five senses COFFEE

70/30 water

A controlled solvent for coffee brewing.

70/30 water is proposed as a starting point for experimentation in controlled brewing. It is designed to be prepared from readily available materials. A water preparation procedure could be useful for cupping coffee under more standard conditions and a procedure for the controlled mineralisation of brew water is a starting point for further experimentation.

The name `70/30' is derived from the concentrations of bicarbonate and magnesium in the finished water. These concentrations are suggested based on guidelines published by the SCAA, presentations by Colonna-Dashwood and sensory evaluations conducted at Five Senses Coffee. This water is not suggested as perfect brew water, but as a step towards controlling water quality based on what is known so far.

The following text describes the preparation of this water with easily available materials and equipment. It really is very easy – easier than making coffee.

Ingredients

Low TDS Water • To begin with, you will need water with a low TDS. If you have access to a reverse osmosis unit, the water this produces would be a good start. Distilled water will be even cleaner. Failing this, read the nutritional information panel on bottled water at the supermarket and choose the one with the lowest numbers for whatever is listed (sodium, calcium and bicarbonate are likely ingredients.)

Bicarbonate • added in the form of sodium bicarbonate, this is easily obtained as a raising agent for baking; it might be labelled as `bicarbonate of soda'.

Magnesium • most easily obtained as Epsom salts, which are magnesium sulphate. I've found it easy to find in supermarkets and pharmacies.

How to prepare stock solutions

The aim is to get around a few hundredths of a gram of each of these substances into a litre of water. Because you probably don't have a set of scales which will weigh out five hundredths of a gram (or even half a gram), we will use a stock solution to make the quantities easier to handle.

Sodium Bicarbonate stock solution • Weigh out 14g of sodium bicarbonate into a measuring jug. Top the jug up to 1000 ml with low TDS water and stir until dissolved. Store this in a sealed bottle to limit contact with surrounding air.

Magnesium Sulphate stock solution • Weigh out 12g of Epsom salts into a measuring jug. Top up to 1000 ml and dissolve as per the sodium bicarbonate solution.

Using the solutions to make brew water

Simply add 1 metric teaspoon (5 ml) of each of these to a litre of low TDS water to make your final brew water. This water will then be approximately 70 ppm of sodium bicarbonate and 30 ppm of magnesium sulphate.

If you want to experiment with changing these concentrations, a graduated syringe is the cheapest way get millilitre accuracy.

Some notes on units

You will notice that the concentrations of these water additives are usually measured in ppm (parts per million), which is the same as milligrams per litre. The confusing thing is that this doesn't always refer to milligrams of what is actually in solution. For example, hardness is usually measured in ppm of calcium carbonate. It is assumed that the hardness is made up of calcium carbonate, but it might actually be made up of magnesium carbonate, or even other forms of magnesium and carbonate. The same applies to alkalinity. It can get quite complicated.

My advice is not to get too bogged down in this. For our purposes, units should refer to what is actually in the water, but you might want to bear the other complexities in mind when looking at measurements of your local water quality or at SCAA guidelines.

With that in mind, these instructions will produce water that is:

70 ppm $NaHCO_3$ and 30 ppm $MgSO_4$

42 ppm total alkalinity

25 ppm hardness as calcium carbonate

50 ppm bicarbonate ion

6 ppm Mg^{2+} ion

For a comparison with what might be coming out of your tap, the total alkalinity for our water here in Perth ranges from around 30 to 180 ppm (as calcium carbonate), while hardness ranges from around 30 to 230 ppm. Your local water authority should have similar figures readily available.

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