

MEMBRANE PROCESS

- a. High pressure process

1. Reverse Osmosis (RO)

- Force the flow of solvent in opposite direction from the higher to the lower concentration, by increasing the pressure on the higher concentration solution

- Pressure - 15 - 50 bar

- Rejects - monovalent ions & organics of molecular weight > 50 Daltons

- Most common application - desalination of sea water

- 2.

Nanofiltration

- Uses membrane with properties between RO & Ultrafiltration • Pressure - 5 bar • Rejects - divalent ions (Ca, Mg) & higher molecular weight organics
- Effective for removal of color forming organic compounds

b. Lower pressure process • 1. Ultrafiltration

- Similar to RO but with larger pore size & at low pressure
- Pressure < 5 bar

Rejects - organic molecule with molecular weight 800

Daltons

2. Microfiltration

- Direct extension of conventional filtration into sub micrometer range
- Pressure - 2 bar (lower pressure membrane process for treatment of water)
- Rejects - colloid, suspended material & particle $> 0.5 \mu\text{m}$
- Used for water treatment to remove particulates & organic carbon prior to RO