

Effect of Impurities in the Chlorination Process of TiO₂

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Abstract : With the increasing interest on Ti alloys, the extraction process of Ti from its typical ore, TiO₂, has long been and will be important issue. As an intermediate product for the production of pigment or titanium metal sponge, tetrachloride (TiCl₄) is produced by fluidized bed using high TiO₂ feedstock. The purity of TiCl₄ after chlorination is subjected to the quality of the titanium feedstock. Since the impurities in the TiCl₄ product are reported to final products, the purification process of the crude TiCl₄ is required. The purification process includes fractional distillation and chemical treatment, which depends on the nature of the impurities present and the required quality of the final product. In this study, thermodynamic analysis on the impurity effect in the chlorination process, which is the first step of extraction of Ti from TiO₂, has been conducted. All thermodynamic calculations were performed using the FactSage thermodynamical software.

Keywords : rutile, titanium, chlorination process, impurities, thermodynamic calculation, FactSage

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