

This paper focusses on the use of flotation of hardrock spodumene ores to produce concentrates that meet market specification. The paper describes laboratory testing and the difficulties of reproducing these results at plant scale. Whilst laboratory testwork indicates that lithium can be recovered and impurities removed spodumene flotation at plant scale can be challenging due to reagent optimisation, grind size, water quality and the presence of slimes. In addition the activation of quartz and feldspar by iron salts introduced during grinding.

In addition the debate over open or closed circuit flotation is considered.

It is common to use mechanical scrapers and the use of cationic and anionic collectors, frothers and regulators is described including de slime. The presence of mica which is platy poses a number of problems with de lamination and contaminating the final spodumene concentrate.

The current flotation circuit regimes are invariably complex and producers loathe to divulge their know how. Grinding to maximise the generation of cleavage planes on spodumene grains can improve flotation performance and lithium recovery. In addition reagent Vendors have demonstrated improvements in selectivity over other aluminosilicate minerals and operators restricting sale of their proprietary reagent to other competitors.