
Quantitative analysis

Concentration is critical

Do you take sugar? How much? Even for something as simple as making a cup of tea or coffee, concentration is important. Dissolving too much sugar, tea or coffee (or not enough) won't hurt you - it just doesn't taste right.

Usually, however, concentration is more critical. Chlorine is added to drinking water to sterilise it. If the concentration of chlorine is too low, bacteria may not be killed. Too high, and it tastes like the swimming pool. With medicines, concentration is vital. It determines the amount of drug in a dose, so it can make the difference between life and death.

Concentration is the amount of a substance present in a given volume of solution. It affects chemical reactions in several ways.

- The amount of one chemical determines how much of other chemicals is needed to react with it.
- The more chemical present, the more product will be formed.
- The more chemical in each cubic centimetre, the more reacts each second, so the reaction goes faster.
- Sometimes, using a different concentration can even cause a different reaction to occur.

Obviously, it's important to be able to measure concentration. You need to be able to:

- determine the concentration of a solution using titration;
- prepare solutions of specified concentrations. This may be for two purposes:
 - to prepare a chemical product;
 - to analyse another solution or mixture.

British Standards include a wide range of procedures for quantitative analysis – that is, for identifying the concentration of particular substances in a solution or mixture. Many of these involve titration, and include instructions for preparing the specific solutions needed. The Standard Procedures below are based on one such Standard.

Three main types of butter are made: salted, slightly salted and unsalted. The Standard doesn't specify how much salt is allowed in each – that's up to the manufacturers. They can use the procedures to test samples of their butter, to check that the salt level is as they want it.

- [SP 0007:2005](#) Method for preparing a titration reagent
- [SP 0008:2005](#) Method for determining the salt content of butter