



Desalination

Removal of common salt (NaCl) from water is called Desalination

Fresh water ==→ 1000ppm.

Brackish water ==→ 1000 to 35000ppm.

Sea water ==→ > 35000ppm.

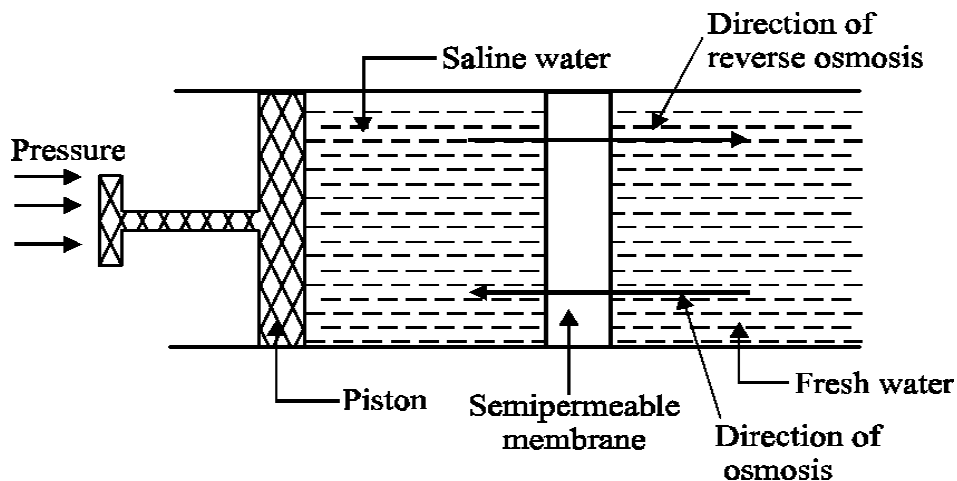
Principle:

Osmosis can be defined as the phenomenon of spontaneous flow of solvent molecules from dilute solution side to concentrated solution side, when they are separated by a semi-permeable membrane. The driving force for this phenomenon is called osmotic pressure. If a hydrostatic pressure in excess of osmotic pressure is applied on the concentrated solution side, the direction of solvent flow can be reversed

i.e higher concentration to lower concentration and the process is called reverse osmosis. This method is sometimes also called as **super-filtration** or **hyper-filtration**.

Method:

In this process, pressure (of the order 15 to 40 kg/cm²) is applied to the sea water to force its pure water out through the semi-permeable membrane; leaving behind the dissolved solids (both ionic and non ionic). The membrane consists of very thin films of cellulose acetate, polymethacrylate and polyamide polymers. The principle of reverse osmosis, as applied for treating sea /saline water, is illustrated in Fig



Advantages:

1. The life time of the membrane is high.
2. Membrane can be replaced within short time.
3. It removes all types of impurities
4. Water obtained by this process is used for high pressure boilers
5. Process is used for converting sea water into drinking water.