

## How to make CDS? – the easy way

There are several ways to obtain CDS as it is after all simply a way of diluting the chlorine dioxide gas resulting from the reaction of sodium chlorite with acid, in water.

The aim is to obtain CDS at a concentration of 3,000ppm (parts per million), this is important just so that when we talk about dosing; we always use this concentration in our protocols and in the laboratory.

There are other ways to make CDS, but we will start with the safest and easiest way to do it.

We will need:

- A one-litre airtight glass container.
- A shot glass (or a glass that fits inside the container).
- A syringe of at least 5ml.
- Water, distilled if possible or mineral still water.
- And of course the sodium chlorite together with the activator. To make CDS it does not matter if we use hydrochloric acid or citric acid since we will only recover the gas and leave the rest of the remaining product of the reaction as waste, which we can reuse for cleaning for example (and I assure you that it is really effective).

Remember to do this in a well-ventilated environment to avoid inhaling the gas that will come out of the mixture and protected from sunlight; the following steps should be followed to obtain our CDS at 3000ppm.

1 - We take the airtight container, put the shot glass inside and fill the container with water without it ever reaching the rim of the shot glass, this is important as no water should get inside (leave a margin of a few centimetres so that we can move it without risk).

2 - Put 5 ml of sodium chlorite and 5 ml of activator into the shot glass and close the container. You will see how the products react and change colour to a dark brown. At this point the chlorine dioxide starts to be released as a gas and will mix with the surrounding water. Store the container in a place protected from sunlight for 12 hours.

3 - After 12 hours we will see that the water has a slight yellowish colour due to the diluted chlorine dioxide inside, now comes one of the "delicate" steps as when we open the bottle some gas will come out from inside and that is why it is important to do it in a ventilated place (and not in direct sunlight as we have already mentioned, as the chlorine dioxide reacts with ultraviolet light). At this point it is time to remove the shot glass from inside the airtight container and close the container again immediately to prevent the gas from evaporating; we can store the product inside in a conventional PET bottle (plastic bottles of water or any soft drink will do) and we can use this waste for cleaning and disinfection at home.

4 - Repeat step 2, put 5 ml of sodium chlorite and 5 ml of activator into the shot glass (this time we do the reaction outside the container and then carefully introduce it) and close the container. They will react again and we keep the mixture again for another 12h.

5 - After this time we will be able to see how the colour of the water is already stronger, being yellow-greenish. Take out the shot glass again, taking care that the product inside does not mix with the CDS and quickly close the airtight bottle. After this time we will have a high quality CDS for our personal use (approximately 3000ppm). We can then transfer this CDS to a special PE (polyethylene), HDPE (high density polyethylene) or PP (polypropylene) bottle to keep it in our fridge (remember that it is preferable for the bottle to be darkened).

\* It is important to keep the CDS always cold in the fridge, as the gas separates from the water at temperatures above 11°C. If kept in the fridge and well sealed, it will last for months.