

in the previous section. Any oxidised sulphides, particularly in the case of pyrrhotite, would probably respond to copper sulphate activation for better flotation recovery.

Tin loss in the bulk sulphide concentrates was generally low in all four tests. It is also indicated that the content of tin sulphide minerals was low. This may be due to using a very coarse size of flotation feed.

The sulphide recleaner concentrates obtained for PC1 and PC2 were very similar in mineralogical composition. They consisted of mainly pyrite, minor non-opaque gangue and traces of pyrrhotite, marcasite, arsenopyrite, covellite and sphalerite. The major tin mineral was stannite with a very small amount of cassiterite. Unliberated cassiterite (about 50 μm) was mainly locked with non-opaque gangue and only a very small portion was locked with sulphides.

The sulphide rougher concentrate obtained for SC1 consisted mainly of pyrrhotite, minor non-opaque gangue and pyrite, and traces of arsenopyrite, chalcopyrite and sphalerite. Both stannite and cassiterite were present. Stannite grains (up to about 100 μm) were associated with chalcopyrite while cassiterite grains (about 50 to 100 μm) were mainly locked with sulphides.

The sulphide rougher concentrate obtained for SC2 consisted mainly of talc (since talc was removed at the same time during bulk sulphide flotation and included in the sulphide product) with minor magnesite, muscovite, pyrite, dolomite and a trace of quartz, pyrrhotite, chalcopyrite and sphalerite. Both stannite and cassiterite were present. Stannite grains (up to about 100 μm) were either free or locked with sulphides and non-opaque gangue. Cassiterite grains (about 50 μm) were also present as free grains or locked with non-opaque gangue.

7.2 Superpanning

7.2.1 Test Procedures and Results

The middling and tailing products of the bulk sulphide flotation test on each composite sample (refer to Section 7.1 above) were combined in proportions by weight. A 500 g sub-sample was riffled out from each set, and then wet and dry sized to obtain 250, 150, 75, 53 and minus 53 μm fractions for superpanning tests. Each sized fraction was treated individually by superpanner to obtain a set of concentrate, middling and tailing products. All superpanner test products were assayed for total and acid soluble Sn for metallurgical calculations. Test results obtained are presented in Appendix H.