Upgrading of waste from construction sand process: Case study of Lamthamenchai Deposit Nakornratchasima, Thailand

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Abstract: The research presents an upgrading of waste of construction sand process from Lamthamenchai Deposit in Nakornratchasima, Thailand. This research focuses on the mineral processing of silica sand to reduce the iron impurities from silica sand by physical and chemical process and analyze the characteristic of the silica sand by X-ray fluorescence.

First, the sample from deposit are divided into 6 parts by using spiral concentrator, half of each of them are scrubbed by scrub machine. Next, shaking table has been used for upgrading the low-grade silica sand and the result shown that 91.3 % of SiO_2 and 0.51% of Fe_2O_3 is the best result, compared with the silica sand obtained by wet high-intensity magnetic separator (WHIMS) 94.1% of SiO_2 and 0.42 % Fe_2O_3 was achieved which cannot respond the standard of the glass- grade silica sand. After that, Flotation method has been used to help for reducing the iron impurities from WHIMS samples 0.3% Fe_2O_3 and 97.6% of Silica sand were achieved by using 100 ml collectors (AOA and Nanza) which higher than minimum standard for glass sand. After finished all the process of removing the impurities minerals, the cost was taken into consideration. Therefore, Wet High Intensity Magnetic Separator technique combined with Flotation process is recommended to apply for this study area.

Keyword: silica sand, glass sand, sand process

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