GOLD REFINING PROCESS PLANT USING CYANIDATION AGITATED TANK LEACHED METHOD

Name : Syitti Hajar Royani (2310 030 025)
Galih Adika Firmansyah (2310 030 073)
College : DIII Teknik Kimia FTI-ITS
Preceptor : Dr. Ir. Lily Pudjiastuti, MT

ABSTRACT

Gold is a valuable metal used for jewelry. Based on Statistics Centre Committee (BPS), the need of gold in Indonesia is always increasing. Therefore, a gold ore manufacture factory is planned to be built in Banyuwangi due to the existence of mineral mine and other metal’s mine, one of it is Au. The process of gold purifying through cyanidation method includes five steps. The first step is size reduction which aims at reducing the size of gold ore. The second is leaching, that is adding Ca(OH)$_2$ in order pH increases into 11 and adding NaCN to extract Au up from its ore. The process is done under 80$^\circ$C as the optimum temperature for extracting Au up by Cyanide. The third step is filtering which is done at Rotary Vaccum Filter aims to separate cake with Au(CN)$_2$. The fourth step is electrowining, that is the process sedimentation of Au at cathode. The process is done under 115$^\circ$C as the optimum temperature for Au sedimentation at cathode. The fifth step is smelting Au at furnace under 1300$^\circ$C temperature. The melt Au will flow to the mold and turn into gold after being cooled for minutes. At this factory of gold purifying 100 kilograms of gold is planned to produce everyday. Thus, 2261.5 kilograms raw material and additional materials such as 45.23 kilograms of NaCN, 125.5 kilograms of Ca(OH)$_2$, 1.24 kilograms of NaOH, 1.47 kilograms of HCl, 6.24 kilograms of active carbon, 1.48 kilograms of borax and 5.7 kilograms of oxygen are needed everyday.