PRODUCT INFORMATION

Ion Exchange units

PROSEP
Private Water Supply Services

Water contains salts which are dissolved naturally in water.
These salts are dispersed as ions which may be positively (cation) or negatively charged (anion). Generally these salts are not very soluble.

It is these ionic impurities in water which allow water to conduct electricity. The measure of a fluids ability to conduct electricity is called its conductivity. The higher the conductivity reading the higher the impurity level.
The principal of ionic exchange is when a solution with a higher concentration of ions displaces those ion with a lower concentration.

An ion exchange system is regenerated periodically with a brine solution. The brine solution is drawn up into the vessel and allowed to stand. During this standing time the ions of sodium displace the ions of calcium and manganese which are flushed to drain leaving the exchange resin loaded with sodium ions. When hard water is then passed through the unit these ions of sodium are displaced by calcium and manganese. This results in the treated water having a higher level of sodium than the raw water.
Care must be taken when using softened water for drinking as we need to consider that the sodium level after treatment must not exceed the prescribed limit of 200ug/l. For this reason we need to know the level of hardness in the untreated water as this has a direct relationship with the residual sodium in the treated water.
There is a misconception that if there is sodium in the water resulting from the use of a brine solution to regenerate the resin then the water will taste salty. This is not correct.

How does it work?

Ionic exchange units are fitted with automatic backwash valves. The complete unit is made up from a composite vessel filled with ion exchange media, the automated backwash valves is fitted to the top of this vessel, and a brine tank is provided to contain the salt and brine solution.
The water is passed through the control valve and down through the vessel. As the water passes across the resin bed, the ions of iron and manganese become attached to the resin so the water leaving the unit contains reduced levels of Iron and manganese. Periodically, depending on how much water is used, the resin needs to be refreshed. This is done by flushing a small amount of brine (stored in an external brine tank), though the composite vessel containing the resin. Once this process has been completed the resin is refreshed and ready to begin again.

Vessel	10.44	10.54	12.52	13.54	14.65	16.65
Forward flow cu.m.h	1.6	2.0	2.5	3.0	5.0	6.0
Capacity in cu.m/h @ 300 ppm CaCO3	6.7	8.3	10	12.5	20	25

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