

IMPROVING THE ASSESSMENT OF OXIDE SYSTEMS CONTAINING TiO₂ FOR APPLICATIONS IN STEELMAKING

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In order to expand and improve the description of steelmaking oxide mixtures based on the IRSID model, our previously reported assessment of the pseudo-binaries Al₂O₃-TiO₂, MgO-TiO₂, MnO-TiO₂ were improved and the FeO-TiO₂ system was assessed using the Kapoor-Frohberg-Gaye modified quasi-chemical model together with stoichiometric solid oxides. The Gibbs energies of some intermediate oxides were slightly modified from the accepted SGTE values, less than 1% of their original energy, to improve the overall fitting. The pseudo-binary diagrams were in excellent agreement with published diagrams and previously published assessments. Comparison is made to some pseudo-ternary diagrams. When used together with the liquid iron phase described using a sub-regular model with coefficients derived from dilute solution data the expanded description for the liquid oxide phase is able to properly describe inclusion precipitation sequences in steels containing titanium additions.