Oleic Acid Plant from Crude Palm Oil with Continuous High Pressure Splitting and Fractional Distillation Process

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Abstract

Oleic acid factory of derived from crude oil capacity of oil palm menpunyai 3,000 tons/year. Oleic acid is widely used in food and cosmetic industry as emulsifiers. The plant site is Rokan Hilir (Riau), selected on the basis of raw materials and the ease of transport. The plant operates 24 hours/day and 330 days/year.

Oleic acid production process consists of three stages. First stage is removing all impurities of the oil in the degumming tank with phosphoric acid was added at temperature of 90°C. The second stage is hydrolysis of triglycerides on crude palm oil in the reactor at temperature of 250°C and a pressure of 50 atm which produces fatty acids and glycerol. The third stage of fatty acids were separated in a distillation tower at a temperature of 360°C to produce 98% oleic acid.

To get a production capacity of 3000 tons/year, raw materials needed is 9394.293 tons of crude palm oil/year. Auxiliary material is 1.369 tons of phosphoric acid/year. This process produces 728.165 tons glycerin/year and residual fatty acids 3.637,737 tons/year as by-products. The need is the utility of sanitation of water, boiler feed water, cooling water and process water are, respectively, 1.45 m³/hr, 291,976 m³/hr, 142,462 m³/hr and 56,747 m³/hr.

Key Word: Oleic Acid, Continuous High Pressure Splitting