

Test of Steam Explosion after Dilute Acid Percolation for the Maximum Recovery of Sugar from Agricultural Waste Feed-stocks

황경란, 이준표, 박순철*
한국에너지기술연구원
(bmspark@kier.re.kr*)

The technical conversions of cellulosic biomass to transportation fuels and chemicals would open up major new agricultural markets and provide powerful societal benefits and energy opportunities. For the high yield commercial processes, pretreatment of cellulosic biomass is an essential tool that has a major impact on costs and performance of entire system. In this study, steam explosion after dilute acid percolation, SEDAP, was tested for the maximum recovery of all sugars including xylan, glucan and the lignin from the corn cob, stalk, rice straw and reed and the percolation and explosion products were recovered and subsequently test hydrolysed to obtain maximum conversion of glucan by cellulase. The solid recovery after SEDAP was 74%(rice straw) ~ 99% (corn stalk) estimated to be very high compared with conventional steam explosion only. SEDAP pretreated substrates showed 72.7 ~ 93.6% enzymatic hydrolysis yield at proper operation conditions and produced 335g ~ 457g of sugars from 1000g of dried biomass.