

The Science of Food: Raising Agents Knowledge Organiser

Mechanical Raising Agents	Action	Uses
Sieving	Traps air in between the flour particles.	cakes, pastry, batter
Whisking	Whisking eggs will trap air and create a foam.	meringues, cakes, mousse, sponges
Rubbing in	Rubbing fat into the flour adds air.	pastry, cakes
Creaming	Mixing fat and sugar together traps air – fat becomes pale and mixture is creamy.	cakes, sponges
Lamination	Air is trapped in each layer when it is rolled and folded.	flaky pastry, rough puff pastry

Chemical Raising Agents	Action	Uses
Bicarbonate of soda	With moisture and heat, the bicarbonate creates bubbles of carbon dioxide which raises the food. This can have a soapy flavour.	chocolate cake, gingerbread
Baking powder	A mixture of baking powder and cream of tartar works in the same way as bicarbonate of soda but with a reduced 'soapy' flavour.	Provides an 'all in one' method of baking when 'creaming' isn't done to add air.
Self-raising flour	Plain flour with baking powder added removes the need to add a raising agent individually.	cake recipes
Creaming	Mixing fat and sugar together traps air – fat becomes pale and mixture is creamy.	cakes, sponges
Lamination	Air is trapped in each layer when it is rolled and folded.	flaky pastry, rough puff pastry

Raising Agents

Used in baking to give a risen, light and airy texture in the food.



Physical Raising Agents	Action	Uses
Steam	Cooking a mixture with a lot of liquid in a very hot oven. Water turns to steam, which causes food to become solid and rise.	Yorkshire pudding, choux pastry



Heat Control

Oven	<ul style="list-style-type: none"> Food can spoil if the correct temperature is not used. If cake browns too quickly, reduce the heat by one gas mark or 10°C.
Hob	<ul style="list-style-type: none"> Water boils at 100°C. Oil and fat can catch fire if they become too hot (between 180 and 250°C).
Grill	<ul style="list-style-type: none"> The element should be red before grilling food. Food must be monitored to check it doesn't burn but cooks through

Biological Raising Agent	Action	Uses
Yeast	<p>Yeast is a living organism that can be bought fresh or dried.</p> <p>With moisture, food, oxygen and time, yeast will produce carbon dioxide bubbles. These cause bread dough to grow and rise.</p> <p>After kneading, dough will be left to prove to allow yeast to become activated.</p> <p>As dough rises, the gluten becomes stretchy, resulting in the dough being soft and springy.</p> <p>Some bakers knock back the dough and allow it to have a second rise for a finer texture</p>	doughs, breads

Troubleshooting

Problem	Cause	Products This Can Affect
The mixture is stodgy, dry and stiff.	too much flour	cakes, breads, biscuits
The mixture lacks volume, is too runny or too soft.	too little flour	baked products and sauces
The product has a rubbery, greasy possibly crunchy texture.	too much fat	all food products
The product is dry and lack flavour.	too little fat	baked goods
Food is too brown and sweet. Texture is crunchy, crisp and brittle.	too much sugar	baked goods
The product lacks flavour and volume.	too little sugar	baked goods and desserts
The product tastes 'eggy' or has a dense texture.	too much egg	baked goods
The product has not set/has little coagulation.	too little egg	cakes, custard, quiche
The consistency is too runny for a batter or sauce.	too much liquid	baked goods and sauces
The mixture is very dry.	too little liquid	baked goods and sauces
The cake surface is cracked, or the cake has risen over the tin.	too much raising agent	bread, biscuits, cake
The product hasn't risen at all and is very dense.	too little raising agent	bread, biscuits, cake

What Do Ingredients Do?

Ingredient	Purpose
Flour	<ul style="list-style-type: none"> provides bulk and volume; thickens liquids (gelatinisation).
Fat	<ul style="list-style-type: none"> adds flavour, colour and moisture; traps air.
Sugar	<ul style="list-style-type: none"> adds flavour, colour and texture.
Eggs	<ul style="list-style-type: none"> adds flavour, colour and air; helps set the liquid (coagulation).
Baking powder	<ul style="list-style-type: none"> produces carbon dioxide bubbles, resulting in cakes being able to rise.
Yeast	<ul style="list-style-type: none"> produces carbon dioxide bubbles, resulting in bread dough being able to rise.