

TR 15-191-192

R.619. Antimony ore from Port Davey

Three samples from a 1.75 ton shipment of antimony ore were received from C. Clayton.

The samples were registered as follows:

Reg. No. 702527 - Sample No. 1 - taken from sacks and bins.

Reg. No. 702528 - Sample No. 2 - taken from large wooden box.

Reg. No. 702529 - Sample No. 3 - taken from 5 open wooden boxes.

The results of the analyses were as follows:

Reg. No.	Sample No.	As	% Sb	% Pb	Ag	Au
702527	1	Nil	19.6	0.08	Trace	Trace
702528	2	Nil	1.2	0.05	Trace	Trace
702529	3	Nil	4.0	0.03	Trace	Trace

Ore buyers were not interested in material of this grade, but one buyer would consider purchasing a concentrate of not less than 50% antimony. The laboratory was asked to consider concentrating the shipment of ore to produce a concentrate suitable for sale.

The reject portions of sample remaining after assay samples had been prepared from samples 702527 and 702529, were combined to make a composite. There was no reject available from sample 702528. This composite sample was used as a head sample for simple recovery tests to determine the most suitable method for concentrating the ore to a grade greater than 50% Sb.

The weight of the head sample was a little over 4.3 kg. The calculated Sb head assay of the sample was 17.7% Sb.

TEST WORK

The composite sample was crushed in the laboratory rolls crusher to pass a 14# screen.

The sample was then halved by riffing to provide a sample for gravity concentration. The remaining sample was again halved by riffing to provide a sample for flotation concentration. In the gravity concentration test N1, the sample was wet screened with 22, 30, 52 and 100# bucket screens. Gravity concentration was carried out on the Deister table using the sand deck for all size fractions except the -100# fraction in which the slime deck was used.

In the flotation test N2, the feed was ground for 10 minutes in a 8 in diam x 8 in Warman laboratory ball mill at 67% solids. Flotation was carried out in the Denver D-1 laboratory flotation cell. 0.8 lb/ton of potassium amyl xanthate and 3 drops of Teric 401 was added prior to flotation. After 8 minutes flotation, a further 0.3 lb/ton of potassium amyl xanthate and 2 drops of Teric 401 were added. Flotation was completed in 11 minutes.

691-101297

RESULTS

The results of the two tests were:

Product		% Weight	% Sb	Sb % Distribution
N1 +22#	TC	5.3	46.2	13.3
	TT	28.8	10.9	17.0
-22# +30#	TC	2.2	56.2	6.7
	TT	13.0	13.7	9.6
-30# +52#	TC	5.5	38.9	11.6
	TT	14.8	9.0	7.2
-52# +100#	TC	2.2	53.3	6.4
	TT	3.6	5.7	1.1
-100#	TC	5.8	49.1	15.4
	TT	18.8	11.5	11.7
	F/D	100.0	18.5	100.0
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Total	TC	21.0	46.9	53.4
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Total	TT	79.0	10.9	46.6
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N2	FC	25.5	52.0	69.5
	FT	74.5	7.8	30.5
	F/D	100.0	19.1	100.0

CONCLUSIONS

In gravity concentration, overall concentrate grade was about 47% Sb which is not acceptable to the buyer. Recovery was only 53%. Poor recoveries and grades were obtained in sizes greater than 52#, but were satisfactory in sizes below 52#.

In the flotation test, a sale grade of concentrate was obtained with about 70% recovery. The stibnite floated quite readily, and it is recommended that flotation be used if it is required to concentrate the parcel of antimony ore.