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If we add sugar in water does the volume of water(water+sugar) increases ?

because there is a saturation point beyond which we cannot dissolve more sugar in water it means there should be some gap in molecules of water where molecules of sugar gets settled IF this is so then the volume should not rise..

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Best Answer: The general rule is that if you add a solute to water, the volume will increase. But by how much in the case of sugar dissolved in water? I have done some research on this for you and I have made some calculations. We will consider the following solutions: that is mass of sugar dissolved in 100cm³ of water.

Solution No1: 17.64g sugar dissolved in 100cm³ water: data is at 25°C (for calculation: 1cm³ water taken as 1g)

Total mass = 117.64g

Density = 1.0581g/cm³

Volume = mass/ density = 111.2cm³

Solution 2: 42.86g sugar dissolved in 100cm³ water

Total mass = 142.86g

Density = 1.1268g/cm³

Volume = mass/density = 126.8 cm³

In all cases the final volume is greater than the initial volume of water.

There are two things that you must consider here:

If you add , as in solution 2 above, 42.86g sugar to 100cm³ water and dissolve: If the volume did not increase you would have 100cm³ volume of sugar solution with mass 142.86g, which would mean that the density of the solution is 1.4286g/cm³. This is not correct - the density is much lower.

So two things are happening - some of the sugar molecules are filling gaps between the water molecules as well as other molecules having some volume of their own, which increases the volume of the whole system.

The second thing to consider is when we prepare molar solutions in the laboratory: Remember that molar means 1 mol of solute in a litre of solution.

Think: why the instructions are always given: weigh out 1.00mol of solute and dissolve in water to a final volume of 1.00 litres

If you attempt: weigh out 1 mol of solute and dissolve in 1 litre of water - you do not have a molar solution because the final volume is greater than 1.00 litre.

Conclusion: adding a solute to water results in an increase in volume.

Source(s):

[Trevor H](#) · 4 years ago

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So, if I understand this right, there will be no increase in volume until the solution hits a point when all the spaces between the water molecules are filled up? After that, adding sugar will increase the volume?

[Neia](#) · 3 days ago

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Depending on the amount to volume of sugar you dissolve. assuming you have the correct amount of sugar, dissolving it in water will fill the gaps in the water perfectly and will remain the same. otherwise it will still rise a little because there are more solid particles of sugar than the gaps of the water

but if your talking about its mass than it obviously will change a little

Source(s): my memory (hope its right) =D

[Christian](#) · 4 years ago

2

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This is an experiential answer.
When we made our elderflower cordial last week we used 1.2L water and 1.8kg sugar, the juice of two lemons,75g citric acid and 20 heads of elderflower. This yielded slightly over 2L of cordial(despite boiling the solution to dissolve all the sugar) Recipe by Sophie Grigson

I do not pretend to know the answer in terms of packing but it seems to me that hydrogen bonding comes into the explanation somewhere.

[Seeker](#) · 4 years ago

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No the volume doesn't increase because particles of matter have space between them.When we add sugar to the water the particles of sugar get into the spaces between the particles of water and the level of solution does not change. It is according to the kinetic theory of matter.

[Rupkatha Ghosh](#) · 4 years ago

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• we add suger in water the volume of water is increase due to hydrogen bonding suger take the plase in the water and make hydrogen bond so volume are increase

Source(s): chemistory books

[Ghanshyam](#) · 4 years ago

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• yes, the volume increases... because we did it already :)

[kate](#) · 7 months ago

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• Its increase but very little...!

Source(s): Book of science

[Pappu](#) · 4 years ago

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• certainly not da !
[Kandasamy](#) · 4 years ago

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