

183a Recent Process Improvements for the Afex Process and Resulting Processing Cost Reductions

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The Ammonia Fiber Explosion (AFEX) process has been shown to be an effective pretreatment for lignocellulosic biomass, but previous cost estimates developed for this process are based on outdated assumptions. Recent research has reduced overall ammonia requirements, reduced the ammonia concentrations required, and has also reduced the enzyme loadings needed to obtain high (over 90%) conversions of glucan and xylan to monomeric sugars. Capital and operating costs for a "stand alone" AFEX process based on these exciting new research results are presented and compared to previous cost estimates. The AFEX process is also considered as part of an overall biorefining system producing fuel ethanol from biomass and the cost of ethanol production is estimated and compared with previous results.