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O T T A W A February 22nd, 1944.

# REPORT

of the

ORE DRESSING AND METALLURGICAL LABORATORIES.

Investigation No. 1602.

Flotation Tests Using a Sample of Technical Secondary Octyl Alcohol to Determine its Usefulness as a Flotation Reagent.

(Copy No. 19.)

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# DEPARTMENT OF

#### MINES AND RESOURCES

MINES, FORESTS AND SCIENTIFIC SERVICES BRANCH

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#### Shipment;

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A small bottle of technical secondary octyl alcohol was received on December 13th, 1945. The sample was submitted by Messrs.A. Boake, Roberts & Co. Ltd., Carponters Road, Stratford, London E 15, England.

### INPERIMENTAL TEST WORK.

Flotation tests were conducted on two samples of ore in which the octyl alcohol was used as a frother. A series of tests was conducted on a copper ore consisting of massive and disseminated chalcopyrite in a white quartz gangue, while a second series was conducted on a uiliceous ore containing carbonates and gold-bearing pyrite.

The first series, Tests Nos. 1 to 5, was conducted on the coppor ore and the second series, Tests Nos. 4 to 6, on the pyrite ore. The results of these tests show that this (Experimental Test Work, cont'd) -

sample of octyl alcohol is fairly satisfactory as a frothing oil.

Details of Testa:

## Teat No. 1.

A sample of the copper ore was ground 50 to 60 per cent through 200 mesh with 2.0 pounds of line per ton added to the charge. The pulp was then conditioned for 5 minutes with 0.10 pound of amyl xanthats per ten and floated for 7 minutes with 0.108 pound of secondary octyl alcohol per ten. The products were assayed for gold. A large amount of dirty froth was produced in this test.

Results of Test No. 1:

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# Tesi To. 2.

A sample of the ore was given the same grind as in test No. 1, with the line reduced to 1.0 pound per ton. The pulp was conditioned with 0.10 pound amyl xanthate per ton for 5 minutes and floated for 7 minutes with 0.072 pound secondary octyl alcohol per ton. The concentrate produced in this test was cleaner looking and less voluminous than that produced in Test No. 1. The pH value of the pulp in this test was 8.2.

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#### Test No. 2, cont'd) ~

'Heaults of Test No. 3:

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#### Test No. 5.

Conditions in this test were the same as these in Test No. 2 except that pine oil, 0.043 pound per ton, was used in place of octyl alcohol. The froth looked somewhat cleaner than the froth produced in Test No. 2.

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The results of Posts Nos. 2 and 3 seem to indicate that pine oil will produce a cleaner, higher-grade concentrate than octyl alcohol, with a slightly lower recovery.

### Test No. 4.

A sample of siliceous are with gold-bearing pyrite was ground about 60 per cent through 200 mesh with 1.0 pound soda ash per ton added to the charge. The pulp was conditioned for 5 minutes with 0.10 pound amyl xanthate per ton. A concentrate was then floated with 0.072 pound secondary octyl alcohol per ton. Flotetion time was 7 minutes. In Tests Nos. 4, 5 and 6 the pH value of the pulp was in the neighbourhood of 9.6.

(Continued on next page)

## (Test No. 4, cont d) -

#### Results of Test No. 4:

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## Test No. 5.

The conditions were the same in this test as in Test No. 4, except that the quantity of octyl alcohol was reduced to 0.036 pound per ton.

Results of Test No. 5;

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## Test No. 6.

In this test again the conditions were the same as in Tests Nos. 4 and 5, except that 0.022 pound pine oil per ton was used as the frother.

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Results of Test No. 6:

By this series of tests it is once more indicated that pine oil will produce a cleaner, higher-grade concentrate than octyl alcohol, with a slightly lower recovery.

In Tests Mos. 5 and 6, one drop of each of the

(Experimental Test Work, cont d) -

respective frothers was used, and the figures given in pounds per ton are indicative of their respective weights.

### CONCLUSION:

The results of the tes : conducted using this reagent show that it has decided frothing properties and could be used as a substitute for pine oil, with certain eres at least. Tests Nos. 1 and 4 indicated that the quantity used should be carefully controlled, or a very dirty, low-grade concentrate will be produced.

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