December 31, 1920

# REPORT
of the
# ORE DRESSING AND METALLURGICAL LABORATORIES.

## Test No. 138

Three samples of tin barilla weighing about ten pounds each were received at the Ore Dressing and Metallurgical Laboratories on May 25, 1920, from Mr. H. G. Cobb of the Electro-Tin Products Limited, Brantford, Ont. These samples were marked Nos. 51, 55 and 59, and consisted of cassiterite and impurities in the form of a number of different sulphides and arsenides.

Test work was carried out only on sample #51, which was first ground to 60 mesh and a sample cut out, which gave the following analysis:

| | |
|---|---|
| Sn .. .. .. | 59.90% |
| Sb .. .. .. | trace |
| Bi .. .. .. | 1.15% |
| Fe .. .. .. | 5.60% |
| Cu .. .. .. | trace |
| As .. .. .. | 0.49% |
| S .. .. .. | 4.98% |
| $SiO_2$ .. .. | 7.35% |

The object of the test work was to remove the impurities and raise the grade of the barilla, thereby obtaining a more desirable product for reduction to tin metal. As the impurities were for the most part in the

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form of sulphides, it was thought possible that the impurities could be floated from the barilla by flotation.

Two small tests were made on the laboratory Janney flotation machine, the results of which are tabulated below:

Test No. 1 - using hardwood creosote, coal tar and coal tar creosote.

| PRODUCT | Weight grams | Analysis Percent As | S | Bi | Fe | Sn | Content gms Sn | %age of Sn values |
|---|---|---|---|---|---|---|---|---|
| Floated | 144 | 0.83 | 13.20 | 3.65 | 11.50 | 44.00 | 63.36 | 20.9 |
| Unfloated | 356 | 0.36 | 1.60 | 0.08 | 3.50 | 67.40 | 239.94 | 79.1 |
| Heads | 500 | 0.49 | 4.98 | 1.15 | 5.60 | 59.90 | 299.50 | 100.0 |

Test No. 2 - using pine oil, crude turpentine, and coal oil

| PRODUCT | Weight grams | Analysis Percent As | S | Bi | Fe | Sn | Content gms Sn. | %age of SN.values |
|---|---|---|---|---|---|---|---|---|
| Floated | 118 | 1.23 | 12.90 | 3.90 | 11.40 | 31.45 | 37.71 | 12.7 |
| Unfloated | 382 | 0.27 | 2.55 | 0.24 | 3.55 | 66.75 | 254.98 | 87.3 |
| Heads | 500 | 0.49 | 4.98 | 1.15 | 5.60 | 59.90 | 299.50 | 100.0 |

CONCLUSIONS:

The results of the above tests show that the impurities can be removed to a large extent by flotation, and with further experimental work on the reagents to be used, much better results could be obtained. Although a considerable proportion of the tin values floated with the impurities, by regrinding and floating, using other reagents, the greater proportion of this would likely be recovered. A higher grade tin product could also be made by refloating.

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Chief, Division of Ore Dressing and Metallurgy.

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