desserts’ ingredients, overrun—that is, the amount of air in the product mix—is critical to product quality and texture. The higher the overrun, the thinner the texture and the poorer the product quality. An overrun of 100%, which means that the product mix contains 50% air, is the maximum allowed by law. The best superpremium ice creams keep their overrun below 50% (25% air). In gelato, overrun is practically nonexistent. As a result, gelato, which tends to have an approximate 10% milkfat content—the lowest milkfat content legally able to be classified as ice cream—can match the thickness of superpremium ice creams that have a milkfat content in the 15%-16% range. One manufacturer states that the best formula for gelato is 12% milkfat and 10%-15% overrun.
**Flavors**

Ice cream and other frozen desserts come in an overwhelming range of flavors, especially as ice cream producers develop flavors that incorporate tastes from cuisines that extend far beyond North America and Europe. Along with the proliferation of flavors is the divide between natural and artificial flavors. If only artificial flavor is used or if artificial flavor predominates, that must be noted prominently in the product labels, per the CFR. Frozen desserts positioned as premium quality stress their use of all-natural ingredients, but artificial flavorings still appear at the premium level and even in products that are otherwise positioned as superpremium.

**Sweeteners**

The CFR for ice cream also includes a reference to sweetener levels, noting that by weight, sweeteners should account for between 12% and 16% of the product. Sweeteners most often used in ice cream are a combination of sucrose and glucose-based corn syrup sweeteners. Higher grade products tend to use sugar exclusively or more sugar than corn syrup in their mix. Since the 1990 enactment of the NLEA, marketers have introduced sugar-free ice creams sweetened with an artificial sweetener such as aspartame or, more recently, sucralose.

**Fillers**

Another aspect of the CRF standard for ice cream covers the use of stabilizers and emulsifiers, noting that by weight they must be no more than between 0.2% and 0.5% of the product. Emulsifiers used in ice cream include diglycerides, lecithin, and polysorbate 80. Their purpose is to help to keep the milkfat in suspension, making the fat globules stick together in chains, which creates the identifiable ice cream texture and helps keep air in the mix. They also limit the growth of ice crystals.

Gums also help keep air in the ice cream mix and help to prevent ice crystals from forming during freezing and re-freezing. Gums have a “mouthfeel” like that of milkfat, which has contributed to the ability to make diet ice creams with reduced fat content. Among the gums used in ice cream are guar gum, carrageen, xanthan gum, locust bean gum, and methylcellulose.

Among the leading ice cream brands, only the superpremium brand Häagen-Dazs foregoes the use of fillers, although some flavors allow for use eggs as a stabilizer. At the premium level,
Breyers was for many years the only brand not to use fillers, until a decision in 2006 by parent company Unilever to change its formula to include gum.

**Mouthfeel**

The correct combination of milkfat content and overrun is key to producing the ineffable quality of ice cream generally referred to as “mouthfeel.” The mouthfeel of ice cream can be described as a balance of cold and smoothness. Economy and regular ice creams have the least appealing mouthfeel because of their combination of low-fat and high air content. However, many premium brands have only passable mouthfeel because of their fat/air combination or because of an overuse of fillers or poor quality flavors that detract from the mouthfeel even if the fat/air content balance is acceptable.

Just as too little fat and too much air make for a poor mouthfeel, too much fat can lead to poor mouthfeel that leaves the tastebuds feeling smothered rather than refreshed. Gelatos, which have a low fat content but also a low air content, have a mouthfeel that some ice cream aficionados consider the ideal. In general, packaged products have not been able to capture the mouthfeel of freshly made gelato served by the scoop in foodservice venues.

**Mix-Ins**

A great many ice cream and frozen dessert flavors feature mix-ins. These include pieces of cake, candy, fruit and nuts as well as swirls of fudge, marshmallow, and other ingredients. While many consumers will eat both mix-in and straight flavor frozen desserts, there are many who will eat only one type or the other.

**Quality Classifications**

**Economy**

Economy grade ice cream formulations target 10% milkfat content and 100% overrun. This keeps costs down because milkfat is often priced quite high and air is free. Economy ice cream tends to come in the basic flavors of vanilla, chocolate, strawberry, etc., and is made using lower-cost artificial flavorings and other ingredients.