



[1]

- Butter (as well as hands and the bowl) needs to be cool or cold to make short pastry for a sweet pie crust (or any pastry). If the butter is too soft, the pastry will be too. That will make the pastry lose its shape and shrink. A warm mixture will make the pastry greasy, heavy and dull. The pastry should be put in the fridge on a warm day, and hands can be run under the cold tap to keep them cooler. A marble slab is good for rolling the pastry on, as it stays cooler. The pastry should be worked quickly, to stop it getting too warm.
- Butter makes things like shortbread and pie crusts crisp and tender. When butter is blended well into flour, you get a very rich pastry. Mixing in small pieces of butter causes less evaporating of moisture than for flaky pastry—makes the crust tighter and firmer. Not adding enough butter makes it easier for the gluten to develop—which makes the crust tough.
- Butter provides moisture. This makes pastry keep longer than drier, lower-fat baked goods.
- The milk fats in the butter allow the crust to brown
- Because butter has a high melting point, it melts nicely in your mouth
- Adding too much flour can make the pastry too crumbly and difficult to work with. It can also make it tough.
- You need to be careful not to over mix pastry, or it will elongate the gluten (protein) cells and make the pastry tough, gluggy and doughy. However it does need to be mixed before the liquid is added. Covering the grains of flour in fat (butter) gives the pastry its fragment discontinuous 'short' texture –as it is harder for the flour to bind with its neighbours. Adding sugar also helps to stop the gluten strands forming so the pastry breaks up in the mouth. This layer of fat makes it difficult for water to hydrate the flour, so structure-giving gluten proteins cannot form. The more coated the flour cells, therefore, the less well they will bind with their neighbours and the weaker (shorter) the pastry will be. However, if the flour is too well coated the pastry will not hold together and will become difficult to work with. This can happen if you use oil or if the solid fat is too warm.
- After making the pastry, chilling it in the fridge for at least 15 minutes (wrap it in plastic wrap or greaseproof paper) will help the gluten to relax. If the pastry is rolled out as soon as it is mixed, it is like trying to roll a sheet of elastic. It will roll, but then it will shrink back. Let the dough warm up just a little before rolling it out—this will make it easier to roll. Once rolled, it should be rested again.—so that it doesn't shrink in the oven.
- Acid (eg lemon juice, vinegar) or a pastry relaxing agent helps to avoid shrinkage.
- Metal baking pans (that don't warp) work well as they conduct heat well. A removable bottom makes it easier to get the pie out.
- Always put pastry into a preheated hot oven. If the oven is too cool, the pastry will melt rather than cook. Placing the pie on a heavy heated baking sheet will help to make the bottom crispy. The hot oven temperature would destroy any microbiological contamination.
- Thin, uncooked fillings can make the pastry soggy.
- Make sure any cracks or holes are patched up with pastry (use water to make it stick). Leaks will make the pastry go soggy
- Blind baking the pastry before adding the filling stops it going soggy as it seals the surface. This is done by covering the pastry with non stick baking paper and then adding some weights (eg rice, dried beans, ceramic balls). These weights stop the pastry rising up. The pastry can then be cooked for another 5 or 10 minutes before adding the filling.
- Cool on a wire rack so the air can circulate—this will also help to stop the crust from going soggy.



## Pies Filling Systems [2]

In industry, viscous products and particulate sauces can be dispensed without damage/ deformation into the pie shell through a piston filler. These fillers will give clean (ie lower change of contamination) and highly accurate measures of filling. These are easy and fast to sanitise.

Rotary plate fillers can be used to accurately deposit small free flow particulates (like a biscuit crumb crust or frozen vegetables) into containers. Sanitary construction, easy to wash down, easy to adjust the timer and volume.

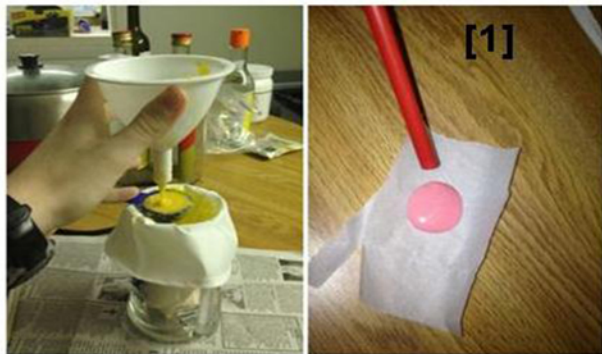
Topping dispensers spot deposit or evenly spread products like grated cheese, bread crumbs, mince, vegetables etc. They are built from food grade materials and are easy to clean.



**Viscosity testing [3]**

Cornflour is usually used to thicken something like a lemon meringue pie. It is good because it doesn't seem to affect the flavour or texture. Other ingredients (lemon juice, the fat in the butter, the sugar, the enzymes in the raw eggs) and heat can work against the thickening ability of the starch in the cornflour. The acid in the lemon reduces the ability of the starch to capture moisture, which can lead to 'puddling'. To get the ideal thickness, a viscosity test should be undertaken.

The test can be easily undertaken in a classroom using a stop watch and a funnel. You measure how long it takes the liquid to run through the funnel. This would then be compared to the ideal viscosity. Or sometimes people will just time how long it takes the liquid to drip off a stick.



Viscosity testing is important in industry because it can help to make the processing more efficient and cost effective. For example, it effects the rate and which a pie filling travels through a filling pipe. It also effects how long the filling might take to dry (before the next process can happen). The viscosity of the filling will help to determine how the pipes are set up (for example, the angle) to make the flow as good as it can be.

In industry, the texture of the food also needs to be maintained as it is meant to be, and a viscosity test allows that.

Also controlling the viscosity is important to make sure that the food item will perform specific functions, for example able to be dipped or used to coat something.

Viscosity testing can also be used to detect changes in colour, density, stability, solids content, and molecular weight.

In industry, special viscosity testing machines are used.

