Thermodynamic equations of stability and solubility of carbon dioxide hydrate were developed using the Pitzer method [1] with regard to the proposed disposal of CO₂ in the ocean. The effect of high CO₂ concentration on phase equilibrium was taken into account using the Pitzer method. Dissociation pressures were calculated for temperature and salinity ranges of 273 to 283 K and 0 to 40 for temperature and salinity respectively. The calculation of dissociation pressures has been approximated as a function of temperature and salinity by empirical equation. The solubility of carbon dioxide hydrate was calculated for the same temperature and salinity ranges as well as for hydrostatic pressures (Pdis) up to 50 MPa. It was found that the solubility of the hydrate increases with increasing temperature and decreasing hydrostatic pressure. An empirical equation describing hydrate solubility as a function of salinity, temperature, and pressure was obtained. In comparison with liquid CO₂, the hydrate reduces the major environmental impact of ocean CO₂ disposal, as seawater equilibrated with hydrate was found to have a higher pH than that of liquid CO₂ by more than a 0.15 pH unit.