

Membrane separation process is a process where a membrane is used to separate the components in a solution by rejecting unwanted substances and allowing the others to pass through the membrane. The role of the membrane is also to change the composition of a solution on the basis of relative permeation rates.

There are different methods of separation employed using membranes such as —

- 1) Microfiltration.
- 2) Ultrafiltration
- 3) Reverse osmosis.
- 4) Electrodialysis
- 5) Gas separation
- 6) Pervaporation.
- 7) Nanofiltration.
- 8) Electrolysis.
- 9) Vapor permeation.
- 10) Dialysis.

The role of the membrane is also to change the composition of a solution on the basis of relative permeation rates. Membrane performance can be measured by the ability of the membrane to prevent, regulate or enhance the permeation.

Flux or permeation rate is the volume of liquid flowing through the membrane per unit area and per unit time and is generally expressed in terms of $[L m^{-2} h^{-1}]$ and permeability by $L m^{-2} h^{-1} bar^{-1}$.

Permeate designates the liquid passing through the membrane, and retentate (concentrate) designates the fraction not passing through the membrane.

