

**ABSTRAK**

**PRARANCANGAN PABRIK 2-ETILHEKSIL AKRILAT DARI ASAM  
AKRILAT DAN 2-ETIL HEKSANOL KAPASITAS 46.000 TON/TAHUN  
(Perancangan Reaktor (RE-201))**

**Oleh**  
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2-Etilheksil Akriolat ( $C_{11}H_{20}O_2$ ) merupakan salah satu ester dari Asam Akriolat yang berfungsi sebagai bahan baku perekat, pelarut dalam industri cat, pelapis, industri tekstil, dan tinta printer. 2-Etilheksil Akriolat dapat diproduksi dengan 3 jenis proses reaksi yaitu Esterifikasi Berkatalis Cair, Esterifikasi Berkatalis Padat, dan Distilasi Reaktif. Penyediaan kebutuhan utilitas pabrik berupa unit penyediaan dan pengolahan air, penyediaan dan pengolahan refrigerasi, penyedia hot oil, penyedia udara instrument, pembangkit dan pendistribusian listrik, dan pengolahan limbah. Pabrik ini akan memproduksi 2-Etilheksil Akriolat dari bahan dasar Asam Akriolat dan 2-Etilheksanol dengan kapasitas 46.000 ton/tahun. Operasional pabrik direncanakan berlangsung secara berkelanjutan selama 330 hari per tahun dan berlokasi di Kota Cilegon, Banten.

Dari analisis ekonomi diperoleh:

Fixed Capital Investment (FCI)	= Rp 3.843.428.092.889
Working Capital Investment (WCI)	= Rp 427.047.565.877
Total Capital Investment (TCI)	= Rp 4.270.475.658.766
Break Even Point (BEP)	= 40%
Shut Down Point (SDP)	= 20%
Pay Out Time before taxes (POT) <sup>b</sup>	= 1,915 tahun
Pay Out Time after taxes (POT) <sup>a</sup>	= 2,285 tahun
Return on Investment before taxes (ROI) <sup>b</sup>	= 38%
Return on Investment after taxes (ROI) <sup>a</sup>	= 30%
Discounted Cash Flow (DCF)	= 38,30%

Berdasarkan beberapa paparan di atas, maka pendirian pabrik 2-Etilheksil Akriolat ini layak untuk dikaji lebih lanjut, karena merupakan pabrik yang menguntungkan dari sisi ekonomi dan mempunyai prospek yang relatif cukup baik.

## ABSTRACT

### PRELIMINARY DESIGN OF 2-ETHYLHEXYL ACRYLATE PLANT FROM ACRYLIC ACID AND 2-ETHYLHEXANOL WITH 46,000 TONNES/YEAR CAPACITY

(Design of Reactor (RE-201))

By

**RIDHA RAHMAWATI**

2-ethylhexyl acrylate ( $C_{11}H_{20}O_2$ ) is one of the esters of acrylic acid which functions as a raw material for adhesives, solvents in the paint industry, coatings, textile industry, and printer ink. 2-Ethylhexyl acrylate can be produced through three types of reaction processes, namely liquid-catalyzed esterification, solid-catalyzed esterification, and reactive distillation. The provision of plant utilities includes water supply and treatment units, refrigeration supply and processing systems, hot oil supply units, instrument air supply units, power generation and distribution systems, and waste treatment facilities. This plant is designed to produce 2-ethylhexyl acrylate from acrylic acid and 2-ethylhexanol with a capacity of 46,000 tons per year. The plant is planned to operate continuously for 330 days per year and will be located in Cilegon City, Banten Province.

From the economic analysis, it was found:

Fixed Capital Investment (FCI)	= Rp 3.843.428.092.889
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Based on the explanations presented above, the establishment of this 2-ethylhexyl acrylate plant is feasible to be further studied, as it is economically profitable and has relatively good prospects.