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What Do % V/V, % W/W and % W/V Mean?

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Posted on February 15, 2018 by [Jessica Clifton](#)

When buying chemical products online, you will notice that the concentrations are either marked as v/v, w/w or w/v. These are common expressions, so what do they mean *exactly*?

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% V/V

Volume concentration of a solution is expressed as % v/v, which stands for volume per volume. This is used when both chemicals in a solution are liquid.

For example, when 50ml of [sulphuric acid](#) is diluted with 50ml of water, there will be 50ml of sulphuric acid in a total volume of 100ml. Therefore, we would express the concentration of this solution as [sulphuric acid 50% v/v](#).

% W/W

Weight concentration of a solution is expressed as % w/w. Like before, this stands for weight per weight. In this case, the volume of each chemical is disregarded and only the weight is used.

So, if the total mass of a 100g solution is made up of 30g [hydrochloric acid](#) in 70g of water, then we would express this as hydrochloric acid 30% w/w.

% W/V



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If 1g of potassium iodide is used to make up a total volume of 100ml, then a 1% w/v solution of potassium iodide has been made.

Calculating Percentages

Each percentage type can be calculated by making small changes to the same method. For example, to find the % w/v of a solution the calculation is:

$$(\text{Mass of Solute (g)} / \text{Volume of Solution (ml)}) \times 100$$

Therefore, to figure out the % w/v of a 100ml solution that is made up of 65g nitric acid, we would divide 65g by 100ml and then multiply the answer by 100. This tells us that there is a nitric acid solution of 65% w/v.

When working out the % v/v of a solution, the same method is used except it is the volume of the solute (ml) that is divided by the volume of the solution (ml). For example, a 1000ml solution that contains 450ml [methanol](#) has a methanol concentration of 45% v/v ($450 / 1000 \times 100$).

Again, the method for calculating % w/w uses the same steps instead it is weight divided by weight.



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Jessica is a Director at ReAgent and leads a variety of growth projects. She has an extensive background in marketing, and has worked in the chemical manufacturing industry since 2019. When she's not writing articles for ReAgent, Jessica can be found on a run, in her campervan, building LEGO, or watching Star Wars.

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