



DEPARTMENT OF MINES
CANADA

MINES BRANCH

OTTAWA September 3rd, 1931.

INTERIM REPORT

of the

ORE DRESSING AND METALLURGICAL LABORATORIES

on

The Concentration of Chromite Ore from
Abonga Lake, Ontario.

By

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Inv. 425

Shipment:

A shipment of 40 bags of ore was received at the Ore Dressing and Metallurgical Laboratories on June 19th, 1931, forwarded by freight from Collins, Ont. D.A. Hatch, Haileybury, Ont., for the Consolidated Chromium Corporation, 52 Vanderbilt Avenue, New York City, was the shipper.

The forty bags included two lots of equal size, lot No. 1 of vein material and lot No. 2 of some material.

Characteristics of the Ore:

Lot No. 1, vein material, consisted of a chlorite schist carrying some magnetite crystals and black grains

scattered through the rock which could not be ascertained by microscopic methods but did not look like typical chromite. Part of Lot No.'s 1, and 2, consisted of extremely altered pyroxenite or peridotite rock almost completely transformed into a talcose rock. Through this, grains of magnetite or chromite are scattered in limited amounts. Their average size is not much above 1/8 millimeter.

Sampling and Analysis:

The two lots were sampled separately. Of the forty bags, all but six were identified. The tags in these six were so badly mutilated that recognition was impossible.

The lots were crushed to $\frac{1}{2}$ " , quartered, crushed again and by succeeding finer grinding and quartering through a Jones riffle sampler, a representative portion minus 100 mesh was secured for analysis. The analyses were as follows:

Lot No. 1	-	20 bags	-	4.44% Cr ₂ O ₃
Lot No. 2	-	14 bags	-	1.89% Cr ₂ O ₃

Purpose of Experimental Tests:

The shipment was made for the purpose of ascertaining the possibilities of economically concentrating the ore 48 - 50% chromium oxide. The shipment on analysis proved to be much lower in chromium than anticipated.

Summary of Experimental Tests:

The results of these small scale tests are nonclusive and in order to obtain more definite information a larger scale

gravity test will be made as soon as some special classifying apparatus can be installed.

The flotation tests were not successful as very little evidence of a separation was observed. The large amount of talc present in the ore also interfered with the separation as it floated more readily than the chromite and would have to be eliminated before the chromite could be floated.

The results of the gravity tests on the small laboratory table made on a sized feed are disappointing in as much as the grade of concentrate produced was under the requirements of 48% chromium oxide.

Experimental Tests:

All tests were made on Lot No. 1, consisting of vein material and assaying 4.44% Cr_2O_3 . The tests consisted of gravity separations made on a small laboratory Wilfley table and series of small batch flotation tests.

The gravity tests on the table were made on a sized feed and an attempt was also made to secure a classified feed for the table, but the large amount of talc present in the ore interfered with the operation.

A representative 6000 gram portion of the ore was ground to pass 48 mesh and screened on 65, 100, 150 and 200 mesh. These products were then passed over a Wilfley table giving the results shown below:

6000 grams ground minus 48 mesh and screened:

Product	% wt.	Assay % Cr ₂ O ₃
- 48+ 65	12.5	6.10
- 65+100	20.9	5.90
- 100+150	10.7	5.70
- 150+200	12.3	4.30
- 200	43.6	3.00

Table Concentration of -48+65 mesh size.

Product	% wt.	Assay % Cr ₂ O ₃	% Values
Heads (cal.)	100.0	5.93	100.0
Table Concentrate	6.0	38.70	39.2
Table Middling	14.4	15.66	38.0
Table Tailings	79.6	1.70	22.8

At this mesh there is no economic recovery of chromium. The concentrate is also lower in grade than that specified 48 - 50% Cr₂O₃.

Table Concentration of -65+100 mesh size.

Product	% wt.	Assay % Cr ₂ O ₃	% Values
Heads (cal.)	100.0	5.30	100.0
Table Concentrate	5.0	36.95	34.8
Table Middling	11.4	22.00	47.2
Table Tailings	83.6	1.90	18.0

Concentration of this size of material does not yield the results required.

Table Concentration of -100+150 mesh size.

Product	% wt.	Assay % Cr ₂ O ₃	% Values
Heads (cal.)	100.0	5.19	100.0
Table Concentrate	1.2	37.14	8.6
Table Middling	22.2	15.40	65.9
Table Tailings	76.6	1.73	25.5

Here again, the grade of concentrate produced is not up to the required limits of 48 - 50% Cr₂O₃.

Table Concentration of -150+200 mesh size.

Product	% Wt.	Assay % Cr ₂ O ₃	% Values
Heads (cal.)	100.0	2.37	100.0
Table Concentrate	1.7	35.56	15.4
Table Middling	7.9	21.92	44.2
Table Tailing	90.4	1.75	40.4

Table Concentration of -200 mesh size

Product	% Wt.	Assay % Cr ₂ O ₃	% Values
Heads (cal.)	100.0	2.37	100.0
Table Concentrate	0.6	30.70	6.4
Table Middling	1.4	25.37	12.4
Table Tailing	98.0	2.33	81.2

None of these tests indicate that a concentrate containing 48 - 50% Cr₂O₃ can be obtained. Apparently the chromite is closely associated with other minerals, possibly iron oxides which have approximately the same specific gravity.

No economic recovery is obtained as the tailings are all quite high in chrome oxide.