Basic Electolyte Mineral Water

Electrolytes have been popular for centuries, in fact the origin of the soda fountain is based on mineral waters and electrolytes is just a modern term for the mineral salts found in natural mineral springs. However, there is a limited number of mineral salts found in springs and some of those salts can be problematic to work with due to ther tendancy to react with one another which can cause solubility issues.

Today we have a much larger number of salts we can use to improve the flavour of these mineral waters. And in a scientific blind tastings people have well defined preferences for the total dissolved solids (TDS) content of mineral water, as well as the specific mineral/electrolyte types. This means you can customize your formulas to target a specific TDS range and types of minerals to develop a more enjoyable beverage.

For electrolyte or mineral water beverages, using salts that are soluble in water at 0°C (32°F) is important for stability and enjoyability. If the salts become sparingly soluble at low temperatures, like magnesium and calcium carbonate, they will form a sediment. This basic mineral formula is completely soluble in water of 0°C (32°F) and has a TDS of around 700 mg/L and is made with the mineral ions that people prefer, according to research[1].

Some historical mineral water formulas[2] are considered "medicinal" and have a very high mineral content. When you come across these, they are not meant as table or drinking water.

Instructions

Step 1: Create a Basic Mineral Water (100 servings)

1. Weight out each mineral salt individually
2. Combine the salts into a container with a lid
3. Shake thoroughly to get a uniform mixture

Step 2: Add Mineral Salt to Water

A 1/8 teaspoon will measure approximately 700 to 750 mg of the combined salts, which when added to 1000 mL (1L) of water will give you approximately 700 to 750 mg/L.

1. Using a 1/8 teaspoon measure firmly pack the salt
2. Add the salt to water and stir or shake until dissolved

* depending on the temperature of the water the salts may dissolve slowly, especially if the water is ice cold.

Step 3: Mineral Substitutions

If you are sensitive to the astringency or percieved bitterness of the mangesium sulphate, you can substitute 1000 to 2000 mg of magnesium glycinate. At 1000 mg you will get 14 mg of elemental magnesium.

Table 1: Basic Mineral Salt Formula

Ingredient	Amount	TDS	Minerals
Calcium Sulphate	20.0 g	200 mg/L	60 mg Ca
Magnesium Sulphate	15.0 g	150 mg/L	30 mg Mg
Sodium Bicarbonate	23.0 g	230 mg/L	75 mg Na
Potassium Bicarbonate	10.0 g	100 mg/L	39 mg K

* Ca is calcium, Mg is magnesium, Na is sodium, K is potassium

Table 2: Kessel Comparision Mineral Formula

Ingredient	Amount	TDS	Note
Sodium Chloride	32.0 g	1684 mg/L	
Magnesium Sulphate	15.0 g	789 mg/L	
Sodium Bicarbonate	5.0 g	230 mg/L	
Calcium Sulphate	6.0 g	316 mg/L	
Potassium Sulphate	1.0 g	52 mg/L	
Water	19L		5 gal keg

** Kessel water is high in sodium chloride and was served as a table water. It is more akin to Borjomi mineral water from Georgia that is high in salt.

Notes

1. Research Abstract: Predicting consumer preferences for mineral composition of bottled and tap water (Talanta, 2016)
2. Book: Mineral & Aerated Waters (1913). This is an excellent book on mineral water and their formulas.

Video Link: https://www.youtube.com/watch?v=rUS7qi6_xvQ