

TR7-177-178

R. 399

EXAMINATION OF A SAMPLE OF SECONDS TIN CONCENTRATE FROM THE VALLEY WORKINGS, DERBY

Sample

The sample was received on January 17, 1962, per Mr. L. M. Stackhouse. Total weight of the sample was 117 grams.

Sizing analysis of the sample was—

B.S. Screen	Percent Weight
Plus 36 mesh	8.2
Plus 60 mesh	33.6
Plus 120 mesh	47.4
Minus 120 mesh	10.8
	100.0

No responsibility is accepted for the results shown in this report, except in so far as they apply to the sample tested.

Investigation

The company requested an examination of the concentrate to determine the nature of the contaminant minerals. It was stated that tin concentrate dressings had been made difficult by these contaminants.

Summary

A small sample of seconds tin concentrates from the Valley workings has been examined and found to contain 27.9 percent by weight of magnetic minerals, mostly ilmenite, but with a trace of magnetite. The non-magnetic fractions contain between 69 and 76 percent by weight of cassiterite. The remainder of the non-magnetics consists of approximately equal amounts of topaz and zircon, with a very small quantity of rutile.

Research

The four sized fractions shown above were treated on the Rapid high intensity magnetic separator to give a magnetic and non-magnetic fraction for each size fraction.

Size Fraction B.S. Sscreen	Total Sample	Percent Weight Magnetics	Non- Magnetics
Plus 36 mesh	8.2	2.6	5.6
Plus 60 mesh	33.6	11.3	22.3
Plus 120 mesh	47.4	12.7	34.7
Minus 120 mesh	10.8	1.3	9.5
Composite	100.0	27.9	72.1

The magnetics consist of ilmenite and a very small quantity of magnetite, and comprise 27.9 percent by weight of the sample.

The three coarse size fractions of the non-magnetics contained appreciable white or colourless minerals, and these fractions were tested in acetylene tetra-bromide at Sp.G. 2.89. There was no float product, hence the concentrates do not contain quartz or other minerals of an Sp.G. of less than 2.9.

The free non-magnetic fractions were assayed for tin, and the cassiterite contents of the fractions were calculated as follows:—

Size Fraction B.S. Screen	Weight Cassiterite Percent
Plus 36 mesh	76.2
Plus 60 mesh	72.1
Plus 120 mesh	69.0
Minus 120 mesh	71.1

The non-cassiterite minerals were colourless to white-opaque. These were examined under the microscope, and were found to be topaz and zircon in roughly equal proportions, plus a very small quantity of rutile.

Treatment by hydraulic classification, followed by concentration, should result in the production of high grade sale concentrate.