

Iron Removal From Kaolin Washing Plants Tailings Using Agitating Leaching

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Abstract

Iron removal on Zonoz kaolin tailings has been carried out by leaching process. The mineralogical analysis of the samples by XRD and ore microscopy studies showed that the main constituents are quartz, clay minerals, hematite, and calcite. Silice amount was about 91% in the samples. The effect of important variables such as reaction time, acid consumption, pulp solid percent, and temperature in laboratory scale was optimized. It was found that leaching rate of Fe₂O₃ increased with increasing the acid consumption, temperature, reaction time and by decreasing pulp solid percent. In consequence, it is possible to reduce the Fe₂O₃ content to 0.03% by iron removal rating of 89.06%.

Keywords: Silice, Iron Oxides, Agitating Leaching, Kaolin, Sulphuric Acid

%

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Al₂O₃

(Fe₂O₃)

x

L.O.I	TiO ₂	Na ₂ O	MgO	CaO	Fe ₂ O ₃	Al ₂ O ₃	Si ₂ O	
/	/	/	/	/	/	/	/	(%)

XRD

SiO₂ % /

(+) (+) (+) (+) (+)

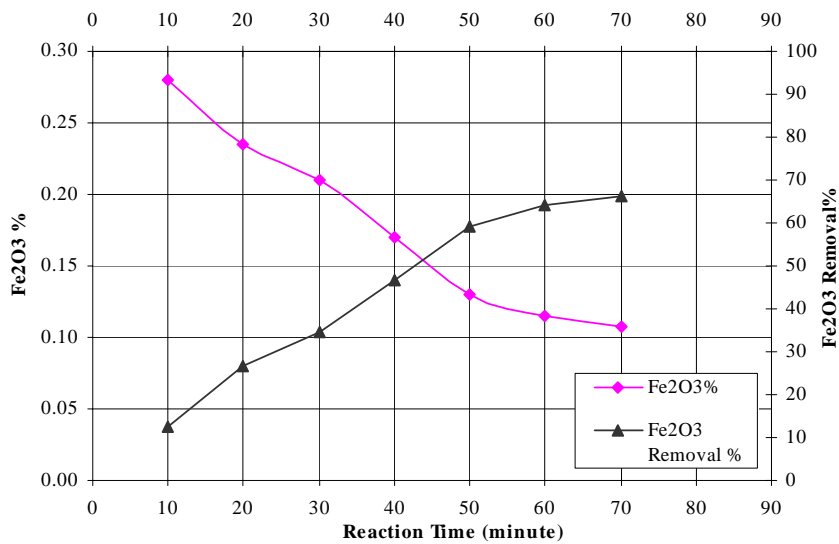
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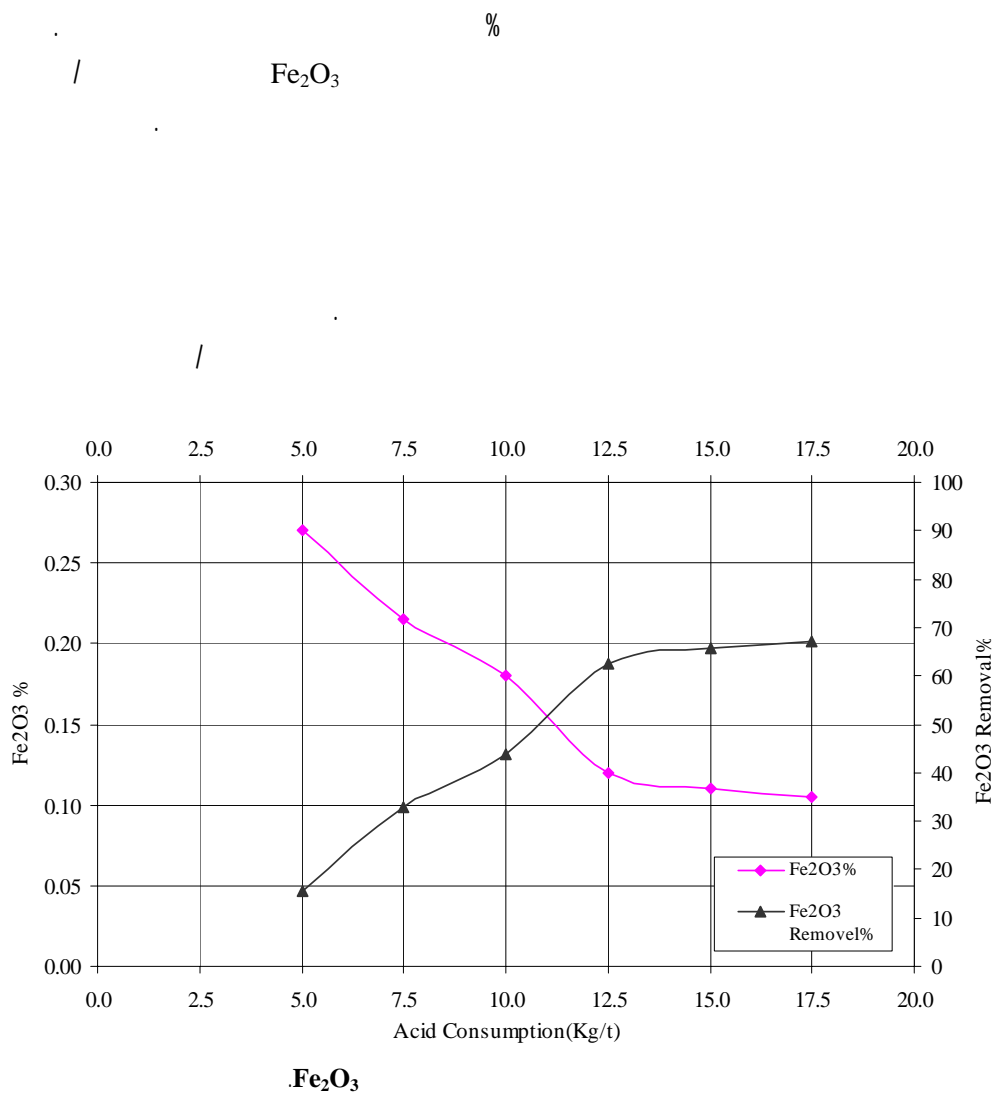
Fe_2O_3

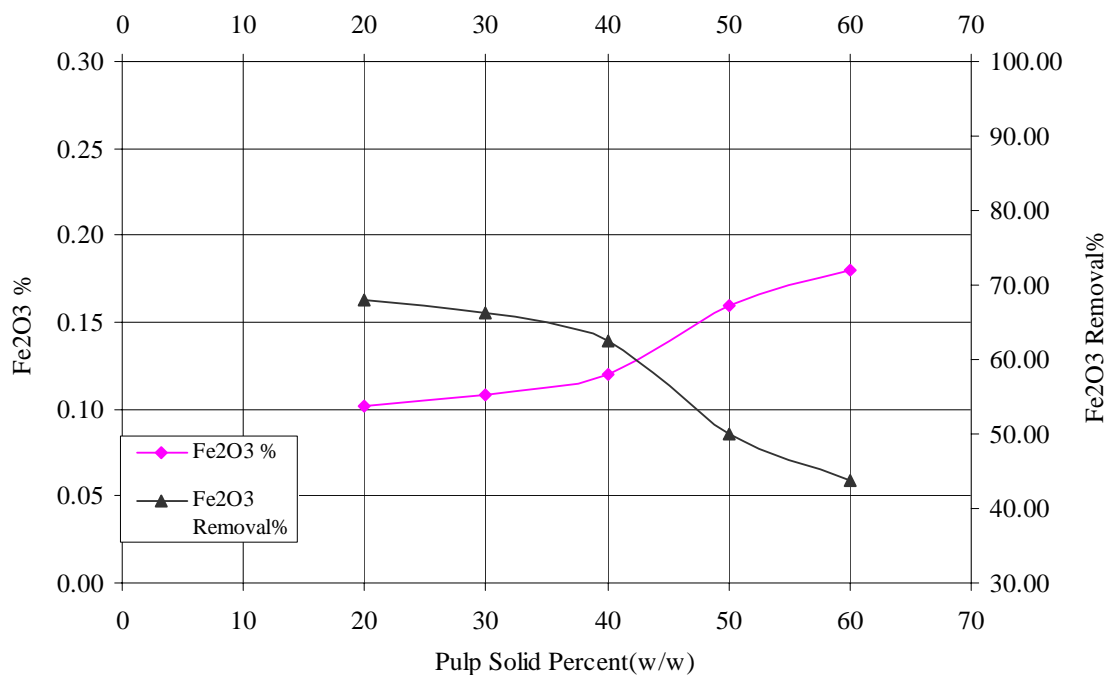
Fe_2O_3 %

Fe_2O_3



Fe_2O_3

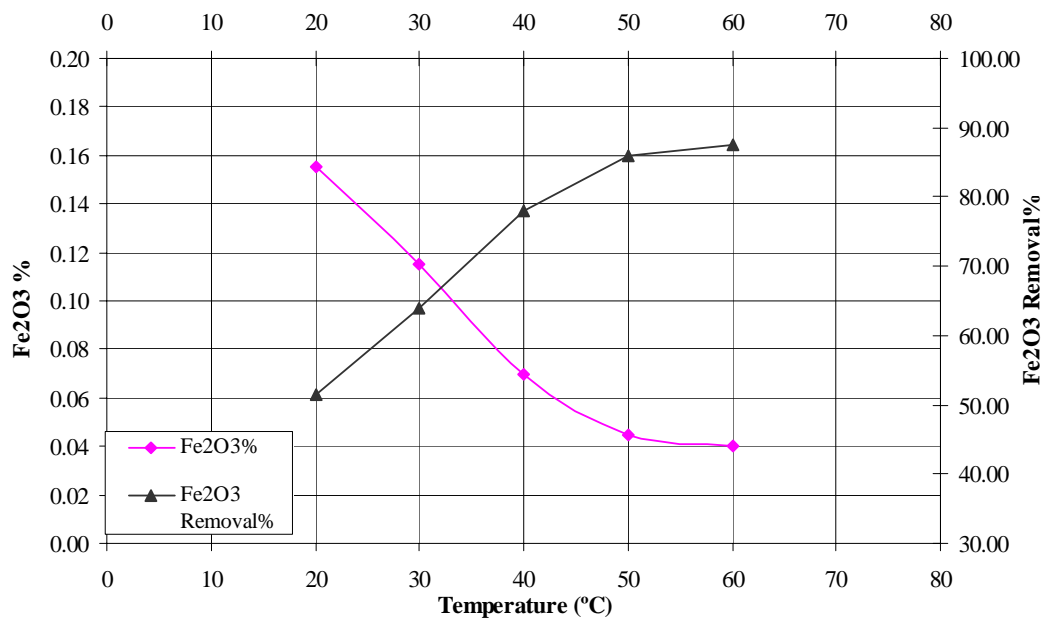




.Fe₂O₃

%

Fe₂O₃



.Fe₂O₃

Fe₂O₃

Fe₂O₃ / % / %

(%)	(%) Fe ₂ O ₃	()	(%)	(kg/t)	()
/	/			/	

Fe₂O₃ / %

XRD

Fe₂O₃

/

%

Fe₂O₃ / % / %

[1] Taxiarchou, M., Pantias, D., Douni, I., Paspaliaris, I., Kontopoulos, A. ; 1997a ; *Dissolution of hematite in acidic oxalate solutions*, Hydrometallurgy 44, 287-299.

[2] Ciullo, P. A.; 1996; *Industrial minerals and their uses: a handbook & Formulary*, Noyes Publications.

[3] Veglio, F., Passariello B, Barbaro M, Plescia P., Marabini, A.M.; 1998; *Drum leaching tests in iron removal from quartz using oxalic and sulphuric acids*, International Journal of Mineral Processing 54, 183-200.

[4] Taxiarchou, M., Pantias, D., Douni, I., Paspaliaris, I., Kontopoulos, A. ; 1997b; *Removal of iron silica sand by leaching with oxalic acid*, Hydrometallurgy 46, 215- 227.

[5] Banza, A.N., Quintt J., Gock, E.; 2006; *Improvement of the quartz sand processing at Hohenbocka*, International Journal of Mineral Processing 79, 76- 82.