

Quick Guide To Dilutions & Concentrations

This week we're back asking and answering more commonly asked questions on our [Quick Guides](#) series. One of these questions is how to dilute ingredients down to a specific concentration. Read on to find out how.

Certain ingredients like acids come in standard concentrations, such as [70% glycolic acid](#), [80% lactic acid](#), and [1% hyaluronic acid](#). But you may want to have a different concentration in your product. For example, you may want to have a total of 10% AHAs in your peel. So how on earth do you go from a 70% concentration of glycolic acid down to 10%?!

This is where dilutions come in.

Dilutions, concentrations and percentages are commonly found in chemistry, but fortunately you don't need to be a chemist to work with them! There is a simple equation that makes use of grade school math and a calculator that you can use to find out the dilutions required in order to achieve specific concentrations of actives in your products.

The equation is **$C_1V_1 = C_2V_2$** , where C is the concentration (%) and V is the volume (mils, or in our case we measure by weight not volume so it will be grams).

If you know any three of the values you can solve for the fourth!

Let's do an example.

Say we have some glycolic acid 70%, but we want to make a peel that contains a final concentration of 10% glycolic acid. How much glycolic acid do we need to use, and how much do we need to dilute it by?

We know C1, the starting concentration: glycolic acid is 70%. We also know C2, our end concentration, because we have decided we want it to be 10%.

I like working in amounts of 100g (or 100ml), because 100 is a nice round number to play with, and it is a 1:1 conversion from percentages. So here, 100g will be our V2. If you want a different amount you can simply change it to whatever you want.

So we will be solving for V1. Rearrange the equation to look like this:

$$V1 = C2V2/C1$$

Put your % amounts into decimal form for ease of calculation, eg. 10% = 0.1

$$V1 = (0.1 \times 100)/0.7$$

$$V1 = 14.29g$$

So you will dilute 14.29g of glycolic acid 70% with 85.71g (100g - 14.29g) of water or other ingredients to end up with 100g solution of 10% glycolic acid.

The $C1V1 = C2V2$ equation can be used for any concentration that you want to convert into a different concentration.

Recommended AHA concentrations for different products

Facial moisturiser, spritz, toner, serum: 0.5-2.5%

Body exfoliating products: 4-7%

Peel: 8-10%. Professional peels do go much higher than this but are performed under the supervision of a qualified dermatologist or skin care professional. We don't recommend going higher than 10% if you are simply doing a peel at home.

These recommended rates are also dependent on your skin type. If you have very sensitive skin, stick to the lower end of the spectrum. If your skin is hardy and you know you can take it, you can go higher.

Please wear SPF after using AHAs as they can cause skin sensitivity to the sun.