

CHEMISTRY IN THE INDUSTRY SYLVINITE ORES CRUSHING, CLASSIFYING AND DE-SLIMING PROCESSES

D. S. Isaboyeva

Namangan State Technique University

Abstract:

This in the article sylvinitic ore crushing , classifying and de-sliming processes analysis Chemistry in the industry materials grinding process , especially sylvinitic ore in separation big importance has . In the article ore of the composition granulometric and chemical analysis , grinding stages , enrichment processes and de-sludging efficiency studied . Sylvinitic ore to fractions separation and every one fraction chemical composition , as well as hydrodewatering process technological features discussion Research has been done . results , sylvinitic flotation and galurgic methods using enrichment effective to be optimal conditions for to determine help gives . Article chemistry and mining industry experts for useful to be , sylvinitic ore again work processes in improvement application possible .

Keywords: Sylvinitic ore grinding, Granulometric analysis, Chemical Analysis, Grinding stages, enrichment processes, Sludge removal, Fractions, Flotation method, Galurgic method, Potassium chloride, Sodium chloride.

Introduction

President Sh.M. Mirziyoyev by Uzbekistan on January 18, 2017 Republic further develop according to actions strategy about Decree of the President of Uzbekistan pressing past independent progress stage , as well as globalization under the circumstances world economy changing going the situation every one-sided analysis to do “ Uzbekistan economy further stabilization according to sharp new idea and principles working exit and done increase of the country advanced development requirement will reach ” [1].

Tubegate in the mine the mine digging to take in the process big low- grade in quantity sylvinites comes out . Current on the day mine sylvinites not used and

waste as This is thrown away . from waste product working release technology create enterprise for important task become is . Tübegatan mine sylvinites in enrichment local flotation agents the impact learned , low- grade sylvinites local flotation agents based on enrichment technology improvement theoretical and practical in terms of justification necessary .

Sylvinites various to factions separation potassium chloride to the exit the impact determination , ore hydrode-sludging to the process chopped sylvinite particles dimensions the impact and elementary low grade of solution sylvinites with various mass in proportion mutual the impact study and determine the optimal conditions of the process clearly , Tübegatan mine sylvinites nest local flotation agents based on enrichment technological scheme working issued and first there is Tubegate mine sylvinites local flotation reagents based on enriched crystal potassium chloride to take scientific basics working was released .[2].

Potassium salts Uzbekistan main mineral wealth , the most important export product is considered . In Uzbekistan potassium industry main raw material base in 2007 opened Tubegate mine is considered . In Uzbekistan every hectare cotton to the crop average 50 kg of potassium fertilizers (K_2O) are applied , which scientific based from the level much lower , and the soils agrochemical study information irrigated of lands big in part potassium lack of showed [3].

Chemistry in the industry materials grinding process important place It not only minerals to study , maybe industry processes optimization It is also necessary for . For example , sylvinite ores grinding and classification processes potassium and sodium chloride , as well as other chemical components in separation main stage This is in the article sylvinite ore crushing , classifying and de-sliming processes in detail seeing will be released.

1. Grinding process

Grinding process the material into pieces separation through surfaces expands and his/her physicochemical features Chemistry in the industry such processes , mainly of the material size or piece size through measured . Ore in grinding piece size wide in a circle to be possible : large (up to 1000 mm), medium (250 mm), or small (1-5 mm). Also called " grinding " and " chopping " concepts there is is , their every one of the material size and to the shape looking at is selected . Table 1 shows the grinding stages and their features following in appearance given:

1. Table Grinding stages features

Grinding class	Piece size (d_n), mm	From grinding next piece size (d_k), mm
Fragmentation	Large	1000
	Average	250
	May	20
Grinding	Rough	1-5
	Average	0.1-0.04
	Thin	0.1-0.04

Grinding level (i) is of the process intensity measurement for For example , sylvinite ore crushing level by the following formula is defined as :

$$i = d_n / d_k \quad i_{min} = d_{min(n)} / d_{max(k)} = 20; \quad i_{max} = d_{max(n)} / d_{min(k)} = 80.$$

Here d_n - elementary of the material size , d_k - chopped of the material size .

2. Granulometric and chemical analysis

Sylvinite ore from crushing before granulometric and chemical analysis transfer necessary . The ore granulometric composition his/her grinding in the process efficiency impact sylvinite in Table 2 ore granulometric mass in shares faction composition shown :

Table 2 Sylvinite ore in the content granulometric mass in shares faction composition

Piece size (mm)	1.60-1.25	1.25-1.00	1.00-0.50	0.50-0.10	-0.10
Mass share (%)	22.5	22.08	21.4	22.92	11.1

This information ore of the composition grinding in the process separately factions when choosing important importance has .

3. Chemical analysis and enrichment

Chemical the content study through of the material in the content useful components and unnecessary mixtures separation possible . In Table 3, sylvinite ore to factions separated chemical composition given :

Table 3 Ore fraction the composition his/her chemical to the composition impact .

Sylvinite ore (mm)	KCl (%)	NaCl (%)	Insoluble residue (%)	H2O (%)
+1.60-1.25	9.42	83.17	5.01	0.14
+1.25-1.00	10.32	75.73	12.56	0.15
+1.00-0.50	7.85	66.97	24.54	0.24
+0.50-0.10	6.32	60.11	32.20	0.28
-0.10	4.78	47.56	44.60	0.16

This basically , +1.60-1.25 and +1.25-1.00 mm between fractions KCl amount and insoluble residue in terms of optimal and they flotation in the way enrichment possible . Other factions and galurgia in the way is enriched .

4. Sludge removal process

Sludge removal process minerals in enrichment applicable important from stages This process is one of through sylvinite in hydrodewatering insoluble of remains separation sylvinite is provided in Tables 1 and 2 . hydrode-sludging process suspension drowning time and T :J phases mass to the ratio impact Example for : Table 4 shows the MFC 1.25 -1.00 mm fraction hydrode-sludging in the process drowning time and de-sliming level quoted :

Table 4. Silvinite hydrode-sludging to the process suspension drowning time and T :J phases mass ratio effect (MFK 1.25-1.00).

No.	Particles size , mm	To be quiet time , minute	T:J (to sylvinite) based saturated solution)	Sludge removal level , %
1	+1.25-1.00	0.5	1:2	62.22
2			1:4	64.70
3			1:6	66.18
4			1:8	67.25
5		1.0	1:2	64.51
6			1:4	66.18
7			1:6	67.65
8			1:8	68.32
9		1.5	1:2	52.10
10			1:4	54.41
11			1:6	57.35
12			1:8	59.94

Table 5. Sylvinite hydrode-sludging to the process suspension drowning time and T :J phases mass ratio effect (KFK 1.6-1.25).

No.	Particle Dimensions , mm	Suspension drowning time , minute	T :J proportions (to silvinite) based saturated solution)	Sludge removal level , %
1	2	3	4	5
1	+1.25-1.00	0.5	1:2	52.34
2			1:4	54.17
3			1:6	55.30
4			1:8	56.67
5		1.0	1:2	53.10
6			1:4	54.80
7			1:6	56.20
8			1:8	57.10
9		1.5	1:2	39.60
10			1:4	40.30
11			1:6	43.50
12			1:8	45.20

As can be seen from Tables 4 and 5 It is clear that the suspension optimal pause time 1 .0 minute , T:W = 1:4 ratio .

The most wide widespread hydromechanical desilting , clay-carbonate and salty minerals every kind dimensions because of chopped ores drowning to the speed according to classification on principle is based on . Ore with sturgeon at the mill wet grinding and dispersion in the process clay-carbonate minerals up to 1.25 - 1.00 mm small to classes will pass .

Optimal de-sludging level 1 .0 minute and in the ratio T:J = 1:4 These results are achieved . ore hydrode-sludging process efficiency to increase help gives .

5. Conclusion

Sylvinite ore crushing, classifying and de-sliming processes in industry working to release improve for big importance has. Granulometric and chemical analyses based on optimal fractions of material choice and them enrichment processes adaptation possible. Sylvinite in hydrodewatering insoluble of remains separation process efficiency increase optimal conditions for find It is necessary.

References

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