

any, possibility of recovering a significant proportion (e.g. >20%) of the tin in the sample into a high-grade tin concentrate by physical methods of beneficiation.

Tungsten is present as scheelite, which occurs in two different forms; about half occurs in relatively coarse crystals which are well liberated in the size range minus 150 plus 75 µm (and are possibly liberated at even coarser particle sizes), and half occurs as much more finely disseminated crystals which are progressively liberated with decreasing particle size below 75 µm. The mineralogical data suggest that it may be possible to recover 50 to 70% of the tungsten into relatively high-grade concentrates by physical beneficiation.

Magnetite is closely associated with silicates and fluorite and considerable problems may be expected in obtaining high-grade magnetite concentrates by low-intensity magnetic separation even in the particle size range of minus 33 plus 17 µm because of the presence of abundant magnetite-bearing composites containing silicates and fluorite.

1. INTRODUCTION

As part of a bench-scale metallurgical testing programme on a composite head sample of fluorite ore from Moina, Tasmania, a detailed ore-dressing mineralogical study has been undertaken on crushed and ground head ore to determine features of metallurgical significance, in particular the mineralogical location and liberation/locking characteristics of fluorine, tin and tungsten, and the liberation/locking characteristics of magnetite. This Report includes the results of chemical analyses and the detailed ore-dressing mineralogical investigation.

2. PROCEDURES

A representative sub-sample of the head was analysed quantitatively for selected elements and semi-quantitatively (by emission spectrography) for a wide range of elements.

A further sample of the ore was crushed and ground (rod-milled) to approximately 90% passing 75 µm (200 mesh BSS) and wet screened and cyclosized to give various size fractions. Selected size fractions were recombined to give the following size fractions for detailed study:

- (-150) +75 µm
- 75 +33 µm
- 33 +17 µm
- 17 + 9 µm
- 9 µm