

Changing Properties — Fats and Oils

Fats and oils get a bad rap, but they're actually really **useful** for a variety of cooking situations...

Fats and Oils Have Lots of Different Uses

Aeration Means Incorporating Air

- 1) When **fats** such as butter are **beaten** with **sugar** (this process is called **creaming**) air becomes trapped in the mixture. This air makes the mixture **fluffier** and **lighter** in colour.
- 2) This aeration gives cakes a **spongy** and **light texture** when they're cooked.
- 3) Foods can be **aerated** in many different ways, e.g. whisking egg whites with a whisk or quickly beating ingredients with a spoon — there's more about this on p.32.

Oils don't trap air as easily as fats — oil-based doughs need something else to add air, e.g. baking powder (see page 32).



Shortening Gives Foods a Crumbly Texture

- 1) When you rub fat into flour, you cover the flour particles with fat — this gives the flour particles a **waterproof** coating.
- 2) This coating prevents **long gluten molecules** forming when water is added to the flour.
- 3) This means the dough **cannot** become **stretchy** and baked goods like **shortbread** keep a **'short'** (firm and crumbly) texture — hence the name **shortening**.
- 4) Shortening is also used when making filled pies and tarts — it's helpful because the base doesn't rise and forms a solid case.
- 5) Some fats are called 'shortening' — they have **100% fat content** (contain no water) which helps **stop gluten formation** and **prevents steam** from raising the food.



Lucy was thrilled that her shortening had been successful.



Plasticity Means Ability to be Spread and Shaped

- 1) Fats have **'plasticity'** — we're able to **spread** and **manipulate** them.
- 2) This is possible because fats contain a mixture of different **triglycerides** (see p.3). These different triglycerides all **melt at different temperatures** — so fats **gradually soften** over a **range of temperatures** rather than melting at just one.
- 3) The **more plasticity** a fat has, the **easier** it is to **spread**.
- 4) You'll remember from p.3 that **unsaturated fats** tend to be **soft** or **liquid** at room temperature, while **saturated fats** tend to be **solid** — this means that the **more unsaturated fatty acids** a fat or oil contains, the **more plasticity** the fat or oil will have (e.g. it will be easier to spread).
- 5) Plasticity is **useful** for a range of different reasons, including:
 - **Decorating** cakes with **buttercream**
 - **Rubbing fat** into flour to make shortened dough (see above)
 - **Spreading butter** on sandwiches and toast
 - **Putting cream cheese** on crackers
- 6) Some **vegetable fat spreads** are marketed as being 'easy to spread'. This is because they contain a mixture of triglycerides with **low melting points**, meaning you can **spread** it as soon as you take it out of the **fridge**.



Butter can be hard in the fridge, soft at room temperature and melty when it's heated.



An example of taking vegetable fat spread literally...

Changing properties of fats and oils.

Aeration:

1. When fat and sugar are beaten together, what does it trap?
2. What texture does aeration give to cakes?
3. What piece of equipment can you aerate food with?

Shortening:

1. When you rub fat into flour, what type of coating are you giving the flour particles?
2. What does this coating do?
3. This creates a short texture which is?
4. The shortening process is used to make? Give 3 examples.
5. Some fats are called shortening. They have what percentage of fat in them.

Plasticity:

1. What does fat plasticity mean?
2. The more plasticity the more fat is able to what?
3. Which fat has a higher plasticity: saturated or unsaturated?
4. Some vegetable spreads are easy to spread. Why is this?