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Man-Made Waste Using Gravitation Methods Study Enrichment Processes

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Gravitational enrichment on a concentration table. In order to determine the possibility of extracting copper, iron, molybdenum, silica, alumina, etc. from the valuable components into the heavy fraction, experiments were conducted on the enrichment of the initial samples and enrichment products. The procedure of the concentration table is as follows:

Frequency of vibrations

- 110 times per minute;

Amplitude of vibrations - 11 mm;

The cross slope of the deck is 20 mm/m;

Consumption of washing water - 4.45 l/mm.

Samples of different sizes were prepared for gravity enrichment: -1+0; -0.5+0; -0.315+0; -0.25+0; -0.125+0 mm.

Enrichment scheme.

It is presented in Figure 1. The results of gravity enrichment are presented in Tables 1 and 2.

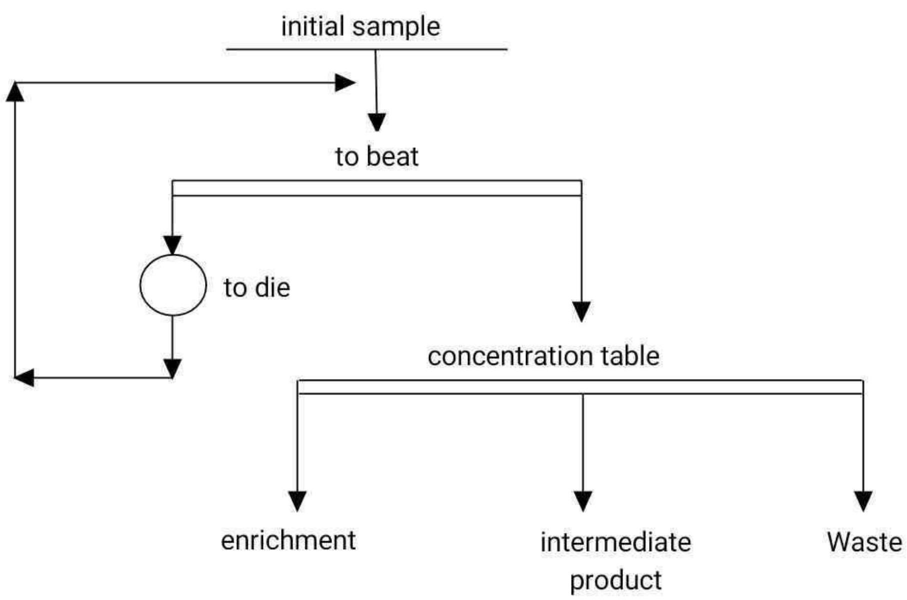

Figure 1. Scheme of enrichment of technological samples by gravity method

Table 1. Yield of man-made waste by gravity enrichment,%

Size of the initial sample, mm	Enrichment products the name of	Sample number	
		№-1	№-2
-1+0	Enrichment	10,5	9,2
	Intermediate product	84,1	89,5
	Waste	5,5	1,3
	Initial ore	100,0	100,0
-0,5+0	Enrichment	4,0	6,3
	Intermediate product	84,4	91,9
	Waste	11,6	1,8
	Initial ore	100,0	100,0
-0,315+0	Enrichment	29,5	51,3
	Intermediate product	65,8	47,3
	Waste	4,7	1,4
	Initial ore	100,0	100,0
-0,25+0	Enrichment	8,1	6,0
	Intermediate product	73,4	85,4
	Waste	18,5	8,6
	Initial ore	100,0	100,0

Table 2. Results of enrichment experiments of AGMK MOF waste on a concentration table

Size of the initial sample, mm	Enrichment products	Output of products, %	Amount, %						Divorce, %					
			Fe	Cu	Mo	SiO_2	Al_2O_3	Au, г/т	Fe	Cu	Mo	SiO_2	Al_2O_3	Au
At first example	Enrichment	10,5	30,7	0,17	0,024	37,63	7,53	1,1	41,0	14,6	23,5	5,9	7,2	39,6
	Intermediate product	80,7	4,9	0,13	0,009	72,0	11,09	0,2	50,0	85,4	67,6	86,6	81,1	52,5
	Waste	8,8	8,0	-	0,011	57,17	14,78	0,3	9,0	0,0	9,0	7,5	11,8	7,8
	Initial ore	100	7,9	0,12	0,011	67,08	11,04	0,3	100	100	100	100	100	100
-0,5+0	Enrichment	11,0	31,3	0,20	0,022	37,63	7,12	1,7	43,8	15,1	24,9	6,2	6,9	48,1
	Intermediate product	73,1	4,6	0,12	0,008	72,37	11,50	0,2	42,8	58,6	60,3	78,9	74,1	41,4
	Waste	15,9	6,7	0,24	0,009	63,32	13,55	0,3	13,5	26,3	14,7	15,0	19,0	10,6
	Initial ore	100	7,9	0,15	0,010	67,11	11,34	0,4	100	100	100	100	100	100
-0,315+0	Enrichment	10,8	34,2	0,18	0,023	34,74	6,57	1,1	45,0	13,4	30,2	5,6	6,5	37,9
	Intermediate product	65,4	4,6	0,10	0,007	74,54	10,54	0,2	36,5	43,2	55,4	72,8	62,7	50,0
	Waste	23,8	6,4	0,27	0,005	60,79	14,24	0,2	18,5	43,3	14,4	21,6	30,8	12,1
	Initial ore	100	8,2	0,15	0,008	66,96	10,99	0,3	100	100	100	100	100	100

As can be seen from table 2, the best result in the enrichment of AGMK MOF waste on the concentration table by classes was obtained when the initial sample was crushed to a size of -0.5+0 mm. At this size of particles, 48.1% of gold and 31.3% of iron were obtained from the enrichment of the heavy fraction at 11%. passed. As a result of the conducted research, it was found that with this amount of gold in the MOF waste, it is possible to achieve the maximum separation of gold by changing the required size of heavy particles, as well as the parameters of the concentration table. In this case, iron is also separated into a heavy fraction, which is not bad, because at the beginning of the process, part of the valuable components can be immediately separated.

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