



ISSN NO. 2320-5407

Journal Homepage: - www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI: 10.21474/IJAR01/10159
DOI URL: <http://dx.doi.org/10.21474/IJAR01/10159>



INTERNATIONAL JOURNAL OF
ADVANCED RESEARCH (IJAR)
ISSN 2320-5407
Journal Homepage: <http://www.journalijar.com>
Journal DOI: 10.21474/IJAR01

RESEARCH ARTICLE

INFLUENCE OF SALT CONTENT IN MINERALIZED WATERS ON THE EXPENDITURE OF OXIDIZERS WHEN PRODUCING IODINE FROM UNDERGROUND SALT WATERS.

Umbarov I.A., Turaev H.Kh., Xamzaev N.J. and Eshonqulov H.N.
Termez State University, Termez, Uzbekistan.

Manuscript Info

Manuscript History

Received: 03 October 2019

Final Accepted: 05 November 2019

Published: December 2019

Key words:-

Iodine, Bromine, Oxidizing Agent,
Iodine-Containing Water, Deposits, Salt
Water, Mineralization.

Abstract

Studies the effect of salt content in mineralized waters on the consumption of oxidizing agents in the production of iodine from underground salt water. Surkhandarya region, in particular, the Kattakum-2 well of the Khudag field, Uchkyzyl, Kokaity and Urtabulok of the Bukhara-Karshi depression. It was revealed that with an increase in the salinity of underground hydrothermal waters of the studied deposits from 113 g / l to 283 g / l, the flow rate of the amount of the solution of oxidizing agents and sulfuric acid increases proportionally.

Copy Right, IJAR, 2019,. All rights reserved.

Introduction:-

Natural deposits containing iodine, bromine and other valuable components are objects for their industrial production. The latter include natural water (thermal), drilling water (associated oil), sea water and ocean water, as well as saltpeter deposits (Chile, Peru). A number of industrial iodine-containing groundwater has been discovered on the territory of our republic, located mainly in the Ferghana, Bukhara-Karshi and Surkhandarya artesian basins and on the Ustyurt plateau [1].

Experimental part. The object of this research work is the thermal waters of the Surkhandarya region, in particular, the Kattakum-2 well of the Khudag field, Uchkyzyl, Kokait and Urtabulok of the Bukhara-Karshi Depression. The data obtained are shown in table 1.

Table 1:- The chemical composition of groundwater samples of Surkhandarya and Urtabulok of the Bukhara-Karshi depression.

depression.													
Min- n mg / L	pH	T,° C	Operatio n reserves, m³ / day.	Content, mg / L									
				I₂	Br₂	NaCl	KCl	LiC l	CaCl₂	MgCl ₂	SrCl ₂	FeCl₂	H₂O
Khaudag Kattakum-2 underground salt water deposits													
210, 0	6, 3	72- 76	414,8	21,3 2	426, 4	14280 0	420 0	420	4830 0	10940	1240	210 0	79000 0
Deposits of underground salt waters Uchkizil													
283, 0	5, 1	40	216,3	20,7	391, 4	18678 0	283 0	-	7358 0	16980	710	212 0	71700 0

Corresponding Author:- Umbarov I.A.

Address:- Termez State University, Termez, Uzbekistan.

Deposits of underground salt waters Kakaydi													
142,9	6,7	39	785,4	17,4	313,2	100030	2140	240	27150	10290	630	2430	856000
Deposits of underground salt waters swimming-pool of Bukhara-Karshi													
113,0	6,8	45	9873	24,43	376	80230	3390	320	23730	3910	330	1100	887000

Results and its Discussion:-

The table shows that the iodine content in the waters of the Surkhandarya basin ranges from 17.4-24.34 mg / l, and bromine 313.2-426.4 mg / l, at a pH of 5.1-6.7, and a temperature of 39 -76 ° C, and mineralization 142.9-283.0 g / l depending on the field. Based on the results of our studies (Table 1), we came to the conclusion that the most promising for the extraction of iodine are the Urtabulak and Khardag (Kattakum-2) deposits.

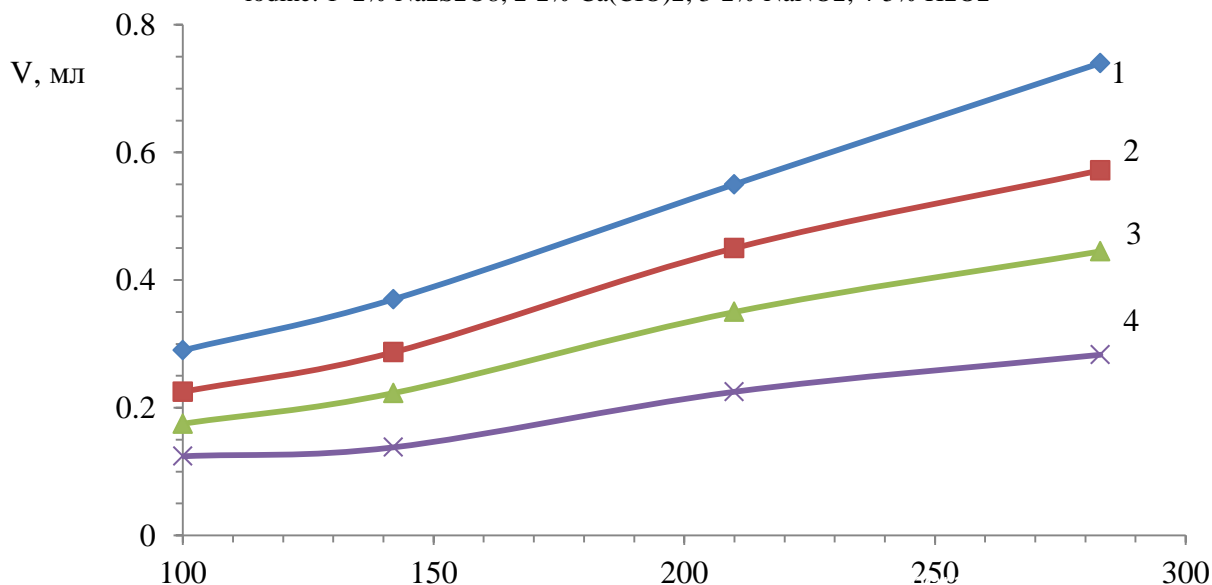
The relationship between the consumption of oxidizing agents and the amount of salts during the separation of iodine from mineralized waters for the deposits of Urtabulak, Kokaity, Khardag and Uchkyzyl was also studied. For the complete oxidation of iodine compounds from iodine-containing test waters, the required amount of a solution of oxidizing agents and sulfuric acid depends on the salinity of the water. The results of experimental studies are shown in table 2.

Table 2:- The relationship between the consumption of oxidizing agents and the amount of salts in mineralized waters during the release of iodine (V = 50 ml)

№	Name of field	Min-tion of water, g / l	Volume 2 % H ₂ SO ₄ ml.	The amount of oxidizing agents, ml			
				2% Na ₂ S ₂ O ₈	2% Ca(ClO) ₂	2% NaNO ₂	5% H ₂ O ₂
1	Urtabulak	113	0,132	0,20	0,154	0,120	0,074
2	Kakaydi	142	0,166	0,29	0,225	0,175	0,124
3	Khardag	210	0,245	0,37	0,287	0,223	0,138
4	Uchkizil	283	0,330	0,55	0,450	0,350	0,225

According to the data obtained, the mineralization of the Urtabulak deposit is 113 g / l and 0.132 ml of 2% sulfuric acid is consumed to acidify 50 ml of the studied waters. Also, the consumption of solutions of the used oxidizing agents is associated with the consumption of sulfuric acid in stoichiometric ratios, respectively, as follows: 2%

Fig. 1:- The effect of salt content in mineralized waters on the consumption of oxidizing agents in the production of iodine: 1-2% Na₂S₂O₈; 2-2% Ca(ClO)₂; 3-2% NaNO₂; 4-5% H₂O₂



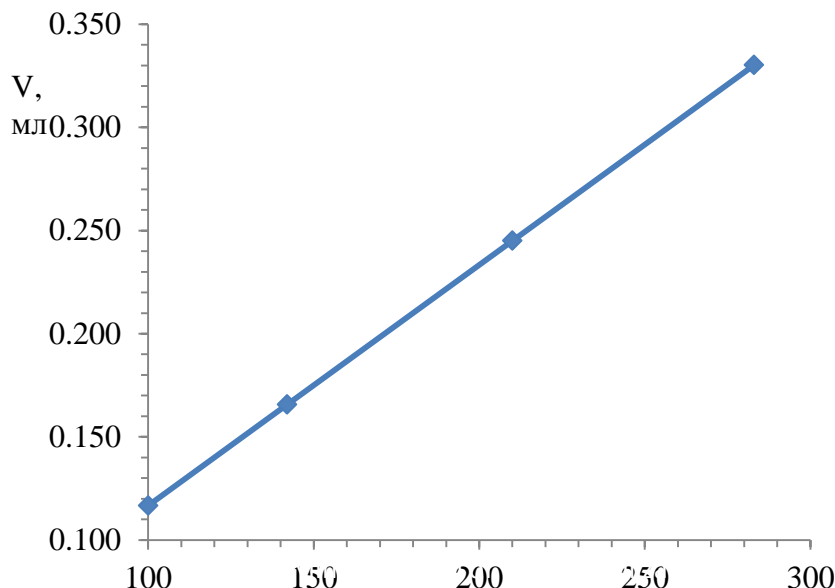


Fig. 2:- The effect of salt content in mineralized waters on the consumption of 2% sulfuric acid in the production of iodine Na₂S₂O₈ - 0.20 ml; 2% Ca(ClO)₂ - 0.154 ml; 2% NaNO₂ - 0.120 ml; 5% H₂O₂ - 0.074 ml.

The mineralization of the Kokait deposit is 142 g / l, and 0.166 ml of 2% sulfuric acid is consumed to acidify 50 ml of the test water. Also, the consumption of solutions of the used oxidizing agents is associated with the consumption of sulfuric acid in stoichiometric ratios, respectively, as follows: 2% Na₂S₂O₈ - 0.29 ml; 2% Ca(ClO)₂ - 0.225 ml; 2% NaNO₂ - 0.175 ml; 5% H₂O₂ - 0.124 ml.

The mineralization of the Khaudag deposit is 210 g / l, and 0.245 ml of 2% sulfuric acid is consumed to acidify 50 ml of the studied water. Also, the consumption of solutions of the used oxidizing agents is associated with the consumption of sulfuric acid in stoichiometric ratios as follows: 2% Na₂S₂O₈ - 0.370 ml; 2% Ca(ClO)₂ - 0.287 ml; 2% NaNO₂ - 0.223 ml; 5% H₂O₂ - 0.138 ml.

The mineralization of the Uchkizyl deposit is 283 g / l, and 0.330 ml of 2% sulfuric acid is consumed to acidify 50 ml of the studied waters. Also, the consumption of solutions of the used oxidizing agents is associated with the consumption of sulfuric acid in stoichiometric ratios, respectively, as follows: 2% Na₂S₂O₈ - 0.550 ml; 2% Ca(ClO)₂ - 0.450 ml; 2% NaNO₂ - 0.350 ml; 5% H₂O₂ - 0.225 ml.

Thus, it was found that with an increase in the salinity of underground hydrothermal waters of the studied deposits from 113 g / l to 283 g / l, the flow rate of the amount of a solution of oxidizing agents and sulfuric acid increases proportionally.

Conclusions:-

1. Based on the results of our studies (Table 1), we came to the conclusion that the most promising for the extraction of iodine are the Urtabulak and Khaudag (Kattakum-2) deposits.
2. It has been proved that the increase in the salinity of underground hydrothermal waters in the Kattakum-2, Uchkizyl, Kokait and Urtabulak deposits when iodine is separated from iodine-containing compounds from 113 g / l to 283 g / l is proportional to the flow rate of the solution of oxidizing agents and sulfuric acid, that is, the consumption of oxidizing agents increases by 2.5 times, and sulfuric acid by 1.5 times.

Reference:-

1. Umbarov I.A., Turaev H.Kh. Determination of the elemental composition of groundwater salt water // Science Time. -Kazan. - 2018. - No. 2 S.- 76-80.