

## TAILORING COLLECTORS TO ALLOW FOR SEA WATER USAGE IN PHOSPHATE BENEFICIATION

Lucas R. Moore, ArrMaz  
lmoore@arrmaz.com  
Guoxin Wang, ArrMaz  
Yu (Ryan) Xiong, ArrMaz  
James Gu, ArrMaz

Key words: phosphate flotation, beneficiation, collector, sea water

Water supply is critical for ensuring the optimal operation of any beneficiation plant. As ore quality continues to decline, the demand on water for mineral processing will only increase. Traditionally, ground and surface water sources have been extensively utilized for mining. In some regions, these sources are proving to be insufficient to meet the increasing demands of this industry, as well as the municipal requirements. As a result, alternate water supplies must be considered. The purpose of this investigation was to develop a collector that allows for the flotation of phosphate in sea water, while still meeting the grade ( $> 27.5\% \text{P}_2\text{O}_5$ ) and recovery ( $> 80\%$ ) criteria.

The graph below shows a series of collectors that were tailor made for this mineral. The grade could be met, with significantly higher recoveries than was the criteria. However, this graph also shows the negative impact of the sea water on the flotation recoveries. Therefore, this paper will introduce the concept of tailor making collectors not only for the mineral, but also the water.

