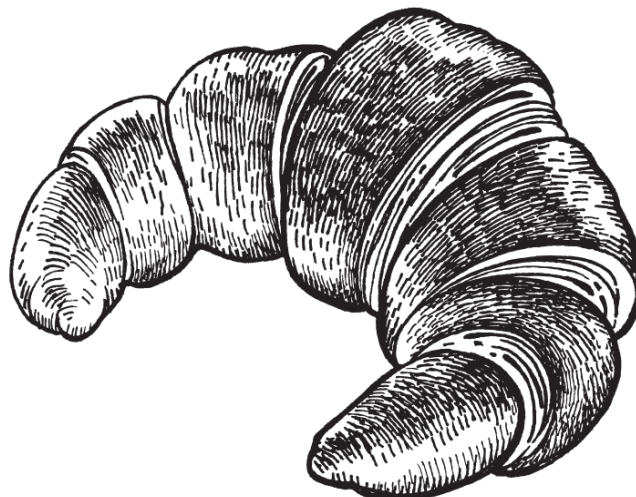




CHARACTERISTICS OF CAKES

IN WHICH CONFECTIONERY FILLINGS
CAN BE USED





INTRODUCTION

Cakes and pastries are popular in the food industry primarily because of their sensory qualities. The preparation method, the quantity and type of products used, as well as the type of icing or glaze decides on their flavour, smell, and nutritional value. The final flavour and aromatic effect, as well as the structure of cakes or confectioneries, can also be influenced by the type of filling used to layer or fill them.

The use of ready-made confectionery fillings allows for the preparation of cakes and other bakery goods of a consistent quality. Thanks to their thermostable texture, these types of fillings do not melt during baking or browning, and they keep their durability while freezing and defrosting. They can also be used after baking, which proves their universality.

This article discusses the standard use of fillings for certain types of dough, cake and batter. It should be noted though that the current trends in confectionery tend towards the unrestricted creativity of the masters and the ideas for unconventional ingredient combinations. This trend applies especially to desserts aimed at being quickly consumed immediately after being created. Wafer dough can be used as a perfect example because fillings are usually not used with it (as the wafer absorbs water and becomes soft), however, it can be successfully combined with filling in the case of a dessert that will be consumed in a short amount of time. Similarly, gingerbread cakes usually do not incorporate the use of fillings. Even though there are numerous ideas like these, we will solely focus on the classification of the use of fillings in general baking.

CHARACTERISTICS OF CAKE, DOUGH AND BATTER IN WHICH A FILLING MAY BE USED

Yeast dough

Its basic components are flour, eggs, and milk. A small amount of sugar, fat and yeast is used as well to help it leaven. The process of kneading is responsible for ethanol

fermentation: the sugar in the dough is transformed into alcohol and carbon dioxide. The bubbles of this gas are responsible for the leavening and the increase in volume of the dough. Yeast dough is characterised by its plasticity achieved by a long kneading process.

It is used in various pastries, e.g.:

- Bundt cakes and pound cakes, including those with candied fruit
- Cakes with fruit, cheese or poppy seeds
- Rolls with marmalade, fruit filling, poppy-seed, cheesecake, nut or almond batter
- Sweet buns, brioche
- Doughnuts
- Crescent rolls
- Confectioneries layered with roasted apples, marmalade or other fruit fillings
- Confectioneries filled with fresh fruit, marmalade, thermostable fruit fillings, poppy-seed, cheesecake, or nut filling, cream fillings

A crucial factor in using fillings in yeast dough pastries is the appropriate texture and moistness of the fillings. It should keep the dough from soaking too much.

Puff pastry (flaky) and filo pastry

It has a characteristic, multilayered structure in the form of very thin flakes. It requires wheat flour, salt, cold water and butter. First, dough and butter should be layered. After chilling the dough, it should be rolled a couple of times and chilled in-between the rolling process. The dough can be folded, rolled or twisted, creating differently shaped pastries. While baking, the layers of fat and dough come apart due to the evaporation of water. The baked pastry is light and delicate, and crumbles easily.

Puff pastry can be used to bake combs, envelopes, cones, shells, tongues, ties, tarts and tartlets. Croissants, mille-feuilles, and cream cakes are popular as well.

Puff pastry creations are often filled after baking. Their structure is very delicate and when a heavier filling is baked it pushes the flakes down. However, it all depends on the shape of the pastry, the placement of the filling, and the desired effect, which is why sometimes it may be filled before baking.

Filo pastry is a variety of puff pastry. Instead of butter, it requires the use of olive oil. Filo is usually combined with savoury fillings.

Rough-puff pastry

We can distinguish: yeast, cream, and cheese rough-puff pastry. By rolling the butter into the yeast dough, one can receive yeast rough-puff pastry. By combining the butter with cottage cheese, eggs and flour - cheese rough-puff pastry. And when the butter is chopped with flour, eggs and cream - a cream rough-puff pastry is created. The

prepared dough is rolled several times into fine layers and shaped into the desired form.

Rough-puff pastry can be used to create confections, crescent rolls, cones, triangles, swirls and rolls. These pastries are often filled with fruit fillings.

Shortcrust

This dough type has a unique, crumbly structure. Three basic ingredients are required to prepare it: flour, butter or margarine, and eggs. The flour should contain weak to medium quality gluten - coarse-grained flour is best, with the possible addition of potato or corn flour. This produces a more crumbly dough than one made with flour containing more gluten. The addition of fat influences the crumbliness as well. Butter, margarine, lard or a combination of these ingredients can be used. Shortcrust dough should contain a 40 - 60% fat to flour ratio. The addition of raw yolks gives it plasticity and cooked yolks - enhanced crumbliness. On the other hand, the egg whites are responsible for reducing the crumbliness.

Powdered sugar is one of the ingredients of shortcrust as well. Granulated sugar should not be used. The low moisture content of the dough prevents the granulated sugar from dissolving and it may caramelize while baking.

To enhance the elasticity of the dough, cream or yoghurt can be used. Raising agents are normally not used.

After kneading, the dough has to be chilled in a refrigerator and then shaped (due to its structure, it is easy to form) and baked.

Shortcrust can be turned into tartlets, layered biscuits, filled and layered confections, cakes and cake bases for cheesecakes, apple pies, poppy seed cakes, cakes with fruit, tarts, mazurek cakes and numerous other bakery goods.

Semi-shortcrust pastry

Semi-shortcrust pastry is created using the same ingredients as in a typical shortcrust (flour, fat, eggs) but with the addition of chemical leavening agents and sour cream. It is used in baking e.g. cakes with various additives, and crescent rolls. Fruit and cream fillings can be used with this type of confections.

Sponge cake

Light, fluffy, and springy batter made with eggs, sugar, and wheat flour. Fat is not used in its preparation. Some of the wheat flour can be replaced with potato flour, thus reducing the amount of gluten in the batter. It gives the sponge cake a more delicate structure.

Sponge cake can be prepared using 'hot' or 'cold' methods. In the first one, the eggs are beaten with sugar over steam, which makes it possible to fluff the batter significantly. The 'cold' method involves beating the yolks with sugar until

well-combined and then folding it with egg whites beaten with sugar, and flour. Sponge cakes significantly increase in volume while baking.

This type of batter can be used to prepare the layers of cakes, log cakes, filled, layered or base confections, as well as cupcakes. They combine very well with fruit or creamy fillings, and by soaking up the filling, they gain some additional flavour.

Sponge-fatty cake

It is also called a sand cake. It is prepared using wheat flour or a combination of wheat and potato flour (1:1), butter or margarine, sugar, eggs, and baking powder. Additionally, dried fruit and nuts, candied fruit, cocoa and flavourings can be used. Similarly to sponge cake, sand cake can be prepared using the 'hot' or 'cold' methods. After baking, it has a characteristic, sandy structure. Thanks to the large amount of sugar used, this type of cake is fluffy and crumbles easily. The addition of potato flour is responsible for the 'sandiness' as well. It resembles a shortcrust, though it is more delicate and fluffier.

It can be used to prepare fruitcakes, stefanka, mazurek cakes, sandcake bundts, tree cakes, camargo cakes, cake bases and squeezed cookies. In the case of mazurek and stefanka cakes, cake bases and camargo cakes, fruit fillings with low water activity can be used.

Choux pastry

It is created by combining flour and boiling water with fat and then adding the eggs to the batter. The flour absorbs a large amount of water, which makes the batter thicker. More or fewer eggs are added to make the batter thick enough.

The water, which cannot quickly leave the batter because of its thickness, acts as a leavening agent. Free spaces are then created in the batter, which makes the baked product increase in volume.

Choux pastry is light, dry and empty in the middle. The best fillings for this type of cake are creams (whipped cream, Russel cream, semi-skimmed cream, custard). Moist fruit or creamy fillings are not recommended for this type of cake due to its dryness.

However, such filling can be combined with animal - or plant-based cream. It will create an aerated cream, suitable for cream puffs, éclairs, and Polish Carpathian mountain cream cake (karpatka).

Apart from the previously mentioned confections, choux pastry is usually used to make rings, nests, and wreaths.

Gingerbread cakes

A sweet and spicy cake with long durability. It is made with a mixture of type 850 wheat flour and type 800 rye flour. The sweetener is usually natural honey, or possibly artificial honey, sugar or inverted syrup.

The characteristic taste and smell is derived from the spices: cinnamon, cloves, black pepper, ginger, allspice, coriander, cardamom, nutmeg and aniseed. The most common raising agents are acid ammonium or sodium carbonate. Gingerbread cakes are prepared by boiling or using a cold method.

This type of batter is used in creating gingerbread cakes and cookies, cookies covered with sugar syrup, icing, cocoa glaze or chocolate. Such gingerbread cakes can be filled with marmalade, thick fruit jam or almonds. Creamy fruit fillings are used to layer gingerbread cakes. This type of cake can also be covered with marmalade, thick jam or Swedish cream. On the other hand, nut or marzipan creams are used to fill them.

Meringues

A meringue is created by combining beaten egg whites and powdered sugar. A small amount of flour or vanilla sugar can act as an additive.

A prepared batter is formed as desired and dried in an oven with the temperature not exceeding 120 °C, until light-golden and crisp. To achieve a white meringue, the drying temperature should be set at about 100 °C.

Depending on the temperature set, the confections may be crisp (higher temperature) or slightly soft and chewy (lower temperature) on the inside. It is used in making confectionery items (tree cakes, cakes with coffee cream), meringue cookies, macaroons, coconut meringue cookies.

Meringues, little cookies, are usually shaped into small, irregular cones. They usually do not contain fillings, as they are mostly used as decorations.

Macaroons are cookies created with egg whites, powdered sugar and ground almonds. They are folded with creams such as Russell cream.

Bigger meringue cakes and layered cakes are folded with various creams, usually thick and containing fat, as they do not dampen the meringue. Pavlova is an exception. It is a white, cracked, crisp meringue with a soft and moist foamy texture inside. It is covered with whipped cream and decorated with fresh fruit. If in one of the above baked goods you would like to use a filling - fruit smooth or creamy - you would need to mix it with butter, mascarpone cheese or chocolate. This way, you will receive a stable cream with the desired texture.

Wafer

Wafers are made with wheat flour and water. Milk or condensed milk can be used instead of water. Milk can replace all or part of the water given in the recipe. Sugar, powdered milk, yolks or powdered egg mix can be added as well. Chemical raising agents (sodium carbonate acid) are used to make wafer dough, which gives the baked goods their characteristic porosity.

It is crucial to reach smooth and uniform texture of the batter, which allows for its quick and easy dosage.

While mixing, cool water or water with some milk should be used. The temperature of the liquid should be between 15 and 20 °C. A higher temperature would enhance the stickiness of the batter, resulting from the puffing of gluten, which lowers the quality of the product.

Wafer batter is used in creating decorative wafer leaves, various ice cream containers (cones, bowls), and rolls. Wafers with and without fillings can also be baked with this type of batter.

They are dry and crispy. These confections easily soak up water so a liquid fruit filling cannot be used with this type of batter. The creams used with wafers should be thick and quite fatty, with the addition of butter or margarine.

Crisp pastry

Preparing a crisp pastry requires flour, eggs, sugar, fat, flavourings and spirit. Mix all of ingredients thoroughly and then beat until a loose dough is formed.

Crisp pastry is characterised by the high egg yolk content and a small addition of fat and sugar. The egg yolks and the small amount of sugar give it the right crispiness. For the same reason, the dough does not burn during deep-frying. It only rises slightly during the cooking process.

The most common confections from crisp pastry are faworki (angel wings) and roses, dusted with powdered sugar after frying.

This type of dough easily absorbs water and becomes soft. Using confectionery fillings is not advisable, especially fruit fillings, given the qualities of these confections. This could lead to sogginess.

Boiled dough

It is made with flour, eggs, a small amount of fat and sugar. Yeast or chemical leavening agents are added to the egg and sugar mix. The amount of sugar determines the sweet or sour taste of the cake.

The shaped products have to be briefly boiled in water to increase their volume and then baked.

Due to the quite hard texture of the boiled dough pastries, fillings are not used. Confections made using this type of dough are decorated with various toppings, e.g. poppy seeds, caraway seeds, nigella, sesame seeds, coarse sea salt, cinnamon, Parmesan with garlic salt, coarse light or dark sugar.

The most common bakery goods from boiled dough are obwarzanek, bagels, pretzels, swirls and saltsticks.

Pancake batter

It is a very runny batter made with milk, eggs, and a small amount of flour. To form pancakes with the desired shape and size, the batter is poured onto a pan and then

fried. During the frying process, the shape sets in place. When heated, the batter increases in volume and becomes porous, and the pancakes become crisp and golden.

Pancakes are served with various, fruit or creamy fillings, with fruit or others, or savoury ingredients. It can be also used to prepare croquettes or pancake cakes.

Dumpling dough

It is created by combining and kneading flour with water (or milk), and salt. Eggs can also be added to the flour (it makes the dough more firm) and some fat (it makes the dough fluffier). The consistency should be sticky but not so much that the dumplings stick together, and the dough should be firm enough to be rolled out thinly without any holes forming.

It is used in making dumplings with sweet (fruit, with or without fruit pieces) or savoury fillings. By preparing a dough with water, flour and fat, tortillas can be fried.

Pasta dough

This thick dough, kneaded on a pastry board, is formed by rolling, cutting, and chopping to give it the desired shape and size.

Various shapes of pasta can be used in sweet meals, using the addition of fruit or fruit conserves, cottage cheese or spices (e.g. cinnamon).

Cheese dough

It is created by combining flour, eggs and cottage cheese. It is relatively light and easy to roll. It is used in the preparation of, among others, crescent rolls, round and ring-shaped cottage cheese doughnuts, cobblers, pies, rolls with fillings, cookies, cakes with fruit.

A cream made by combining the filling with whipped cream can be used in cottage cheese pastries as well.

Cream butter cake

It is a type of semi-shortcrust cakes, even though after baking it has the characteristics of sponge cakes. It is light and fluffy. It goes very well with fresh fruit, ready-made fruit fillings, dried fruit and nuts or on its own, without any additions.

We use it to bake bundt cakes, fruitcakes, cakes with fruit, cheese tartlets.

Shortcrust-yeast cake

It is baked with wheat flour, butter, 18% cream, fresh or dried yeast and powdered sugar. This kind of cake is fluffy but quite fatty and crumbly when tearing apart.

It is used in making crescent rolls with fruit and creamy fillings, pies, rolls with sweet or savoury fillings, mini pizza bases.

WAYS OF USING FILLINGS IN PASTRIES

The following can be used for filling cakes: fruit and fruit preserves, poppy seeds, cottage cheese, almonds, nuts, egg-based creams, butter creams and creams with cream.

The fruit filling is made with frozen or fresh fruit. Cream fillings, on the other hand, are based on vegetable fat - palm oil is most commonly used. Sugar used in different forms is a key ingredient as well. In addition, there are thickeners and stabilisers which guarantee the right consistency and resistance to baking or freezing. Lastly, colourings and flavourings are added. This type of fruit filling is thermostable, which means that it retains its quality and properties both during baking and freezing.

The poppy-seed filling is prepared from ground poppy seeds with the addition of honey, raisins, orange peel and flavourings. Almond filling is made with sweet almonds. The above-mentioned fillings are used in yeast, sand and sponge cakes. Hazelnut and walnut fillings are used in yeast cakes and puff pastry.

The cakes can be filled both before and after baking. For raw dough, fillings with little or no fat are used. The best choices are fruit, cheese or poppy-seed fillings. For baked cakes, fillings with fat (cream, butter, eggs) can be used. Lauretta cream fillings contain very small amounts of fat and can be used before baking.

Confectionery fillings are used in yeast, shortcrust, and semi-shortcrust cakes. Sponge cakes and gingerbreads are filled after the baking process. Sponge cake should be soaked with syrup or punch to keep it moist. It makes it easier to combine the cake with the filling.

EXAMPLES OF FILLED CONFECTIONERY ITEMS FROM VARIOUS CAKE CATEGORIES

Tab 1. Types of dough and batters in which confectionery fillings can be used

| Type of dough/batter | Direct use of confectionery fillings | Use of confectionery fillings after mixing with other products |
|----------------------|--------------------------------------|---|
| Yeast dough | Yes | No |
| Puff pastry (flaky) | Yes | Use of creams created by combining the filling with butter, white chocolate and cream or mascarpone cheese. |

| | | |
|------------------------|-----|---|
| Rough-puff pastry | Yes | Use of creams created by combining the filling with butter, white chocolate and cream or mascarpone cheese. |
| Shortcrust | Yes | No |
| Semi-shortcrust pastry | Yes | No |
| Sponge cake | Yes | A gelée, created by combining the filling with water, sugar and gelatine, can be used to cover the cake. |
| Sponge-fatty cake | Yes | A gelée, created by combining the filling with water, sugar and gelatine, can be used to cover the cake. |
| Gingerbread cakes | Yes | No |
| Meringue | Yes | Macaroons can be filled with cream created by combining the filling with butter, white chocolate and cream or mascarpone cheese |
| Choux pastry | No | A cream made with the filling and whipped cream can be used |
| Wafer | No | No |
| Crisp pastry | No | No |
| Boiled dough | No | No |
| Pancake batter | Yes | A cream made with the filling and whipped cream can be used |
| Dumpling dough | Yes | The filling can be combined with cottage cheese |
| Pasta dough | Yes | No |
| Cheese dough | Yes | A cream made with the filling and whipped cream can be used |
| Cream butter cake | Yes | No |
| Shortcrust-yeast cake | Yes | No |

A detailed description of the possibilities of mixing confectionery fillings with other ingredients can be found in the article „Możliwości wykorzystania nadzień cukierniczych owocowych i kremowych” (“Possibilities of using fruit and cream confectionery fillings”).

The assortment of cakes in which fruit fillings can be used is astounding. The fillings can be incorporated into the majority of cake types produced. They make a valuable addition to pastry products.

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