



INTISARI

Prarancangan pabrik poli aluminium klorida dari pyrophyllite ini dimaksudkan untuk mengetahui kelayakan pendirian pabrik yang memproduksi poli aluminium klorida dengan kapasitas 30.000 ton/tahun. Pabrik ini beroperasi selama 330 hari/tahun dan 24 jam/hari.. Dalam proses *leaching*, *pyrophyllite* digunakan sebanyak 65137,04 ton/tahun sebagai bahan baku utama dan larutan HCl sebanyak sebanyak 325685,1785 ton/tahun digunakan sebaga bahan baku pembantu. Semua bahan baku diproses dalam reaktor alir tangki berpengaduk yang dijalankan pada tekanan atmosferis dan suhu 80°C.

Pabrik ini direncanakan akan didirikan di kawasan industri Rungkut, Surabaya. Pabrik ini memperkerjakan 197 orang karyawan. Untuk keperluan utilitas, diperlukan air sebanyak 30,4487 m³/jam yang disuplai dari Kali Surabaya. Kebutuhan listrik sebanyak 2.296,42 kW kW berasal dari PLN. Pabrik ini juga mempunyai unit pembangkit *steam*, unit penyedia udara tekan, dan unit pengolahan limbah.

Dalam menjalankan produksi, pabrik poli aluminium klorida ini membutuhkan modal tetap sebesar \$43.784.778,31 dan Rp27.029.483.803,37 dan modal kerja sebesar Rp737.069.016.500,94. Keuntungan yang diperoleh sebelum pajak sebesar Rp. 201.255.022.840,49, sedangkan keuntungan setelah pajak sebesar Rp. 100.627.511.420,24. Setelah dilakukan evaluasi ekonomi terhadap pabrik ini, maka diperoleh nilai ROIB 24,58%, ROIa 12,29%, POTb 2,89 tahun, POTa 4,49 tahun, BEP 49,18%, SDP 31,23% dan DCFRR 19,99%. Berdasarkan nilai-nilai tersebut, dapat disimpulkan bahwa pabrik ini menarik dan layak untuk dikaji lebih lanjut.

Kata kunci: Poli aluminium klorida, *pyrophyllite*, Surabaya, *leaching*



ABSTRACT

Preliminary plant design of poly aluminium chloride manufacturing from pyrophyllite studies its feasibility to produce poly aluminium chloride with production capacity of 30.000 tons/year. The plant continuously operates in 330 days a year and 24 hours a day. In leaching process, pyrophyllite is needed as main raw material at rate 65137,04 tons/year, and chloric acid solution are needed as supporting raw material at rate 325685,1785 tons/year. Raw material is processed in the continuous stirred tank reactor that is operated under condition atmospheric pressure and 80°C temperature.

The plant is planned to be established at industrial area in Rungkut, Surabaya. It is supposed to employ about 197 workers. This plant utilizes water from Surabaya river at rate of 30,4487 m³/hour before is processed in utility section. The electricity is supplied by PLN is 2.296,42 kW. This plant also has steam reforming section, instrument air section, and waste water treatment section.

Fixed capital of \$43.784.778,31+Rp27.029.483.803,37and working capital of IDR 737.069.016.500,94 are needed to establish the plant. It provides IDR 201.255.022.840,49 as profit before tax or IDR 100.627.511.420,24 as profit after tax. Based on economic analysis, Return of Investment (ROI) is 24,58% before tax or 12,29% after tax. Pay Out Time (POT) is 2,89 years before tax or 4,49 years after tax. Break Even Point (BEP) is 49,18% and Shut Down Point (SDP) is 31,23%. Discounted Cash Rate of Return (DCFRR) is 19,99% per year. Therefore, further research in poly aluminium chloride for pyrophyllite with production capacity of 30.000 tons/year should be carried out.

Keywords: *Poly aluminium chloride, pyrophyllite, Surabaya, leaching*