

4. MINERALOGY OF HEAD SAMPLES

Ore-dressing mineralogical examination was conducted on each of the four composite head samples, PC1, PC2, SC1 and SC2, to establish the nature and mode of occurrence of tin minerals and also their liberation characteristics. The findings of the mineralogical study are summarised as follows:

- (a) PC1 and PC2 samples had a similar bulk mineralogy, consisting mainly of quartz, topaz with minor pyrite and iron oxides. PC1 also contained fluorite and muscovite.
- (b) The mineralogical compositions of the SC1 and SC2 samples were different. SC1 consisted mainly of pyrrhotite, small amount of sellaite with minor muscovite, dolomite, siderite and quartz. SC2 consisted mainly of magnesite and dolomite, minor siderite with talc and pyrrhotite. Pyrite was present in both samples together with traces of other sulphides including chalcopyrite and sphalerite.
- (c) Cassiterite was the major tin mineral in all composite samples. PC1 and PC2 had a small amount of stannite which was also present in trace amount in SC2. Traces of franckeite were also present in PC2 and SC2. Both stannite and franckeite accounted for only a negligible proportion of total tin content in all composite samples.
- (d) An acid digestion (for removal of acid soluble tin minerals, sulphides and iron oxides) of two sized fractions (-500 +300 μm and -210 +105 μm) of sink products from heavy liquid separation (>4.0 sp.gr.) gave residues for all composite samples which contained only a small proportion of cassiterite. In all cases most of the tin in the residues reported in the original size range of the unleached fractions with the exception of SC1 samples where a considerable proportion of the tin reported in the finer fractions. The leached residues of SC1 contained more 'locked' cassiterite than the other three composite samples.