The kinetics of the Meyers process desulfurization of Mae Moh coal, by the oxidation of the pyritic sulphur with aqueous ferric chloride and aqueous ferric sulphate in a stirred batch reactor has been investigated. The sulfur and ash removal rate was found to increase significantly with increasing ferric ion concentration, temperation and time but decrease with increasing coal particle size. The rate of pyritic sulphur removal was found to be well represented by a continuous reaction model that was second order with respect to pyritic sulfur. The rate constant for pyritic reaction ($k_2$) of Mae Moh coal in aqueous ferric chloride was :

$$k_2 = 5.1 \times 10^{-2} \exp(-14.30 \times 10^6/RT)$$

and in aqueous ferric sulphate was :

$$k_2 = 6.3 \times 10^{-2} \exp(-14.50 \times 10^6/RT)$$

The pyritic sulphur removal reaction was also well described by the unreacted shrinking core model with the indication that the desulfurization was predominantly diffusion of ferric ion through product layer controlled. The effective diffusivity ($De$) for pyrite reaction of Mae Moh coal in aqueous ferric chloride was :

$$De = 5.1 \times 10^{-8} \exp(-15.40 \times 10^6/RT)$$

and in aqueous ferric sulphate was :

$$De = 2.4 \times 10^{-8} \exp(-12.45 \times 10^6/RT)$$