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TiO₂ % /

()
%

flotator FS-2 Clarient flotator SM15

%

%

کلمات کلیدی: فلوتاسیون، ایلمینیت، طراحی آزمایش‌ها، زمان آماده‌سازی.

Decreasing The Loss Of Ilmenite In Fine Tailings Of Kahnooj Processing Circuit

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Abstract

The processing of titanium containing minerals at Kahnooj is based on gravity, magnetic and electrical methods in three successive lines. Insufficient efficiency of the methods applied, particularly when dealing with fine particles, results in significant loss of valuable fines. The underflow of tailings thickener containing 3.44% TiO₂ reports considerable values to tailings dam. Thus application of flotation to fine tailings is investigated. In this work the impact of de-sliming, surface activation and acidic pretreatment on ilmenite flotability, utilizing 700 gr/t Clarient Flotator SM 15 and Flotator V2711 mixture with ratio 1/1 as collectors were investigated. De-sliming (elimination of particles $-20\mu\text{m}$) using decantation method brought about 30% increase in recovery. On the other hand, acidic pretreatment using sulfuric acid (5%) for 10 minutes before conditioning resulted in 2.5% increase in rougher and 10% increase in cleaner concentrate grade. Eventually, the acidic pretreatment in rougher and cleaner stages contributes to production of a concentrate containing at minimum 26% ilmenite with 28% recovery.

Keywords: Flotation, Ilmenite, Experimental design, Conditioning time.

[]

[] TiO_2 % / () TiO_2 % /

TiO_2 % /

[]

Titania A/S

Telness

Tall oil . /
[]

%
fuel oil
Otanmaki

Tall oil

Etoxol P-19
pH
[]

fuel oil

Panzihua

TiO_2

TiO_2 /

TiO_2

[]

pH

$\text{Ti}(\text{OH})_n^{4-n}$, $\text{Fe}(\text{OH})_M^{2-M}$

Fe^{2+} Ti^{4+}

ABO_3
pH

pH

pH

[]

()

[]

Chernet (1999)

%

%

[]

TiO₂

(/)

% / TiO₂ % /

[]

Clariant Flotisor SM 15

% / TiO₂ % /

% / TiO₂ % /

% /

% /

TiO₂ % / % /

[] TiO₂ % /

(TiO₂ % /)

Clariant flotisor

/ pH

flotisor FS-2 SM15

[]

(TiO₂ % /)

g/l Pb(NO₃)₂

%

% Denver

g/t Clarient Flotisor SM 15 Flotisor FS

%

Denver

Clarient Flotisor SM 15 Flotisor FS

g/t

g/t

g/t

:[]

$$V = \frac{gd^2(D_s - D_f)}{18\eta}$$

()

(kg/m³)

:D_s

(Ns/m²)

:η

(kg/m³)

:D_f

(m/s)

:V

(m/s²)

:g

(m)

:d

:

t

x

$$v = \frac{x}{t}$$

()

kg/m³

$$v = 4.89 \times 10^{-4} m/s$$

$$t = 306s = 5.1 \text{ min}$$

/

% Denver ()

g/t Clarient Flotisor SM 15 Flotisor FS

% Denver ()

Clarient Flotisor FS

g/t Flotisor SM 15

XRF Fe TiO₂

Niton

% Denver

	()	(%)	(%)
		/	/
			/

	()	(%)	(%)
			/
	/	/	/

pH

/

/

pH

	(%)	(%)
	/	/
	/	/
	/	/
	/	/
	/	/

•
•
•
•

/ %

% %

() []

() []

() []

() []

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"

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