What is Reverse Osmosis or RO?

Reverse osmosis is the gold standard for drinking water purification. RO water purification has been used for decades to remove a wide variety of suspended solids like dirt, silt, algae, bacteria, and cyst parasites as well as dissolved solids like sodium, fluoride, lead and arsenic.

Reverse osmosis membranes reduce the concentration of dissolved solids, including a variety of ions and metals, and very fine suspended solids that may be found in water.

In the reverse osmosis process, pressure is applied to one side of a selective or semi-permeable membrane barrier. Purified water flows through the membrane.

Concentrated salts, metals and various suspended solids are prevented from passing through the membrane due to feed pressure, solute concentration and water flux rate as well as the charged membrane surface itself.

Because this technique reverses the normal process of osmosis, it came to be called reverse osmosis or RO.

What is the difference between filtration and reverse osmosis or RO?

Regular filters exclude (or retain) particles based on size. This sieving process is generally independent of pressure or concentration. Reverse osmosis or RO water purification involves a diffusive mechanism where water forced through a semi-permeable membrane. The separation of pure water from dissolved and suspended solids is achieved via solute concentration, pressure, and water flux rate.

What are Suspended Solids?

Suspended solids in drinking water are usually composed of a mixture of dirt, silt or algae. These are very small particles, many that are easily visible to the unaided eye, that float in the water. A well-regulated municipal water treatment plant will reduce

most of the suspended solids to a pretty low level but the remaining particles can impart an off-taste or odor.

What are Dissolved Solids?

Pure water has the ability to dissolve a wide variety of substances. If you place a small amount of salt or sugar in water and stir, you will see the solid particles dissolve into the water. This is like what happens as water travels through, or over, certain kinds of rocks. Small amounts of salts and hardness will dissolve into the water - for example calcium carbonate, magnesium sulfate, sodium chloride and bicarbonate. These substances are not harmful in small concentrations but there are many areas in the world where the total dissolved material may exceed accepted standards for good hydration, generally 500 ppm. In addition, many people feel coffee, tea, and cooking water tastes best with lower TDS or total dissolved solids.

What does TDS mean?

Total dissolved solids or TDS is a term for all of the salts and hardness that are dissolved in water. TDS is usually expressed in parts per million or ppm. For example, high TDS drinking water might have a TDS measurement of 500 ppm. In general, TDS that is higher than 500 ppm is considered unsuitable for human consumption. Brackish water has more salinity than fresh water, but not as much as seawater. Brackish water contains between 500 and 30,000 ppm salt. Seawater may be 30,000 to 50,000 ppm.

How do I find out what disinfection agents are being used by my local water utility?

If you are curious about how the water from your local water utility is treated, a 1998 Federal mandate requires all municipal water treatment facilities to prepare annual water quality reports called Consumer Confidence Reports. Ask your local water utility for a copy of this report.

How can I measure the contaminants in my drinking water? Is there a home test to measure the contaminants in my tap water?

The easiest way to measure total dissolved solids (TDS) in your tap water is with a simple, digital TDS Water Quality Tester. This meter uses an electrical pulse to measure the conductivity of the dissolved salts. The number on the digital readout is expressed in parts per million (ppm).

For example:

If your tap water returns a reading of 500 ppm and your product water (the water from the WaterMaker Five faucet) returns a reading of 20 ppm, the reduction in TDS would be calculated with this formula:

((TDS in feed water - TDS in product water)/TDS in feed water) * 100 = % reduction

((500 - 20)/500) * 100 = 96% reduction

Or you can use a TDS calculator to find out the TDS reduction percentage. We recommend the membrane cartridge be changed whenever the TDS reduction drops below 85%.