

INFLUENTIAL PARAMETERS ON THE DISSOLUTION RATE OF LIMESTONE SAMPLES OF TIRUNELVELI DISTRICT, TAMIL NADU, INDIA

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Abstract

Calcium carbonate (CaCO_3) is an abundant mineral comprising approximately 4% of the earth's crust. The CaCO_3 has received much attention owing to its wide application in such industrial fields as paper, rubber, plastics, paint, etc. Flue gas desulphurization (FGD) employs limestone suspension to absorb SO_2 . The rate of CaCO_3 dissolution in slurry scrubbers for FGD affects SO_2 absorption, $\text{CaSO}_3/\text{CaSO}_4$ scaling, and ultimate CaCO_3 utilization. Increasing the limestone dissolution rate for limestone-containing slurries used in wet Flue gas desulphurization (WFGD) systems allows courser limestone particles, lower limestone stoichiometry and lower slurry recycle rates to be employed, thereby saving capital and operating costs. The influence of P^{H} value, temperature, variation in particle size, rotation speed on limestone dissolution rate is investigated in this study. This study focuses on the suitability of certain limestone samples from the Tirunelveli district of Tamil Nadu, India and is based on the most influential parameters on the reactivity of marginal grade limestone samples in slurry scrubbers for FGD.

Keywords: Limestone, Local source, Dissolution, Desulphurization, Industry

