Bakery products

Vegetable Oils and Fats from Walter Rau.
Bakery products

Short crust pastries are subdivided into doughs of a medium-stiff, slightly plastic character such as moulded pastries and stamped cookies and doughs which are short, soft and ready-to-use such as shortbread biscuits. The characteristic of these pastries is their short, tender and sandy texture due to the high fat content in their recipe.

The ratio sugar: fat: flour for basic recipes of these pastries is in the range of 1: 2-3: 2-3.

In these doughs, the fat has the task of binding the other recipe ingredients in a homogeneous mixture. In short crust pastries the usual formation of gluten takes place to a minimal extent as the required liquid is not existing and the flour is coated with a hydrophobic film of fat so that plastic doughs of low elasticity develop.

For shortbread doughs such as biscuit doughs, a correspondingly softer fat must certainly be used. For doughs which are prepared with yeast, the formation of gluten strands is desired. The addition of fat improves the elasticity of the glutsens’ structure. Thus, the gas retention capacity, the fermentation tolerance, and eventually the volume of the pastry will be improved. To this end, as soft, plastic fat is being used.

New processes, new products and also new quality requirements demand a lot from the bakers. We produce baking fats for the many different applications because baking fat is an essential ingredient used in the production of bakery products. In the dough, it improves the mixing process of the recipe ingredients, contributes to the development of volume, improves the crust texture and helps keeping the products fresh.

The variety of baking products demands baking fats, which are specially adapted to the requirements of a product. Starting with the consistency over the melting points up to the composition of fatty acids. In their characteristics, baking fats have to be perfectly tailored to the product in order to allow optimised pastries and cookies of high culinary value.

Baking fats significantly increase the culinary value and improve flavour, taste and mouth-feel of the pastries, the best prerequisite for a strong and successful positioning in the market.

On the following pages we will going to present you with several examples in order to give you an overview of the different oils and fats for each range of application.

Vegetable oils and fats are mainly standardised products, although for many applications there is no universal solution available: special products require special fats. We know that individual solutions need individual assistance – and this is our strong point. We will always be ready to listen to your desires and questions.
### Recipe examples for shortbread biscuits

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Alternative 1 in kg</th>
<th>Alternative 2 in kg</th>
<th>Alternative 3 in kg</th>
<th>Alternative 4 in kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Icing sugar</td>
<td>115</td>
<td>115</td>
<td>115</td>
<td>115</td>
</tr>
<tr>
<td>Skimmed milk powder</td>
<td>12</td>
<td>12</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Butter</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Dough fat</td>
<td>165</td>
<td>165</td>
<td>165</td>
<td>165</td>
</tr>
<tr>
<td>Water</td>
<td>65</td>
<td>65</td>
<td>65</td>
<td>65</td>
</tr>
<tr>
<td>Salt</td>
<td>2</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Sodium carbonate</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Vanilla flavouring</td>
<td>-</td>
<td>-</td>
<td>1.5</td>
<td>-</td>
</tr>
<tr>
<td>Lemon peel</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Citric acid</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>Wheat flour</td>
<td>250</td>
<td>250</td>
<td>250</td>
<td>250</td>
</tr>
</tbody>
</table>

### Manufacturing
- Fold in flour for 2 min. (1 min. 1st speed + 1 min. 2nd speed)
- Use either a piping bag (star spout) or a pastry bag to put the dough directly onto the ungreased baking sheet

### Product application

**Vegetable fats for pound cake and sand cake**

For pound cake and sand cake, which are designated as "bakery products from whipped doughs", we recommend using a fat with a favourable whipping behaviour.

During the preparation of the dough, it is of decisive importance for the pastry volume to stir in air so that the grade of loosening largely depends on the density of the mixture.

The density of the mixture, in turn, is influenced by the selection of the raw materials, and the processing techniques. Soft fats in particular are able to incorporate air in the form of tiny bubbles, and to stabilise them thanks to the existent fat crystals. Consequently a baking fat has a balanced ratio of liquid and crystalline components at its respective processing temperature. The proportion of crystalline components should attain 15–30% and moreover, occur preferably in fine-crystalline form.

**Recipe for the manufacture of Madeira cake**
- 2,500 g Vegolio 23530 or alternatively Bavettin Special 22820
- 2,500 g whole egg
- 2,000 g sugar
- Produce a homogeneous mixture of these products.
- 2,500 g wheat flour
- 20 g baking powder
- Add rum or vanilla flavouring
- Stir in these ingredients into the mixture and then pour it into baking forms
- Baking temperature 190 °C
- Baking time approx. 45 min.
Product application

Vegetable fat for puff pastry

For pastries such as puff pastry and Danish pastry, roll-in margarines and roll-in fats are used. According to the traditional German processing method, the fat will be folded into the dough (tourage) for these types of pastries. Thus, a defined number of fat layers, which will loosen the pastry, are incorporated into the dough.

The strong mechanical strain during the processing of these doughs makes special demands on the fat quality. These pastries require a fat which shows a flat SFC curve, so a melting of the fat phase, caused by the strong mechanical strain, can be avoided.

In the past, animal fats with a relatively high-melting point, e.g. tallow, were used for these pastries and left an unpleasant greasy taste in the mouth due to the large proportion of high melting ingredients.

In current vegetable fat compositions, this defect has almost completely been eliminated. The fat will only leave a greasy impression if the proportion of solid fat over 35 °C is very high, for instance > 20%.

Depending on the facility, the use of puff pastry fat may require an adaptation of the processing parameters compared to margarine.

We will be pleased to advise you.

Recipes for the manufacture of puff pastries

Basic recipe:

- 1,000 g wheat flour type 405
- 0.55 litres cold water
- 15 g salt
- 45 g Palmetta 38050
- (Depending on the type of flavour, extra 30 g sugar)

Process all ingredients for approx. 4 minutes to a dough. Then roll in Bavettin TOURit. According to the German tradition, roll in two single folds and one double fold. Afterwards, put the puff pastry in a refrigerator at 7 °C for approx. 20 hours.

Fruit puff pastry dough

Roll out the dough 5 mm thick and then cut it into squares of 11 x 11 cm. Fill the middle of each square with flan and cherries. Bake at 210 °C.

Baked apple in puff pastry

Roll out the dough to 3 mm. Then cut out squares of 16 x 16 cm. Put peeled apples in the middle of the squares and fold the ends of the dough over the apple. Bake at 210 °C.

We offer you the following advantages versus roll-in margarine

- The fats which are used are unhardened and, therefore, have a trans fatty acid content below 2% in accordance with the recommendations of leading associations and scientists.
- In contrast to the roll-in margarines, the fats do not contain any additives such as colourants or emulsifiers.
- Better shelf life as they are practically free of water (-> therefore, there is no need for cool storage)
- no microbiological risk.

Economic advantages

- 20% less storage capacities need to be tied up
- 20% less storage costs
- 20% less material used in recipes in comparison with margarine
- 20% less transport expenditure (food miles)
Product application
Cream filling fats with their characteristics and application options

Light creams and fillings on fat basis increase the variety of product alternatives and leave plenty of room for imagination in product development.

Cream fats are used for the production of fillings in or on bakery products. These fillings have a characteristically low litre weight in order to create a light and silky mouthfeel. To this purpose, we need a fat, which is characterised by a good whipping behaviour. Soft fats in particular with an SFC value of 10–20% at processing temperature and a melting range below body temperature are suitable.

It is justified to ask whether a proportion of solids of 10–20% in a fat at processing temperature will be sufficient to bind the liquid ingredients, so no oil seeps out. This question can be clearly answered with yes if the fat has been well plastified and the crystals are finely dispersed in optimal form.

Thanks to the proper selection, the melting down and release of flavours can also be controlled and, therefore, the desired sensorial balance between pastry and cream is established. Filling fats are normally stiffer and cannot be whipped very well. The transition from creams to fillings in terms of their physical properties such as consistency and density is practically smooth.

The characteristics of the fats are clearly reflected in the behaviour of the creams/fat fillings and, for instance, have an influence on:

Melting behaviour
- Release of flavours
- Cooling effect
- Waxiness

Firmness
- Chewing impression
- Processing
- Binding properties, e.g. waffle/filling

Whipping
- Air retention capacity
- Machine processability

Example of a cocoa/nut based filling which can also be whipped:

<table>
<thead>
<tr>
<th>Ingredient</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cocoa powder (10/12)</td>
<td>6.7</td>
</tr>
<tr>
<td>Skimmed milk powder:</td>
<td>6.5</td>
</tr>
<tr>
<td>Hazelnuts:</td>
<td>10.0</td>
</tr>
<tr>
<td>Sugar:</td>
<td>50.0</td>
</tr>
<tr>
<td>Vanillin:</td>
<td>0.02</td>
</tr>
<tr>
<td>Salt:</td>
<td>0.03</td>
</tr>
<tr>
<td>Lecithin:</td>
<td>0.5</td>
</tr>
<tr>
<td>Bavettin Spezial 22820</td>
<td>26.25</td>
</tr>
<tr>
<td>(alternatively Pralisan 94350)</td>
<td></td>
</tr>
</tbody>
</table>

www.WalterRauAG.de
Good products are those which meet the customers’ requirements. Therefore, new products are created in close cooperation with you, our customers. In our product developments, cultural and religious values will be just as much taken into consideration as nutritional-physiological trends or the new consumer habits.

The expert staff of our Application Technology Department will not only guide you regarding the selection of suitable fats and oils but also support you in every way possible with the tuning of your preparations and processes – at our Technological Centre or on-site with you. We will also be ready to solve more in-depth issues with the support of our competent laboratory team, which can fall back on a wide range of analysis methods.

Explanation of the abbreviations

SAFA %: percentage of saturated fatty acids
MUFA %: percentage of monounsaturated fatty acids
PUFA %: percentage of polyunsaturated fatty acids
Ω3:Ω6 ratio: ratio between Ω3 and Ω6 fatty acids; the ideal ratio is 1:5*
S:U ratio: ratio of saturated to unsaturated fatty acids; optimum is a value of at least 1:2* – i.e., at least double the content of unsaturated fatty acids
*Recommendation of the German Nutrition Society (DGE)
Packaging options

<table>
<thead>
<tr>
<th>Packaging options</th>
<th>liquid</th>
<th>paste-like</th>
<th>solid</th>
<th>general remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Block 4 x 2.5 kg / 10 kg / 12.5 kg / 20 kg / 25 kg</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bag 25 kg</td>
<td></td>
<td>●</td>
<td></td>
<td>powder, pearls, scales on request (for high-melting products)</td>
</tr>
<tr>
<td>Bag in Box 3–20 litres</td>
<td>● ●</td>
<td></td>
<td></td>
<td>several nozzles possible</td>
</tr>
<tr>
<td>Tinplate buckets 10 litres</td>
<td></td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plastic buckets 25 litres</td>
<td></td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Drum 180 kg</td>
<td>● ●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bulk container 1,000 litres</td>
<td>● ●</td>
<td>●</td>
<td>●</td>
<td>optionally with electrical heating, IBC or steel</td>
</tr>
<tr>
<td>Tank trucks</td>
<td>● ●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barge &gt;250 tons</td>
<td>● ●</td>
<td>●</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Product consistency

- **Liquid**
- **Paste-like**
- **Solid**
- **General remarks**

We can supply on demand

- Tinplate buckets 10 litres
- Plastic buckets 25 litres
- Drum 180 kg
- Bag in Box 3–20 litres
- Block 4 x 2.5 kg / 10 kg / 12.5 kg / 20 kg / 25 kg
- Bag 25 kg
- Tank trucks
- Steel IBC (Aseptic IBCs)
- Heated IBCs
- Folding IBC
- Standard IBCs

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