

고온 고압 조건하의 입자 마모 특성 및
모형 연구

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The attrition characteristics of PKM1-SU particles, absorbents for pre-combustion CO₂ capture process, were investigated under varying experimental conditions, such as test apparatus, static bed height, temperature, pressure, gas velocity, and humidity. As a reference material for comparison, FCC (fluid catalytic cracking) catalyst was also used. In this study, attrition characteristics caused by the gas jets of the distributor were evaluated using a conventional ASTM D5757-95 attrition test apparatus and a newly designed high temperature and high pressure bubbling fluidized bed attrition test apparatus. The attrition amount (or rate) of particles (PKM1-SU, FCC catalyst) increased with increasing pressure and increasing gas velocity, whereas it decreased with increasing static bed height and increasing temperature. In the case of the FCC catalyst, attrition characteristics were not affected by humidity, whereas those of the PKM1-SU particles were strongly affected. The attrition rates of PKM1-SU were far higher in the early period (1 hr) than those in the later period (2~5 hr). Therefore, CWLI(5), corrected weight loss index, along with WLI(5), weight loss index, should be definitely considered.