TR6_200_202

R. 384

CHROMITE FROM NICKELIFEROUS CLAY, BEACONSFIELD

Sample

Three samples, each weighing about 8 lbs., were received from the Ben Lomond Mining Company. The three samples were stated to be from the Lesneski Lease, Andersons Creek, Beaconsfield.

Investigation

The Ben Lomond Mining Company requested that concentration tests be carried out for possible beneficiation of chromium, iron and nickel. The concentration method suggested by the company involved:—

(1) Wet screening ± 10 mesh, the plus 10 mesh material to be discarded.

(2) A gravity concentrate obtained from the minus 10 mesh material.

(3) The gravity concentrate to be magnetically separated to give—

(*a*) a magnetic concentrate, high in iron;
(*b*) a non-magnetic concentrate of chromite.

(4) The gravity tailings to be assayed for nickel.

Summary

Three samples from the Lesneski Lease, Beaconsfield, have been examined for chromite, nickel and iron beneficiation. No sensible concentration of either iron, chromium or nickel was obtained from sample R.384/2.

Samples R.384/1 and R.384/3 gave interesting concentrations of both iron and chromite. Treatment consisted of removal of 10 mesh oversize by screening, gravity concentration of the undersize and separation of the magnetite by magnetic separation from the chromite.

	Wght	Percent Cr_2O_3	Ni	Fe
Sample R.384/1				
Magnetite Concentrate	6.5	1.71	0.41	57.8
Chromite Concentrate	2.0	55.4	Nil	26.5
Sample R.384/3				
Magnetite Concentrate	10.8	1.4	0.22	59.8
Chromite Concentrate	4.2	54.9	Nil	27.5

There was no significant concentration of nickel in any product examined.

Procedure

The samples were pulped and dispersed by agitation with sodium silicate, and screened on a 10 mesh screen.

The plus 10 mesh material was weighed and discarded.

The minus 10 mesh material was concentrated by panning, and the panned concentrate separated on the Rapid high intensity magnetic separator to give—

(*a*) a highly magnetic fraction;

(*b*) a weakly magnetic fraction;

(*c*) a non-magnetic fraction.

The highly magnetic fraction consisted essentially of plus 20 mesh black or red-black rounded magnetite (?) particles. The weakly magnetic fraction consisted essentially of plus 20 mesh earthy coloured particles.

The non-magnetic fraction consisted of a mixture of earthy coloured rounded particles, mostly plus 30 mesh, and a black granular chromite, which was almost entirely minus 30 mesh. A small amount of sand present in the non-magnetics was panned off after magnetic separation.

The assays of the different products are tabulated below.

R.384/1

	Weight	Percent Cr_2O_3	Ni	Fe
Plus 10 mesh material	42.5	....	....	....
Panned tailings	46.5	....	0.47	....
Highly magnetic fraction	6.5	1.71	0.41	57.8
Weakly magnetic fraction	1.1	2.04	0.22	49.4
Non-magnetics, plus 30 mesh	1.4	5.45	0.27	40.9
Non-magnetics, minus 30 mesh	2.0	55.4	Nil	26.5
	100.0	....	....	....

R.384/2

	Weight	Percent Cr_2O_3	Ni	Fe
Plus 10 mesh material	31.5	....	....	....
Panned tailings	67.1	....	0.10	....
Highly magnetic fraction	0.6	21.0	Trace	50.5
Weakly magnetic fraction	0.3	17.6	Trace	49.0
Non-magnetics, all minus 30 mesh	0.5	29.7	Nil	36.3
	100.0	....	....	....

R.384/3

	Weight	Percent Cr_2O_3	Ni	Fe
Plus 10 mesh material	53.3	....	....	....
Panned tailings	26.6	....	0.63	....
Highly magnetic fraction	10.8	1.4	0.22	59.8
Weakly magnetic fraction	2.7	1.48	0.24	52.4
Non-magnetics, plus 30 mesh	2.4	1.26	0.27	37.6
Non-magnetics, minus 30 mesh	4.2	54.9	Nil	2.75
	100.0	....	....	....

The minus 10 mesh material from sample R.384/2 consisted almost entirely of sand and clay.

Products from sample R.384/1 and R.384/3 are similar in iron, chromium and nickel content.

Previous work on the deposit aimed at the recovery of nickel is contained in Ore Dressing Investigations R.349, R.350 and R.352. A preliminary investigation R.367 aimed at production of a chromite concentrate.

Further work on this deposit appears justified, only if it appears that there is a market for chromite with a low chrome/iron ratio, and/or a market for an iron concentrate containing chromium and nickel.