

Desulfurization characteristics of domestic limestones for oxy-CFB boilers

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Limestone is generally used as a desulfurizing agent material in circulating fluidized bed (CFB) boilers. In order to study desulfurization characteristics of domestic limestones, the effects of particle size (0-75, 75-106, 106-212, 212-300, 300-500 and 500-1000 μ m), desulfurizing temperature (750, 800, 850 and 900 $^{\circ}$ C), and SO₂ concentration (550, 1031, 1375, 2062 and 2750 ppm) on desulfurizing conversion were investigated in thermogravimetric analyzer (TGA, TG1000). The limestones used in these experiments is commercially used in domestic CFB boilers. As a result, the desulfurization conversion was inversely proportional to particle sizes. But there was proportional to desulfurizing temperature and SO₂ concentration. In general SO₂ removal efficiency was drastically reduced in more than 850 $^{\circ}$ C. However, SO₂ removal efficiency increased over 900 $^{\circ}$ C when the average particle size of limestones was lower than that in CFB boilers. Finally, the empirical equation for predicting SO₂ removal efficiency was suggested in this study.