The Thermodynamic Consideration for Fe–H₂O System at 25°C*

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Abstract

For a better understanding of the rusting of iron and steels in aqueous solutions producing FeOOH’s, the standard free energies of formation ($\Delta F^\circ$) of iron species in Fe-H₂O system at 25°C were summarized and the solubility and potential-pH diagrams were constructed in which $\alpha$-FeOOH, $\gamma$-FeOOH and FeOH⁺, etc. are considered. The calculated diagrams have been compared with practical corrosion of steels.

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