

## A STUDY ON THE EFFECT OF MIXING INTENSITY ON CYCLODEXTRINS PRODUCTION UNDER BATCH PROCESS

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### ABSTRACT

Cyclodextrins are inexpensive enzyme-modified starch derivatives which are widely applied in food, cosmetic, pharmaceuticals and plastic industries. These starch derivatives are non-toxic ingredient which would act as an encapsulator if introduced to other colloidal. Cyclodextrins are produced from starch source resulted from enzymatic reaction of cyclodextrin glucosyltransferase (CGTase). As the world demand for cyclodextrins is increasing, the pilot scale reactor was therefore fabricated in order to produce cyclodextrins which is commensurate to current demand. In pilot scale operation, mixing intensity parameter is one of the operational factors that could substantially affect the reaction efficiency. Thus, this study investigates the effect of mixing intensity in cyclodextrins production with a custom-made pilot plant reactor of 10 L volume. The high performance liquid chromatography (HPLC) was used to identify the concentration of cyclodextrins at various impeller speeds. The result showed that the yield of cyclodextrins was increased gradually with the impeller speed until it reached the optimum concentration at 300 rpm. Observation after 300 rpm shows decrement of cyclodextrin production which was might probably due to the inactivation of CGTase enzyme activity at high rpm.

**Keywords:** Cyclodextrins; Mixing Intensity; HPLC; Reactor