



2-4. General Property of CSM RO Membranes

2-4-1. General Separation Property of RO Membrane

- Inorganic solutes are rejected by RO membrane better than organic solutes. Organic solutes with molecular weight (MW) larger than 100 are also well rejected by the membrane
- Ionizable solutes are rejected better than non-ionizable solutes.
- Ionizable solutes with higher charges are rejected better than lower charges. For examples, aluminum ion (Al^{3+}) is rejected better than magnesium ion (Mg^{2+}) which is in turn rejected better than sodium ion (Na^+).
- The rejection of inorganic solutes depends also on the size of the ions and the size of hydrated ions. The bigger the ions and the hydrated ions, the better they are rejected
- The bigger the non-ionizable solutes (the higher the molecular weight), the better the rejection.
- Gases with MW lower than 100 can easily permeate through the membrane. For example, the rejection of ammonia, chlorine, carbon dioxide, oxygen and hydrogen sulfide is very low.
- The rejection of weak acids is low, which also depends on the MW of the acids. The rejection of the following acids is decreasing in the order of citric acid, tartaric acid and acetic acid as the MW of the acids decreases.

2-4-2. Characteristic Property of CSM RO Membranes.

- High permeate flux and high salt rejection
- Chemically stable in a wide range of pH (pH 2 - 12)
- Long membrane life time
- Resistant to a biological attack
- Operable in a wide range of pressure (20 – 1000 psig)
- Operable at a wide range of temperature (4 – 45 °C)
- Economical