A novel leaching process for ilmenite by caustic digestion using potassium hydroxide

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At the present study, a novel leaching process for ilmenite was examined by caustic digestion using KOH at atmospheric pressure. Ilmenite concentrate was decomposed by hydrothermal method to transform ilmenite to an easily soluble material at relatively low acid concentration, and then it was dissolved in HCl solution to observe the leaching behavior of Ti and Fe. During the caustic digestion tests, concentration of KOH solution, particle size of ilmenite were varied from 60 wt% to 80 wt%, and −25㎛ to +45/−75㎛, respectively. In result, 100% of Ti and Fe were leached at 2M concentration of HCl solution within 40 minutes at ambient temperature with 300 rpm when ilmenite concentrate was digested at the following condition; −25㎛ particle size, 80 wt% concentration of KOH, 300 rpm agitation, 5 hours retention time, 1:20 pulp density, 200°C temperature.

Keywords : ilmenite, leaching, caustic digestion, potassium hydroxide