OXALIC ACID PLANT FROM GENDERUWO CASSAVA WITH NITRIC ACID OXIDATION PROCESS

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Abstract

Oxalic acid is the basic ingredient for metallic coating and dyes textiles. The raw material of oxalic acid plant is cassava Genderuwo. The Oxalic acid plant is processed with Nitric Acid Oxidation technology that has the capacity product of 1818.18 kg/day. This factory is located in Lampung, chosen based on the inventory of raw materials, water and ease of transportation.

Oxalic acid production process consists of four stages. At first stage, carbohydorat from genderuwo cassava is hydrolyzed with 1 N H₂SO₄ catalyst at temperature of 80 °C for 6 hours into glucose. At second stage the glucose is oxidized with nitric acid and Fe³⁺ catalyst at temperature of 63 °C for 8 hours into oxalic acid. At third stage the oxalic acid is purified from 73% to 90%. At fourth stage, the oxalic acid is dried with dry air at temperature of 65°C until 1% moisture.

This plant operate semi-continuously for 330 day/year and 24 hours/day. The genderuwo cassava required is 4879 kg/day and additional materials are nitric acid, hydrogen monoxide and Fe³⁺ catalyst. The utility requirement for water sanitation, cooling water, process water, boiler makeup water, and total requirement are 17.6 m³/day, 43.41 m³/day, 2.8 m³/day, 43.41 m³/day and 67.288 m³/day.

Keyword : Oxalic Acid, genderuwo cassava, Nitric Acid Oxidation Process