O T T A W A January 18th, 1941.

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of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 948.

Sink-and-Float Tests on a Sample of Chromite Ore from the Sterrett Mine at St. Cyr, Richmond County, Quebec.

BUREAU OF MINES
DIVISION OF METALLIC MINERALS
—
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CANADA
DEPARTMENT
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MINES AND GEOLOGY BRANCH

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Shipment:

A shipment of 5 sacks of ore, total weight 600 pounds, was received on November 6th, 1940. The sample was submitted by Cyril L. Jerrom, Vice-President, CHROMITE LIMITED, 404 Notre Dame Street West, Montreal, Quebec.

Location of Property:

The property from which this ore was taken is located 2 miles from St. Cyr railway station on the Canadian National Railways line, in Richmond county, Quebec.

Character of the Ore:

The sample consisted of a mixture of barren serpentine and serpentine containing asbestos fibre along with some low or medium grade disseminated chromite. No microscopic examination was made of the present shipment but the description of a former shipment of ore from this property is to be found in Report of Investigation No. 865 issued in July 1940.

Sampling and Assaying:

A head sample was cut from the shipment, assayed, and reported as follows:

Cr_2O_3 - 11.60 per cent

FeO - 9.22 "

Experimental Tests:

To determine the suitability of the ore for treatment by the Huntington-Heberlein Sink-and-Float Process, small-scale sink-and-float tests were conducted in pails.

The object of the tests was to find out whether or not a substantial proportion of the ore could be rejected as low-grade material leaving a high-grade concentrate, or "sink", for further treatment.

The tests were conducted under static conditions using a stable galena-water suspension, the same as would

(Experimental Tests, cont'd) -

be used in the Huntington-Heberlein plant. The effective density of the medium is controlled by altering the water-solid ratio of the suspension.

It was determined by preliminary tests that material finer than 6 mesh could not be successfully treated by this process. The results tabulated below were obtained on material sized at -1" +6 mesh.

As shown in the accompanying tables the results of this test were most satisfactory. More than 97 per cent of the chromite treated by sink-and-float was recovered in the form of a "sink" product assaying 38.27 per cent Cr_2O_3, while less than 3 per cent was lost in the form of a low-grade "float" product assaying 0.42 per cent Cr_2O_3.

On the basis of the original ore as calculated in Table III it will be noted that 59.61 per cent of the weight of the ore has been rejected as a low-grade float product containing 2.14 per cent of the total Cr_2O_3, while the sink product plus the untreatable fines gives a product for further treatment containing 97.86 per cent of the chromite and assaying 28.11 per cent Cr_2O_3.

The S. F. concentrate, or sink product, was assayed further and reported as follows:

Iron	=	8.99 per cent
Sulphur	=	0.04 "
Phosphorus	=	0.004 "

(Continued on next page)

(Experimental Tests, cont'd) -

Results of Tests:

Table I. - Distribution of Products from Crushing.

Product	Weight, per cent	Assay, Cr_2O_3, per cent	Units	Distribution, per cent
S. F. feed	83.08	11.11	922.9778	79.55
Fines	16.92	14.02	237.2286	20.45
Head sample	100.00	11.60	1,160.2064	100.00

Table II. - Distribution of Products from S.F. Separation.

S. F. conc.	28.25	38.27	1,081.0494	97.31
S. F. tailing	71.75	0.42	29.9012	2.69
S. F. feed	100.00	11.11	1,110.9506	100.00

Table III. - Summary of Products from Preconcentration Process.

S. F. conc.	23.47	38.27	898.1359	77.41
Fines	16.92	14.02	237.2286	20.45
Product for further treatment	40.39	28.11	1,135.3645	97.86
S. F. tailing	59.61	0.42	24.8419	2.14
Head sample	100.00	11.60	1,160.2064	100.00

Conclusions:

The results of this test appear to justify continuance on a tonnage basis in the sink-and-float plant. We understand that a sample of ore is to be submitted for this purpose in the near future.

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