

Particle Size Analysis of Itagunmodi Southwestern Nigeria Alluvial Gold Ore Sample by Gaudin Schumann Method

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Abstract : Mining of alluvial gold ore by artisanal miners has been going on for decades at Itagunmodi, Southwestern Nigeria. In order to optimize the traditional panning gravity separation method commonly used in the area, a mineral particle size analysis study is critical. This study analyzed alluvial gold ore samples collected at identified five different locations in the area with a view to determine the ore particle size distributions. 500g measured of as-received alluvial gold ore sample was introduced into the uppermost sieve of an electrical sieve shaker consisting of sieves arranged in the order of decreasing nominal apertures of 5600 μm , 3350 μm , 2800 μm , 355 μm , 250 μm , 125 μm and 90 μm , and operated for 20 minutes. The amount of material retained on each sieve was measured and tabulated for analysis. A screen analysis graph using the Gaudin Schuman method was drawn for each of the screen tests on the alluvial samples. The study showed that the percentages of fine particle size -125+90 μm fraction were 45.00%, 36.00%, 39.60%, 43.00% and 36.80% for the selected samples. These primary ore characteristic results provide reference data for the alluvial gold ore processing method selection, process performance measurement and optimization.

Keywords : alluvial gold ore, sieve shaker, particle size, Gaudin Schumann

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