

INTISARI

Aseton sianohidrin ($(\text{CH}_3)_2\text{COHCN}$) diproduksi dari aseton ($(\text{CH}_3)_2\text{CO}$) dan asam sianida (HCN) dengan katalisator basa NaOH dalam reaktor alir tangki berpengaduk (RATB). Tekanan operasi dalam reaktor adalah 2 atm dengan suhu reaksi pada 35°C . Reaksi pembentukan merupakan reaksi eksotermis sehingga reaktor dilengkapi dengan koil pendingin.

Pabrik aseton sianohidrin ini dirancang dengan kapasitas 20.000 ton/tahun dan direncanakan beroperasi kontinyu selama 330 hari setahun. Proses produksi aseton sianohidrin 99,5% memerlukan bahan baku aseton 99,5% sebanyak 13.720,88 ton/tahun, HCN 99% sebanyak 6.389,64 ton/tahun dan NaOH 99% sebagai katalisator sebanyak 199,06 ton/tahun, dan asam sulfat 98% sebanyak 246,53 ton/tahun.

Pabrik ini akan dibangun di kawasan industri Karawang, Jawa Barat pada tahun 2020, dengan luas tanah 20.381m^2 , dan membutuhkan tenaga kerja sebanyak 218 orang.

Modal tetap yang perlu diinvestasikan sebesar Rp 534.921.806.654,41 dan modal kerja sebesar Rp 94.397.965.880,19.. Hasil evaluasi ekonomi menunjukkan keuntungan sesudah pajak Rp 220.438.707.347,05. *Return on Investment* (ROI) sesudah pajak sebesar 35 %. *Pay Out Time* (POT) sesudah pajak 1,94 tahun. *Discounted Cash Flow Rate of Return* (DCFRR) 31,9 %, *Break Even Point* (BEP) pada kapasitas pabrik sebesar 41 % dan *Shut Down Point* (SDP) pada kapasitas pabrik 27 %. Berdasarkan hasil evaluasi ekonomi tersebut, disimpulkan pabrik ini menarik untuk dikaji lebih lanjut.

ABSTRACT

Acetone cyanohydrin ((CH₃)₂COHCN) is produced from acetone ((CH₃)₂CO) and hydrocyanic acid (HCN) with base catalyst NaOH in a continuous stirred-tank reactor (CSTR). The operating pressure in the reactor is 2 atm with the reaction temperature at 35 ° C. The formation reaction of acetone cyanohydrin is exothermic reaction so that reactors are equipped by cooling coil.

The factory is designed with 20,000 tons/year capacity and it is planned to operate continuously for 330 days/year. The raw materials to produce acetone cyanohydrin 99,5% required are acetone 99.5% as much as 13.720,88 tons/year, HCN 99% as much as 6.389,64 tons/year and 99% NaOH as a catalyst as much as 199,06 tons/year, sulfuric acid 98% as much as 246,53 tons/year.

The factory is planned to be built in the industrial area Karawang, West Java in 2020, with requires land area as 20.381 m², and requires a workforce of 218 employees.

Fixed capital needed is Rp 534.921.806.654,41 and working capital of Rp Rp 94.397.965.880,19. The results of an economic evaluation showed a profit after taxes is Rp 220.438.707.347,05. Return on Investment (ROI) after tax of 35%. Pay Out Time (POT) 1,94 years for after tax. Discounted Cash Flow Rate of Return (DCFRR) is 31,9%, Break Even Point (BEP) at 41% and Shut Down Point (SDP) at 27% of plant capacity. Based on the results of the economic evaluation, the plant is deserved to be studied further.