The kinetics of reaction of calcium oxide and sulphur dioxide by iron(III)oxide catalyst was investigated in a packed bed reactor.The reactor vessel, 2.5 cm. in diameter and 30 cm. heigh, was loaded by mixture of calcium oxide and iron(III)oxide with specific diameter 75-150 µm.

For the reaction of calcium oxide and sulphur dioxide by iron(III)oxide catalyst, the optimum amount of iron(III)oxide catalyst was obtain. The effect of flow rate on the rate of reaction was studied. The optimum amount of iron(III)oxide catalyst is 8%Fe_2O_3. The rate of reaction decreased with increasing flow rate because of the decrease of the resident time.

The kinetics of the reaction was also studied, 8%Fe_2O_3, 200 mg mixture of calcium oxide and iron(III)oxide, experimental temperature of 400-500 $^\circ$c and concentration of SO_2 2000-5000 ppm. The rate equation was determined. It is found that the order of reaction is 0.84 with respect to initial concentration of SO_2. The rate equation is expressed as follows:

$$-r_{(SO_2)o} = 9.49 \times 10^{-4} \cdot e^{-763.5/T} \cdot [C_{SO_2}]_o^{0.84}$$

$$k = 9.49 \times 10^{-4} \cdot e^{-763.5/T}$$

It is also found that the gas film resistance and pore resistance does not effect on the rate of reaction.

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