

Atrac[®] 1650

Excellent collector to improve flotation of apatite

To address customer demand, we have developed a new flotation reagent system to improve sensitivity of the flotation process to water hardness and temperature fluctuations.

Challenge	Recovery varies significantly at different pulp temperatures and water hardness
Solution	Atrac 1650 in combination with fatty acid
Benefits	<ul style="list-style-type: none"> • Consistent performance, maintaining recoveries at >90% • Energy savings required for heating up of the process water • Decrease in total consumption of chemicals by >20% • Improved sensitivity of the flotation chemicals to water hardness

An additional objective from the customer has been to keep cost/performance at the existing level or improve it.

Challenges for the flotation process improvement

Increased recovery at a right grade is of highest value for all producers in the field of mining. In direct flotation of apatite fatty acids are established cost-efficient collectors, however their efficiency is strongly dependent on the temperature and water hardness in the flotation circuits.

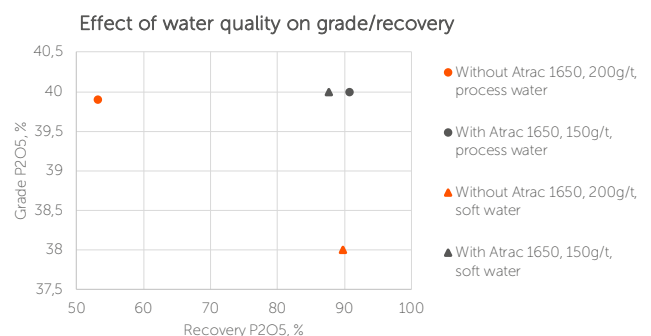
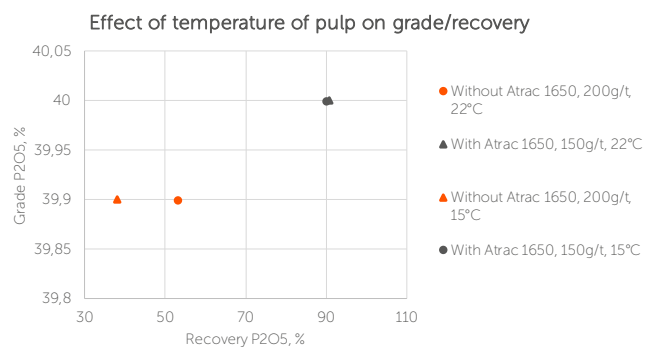
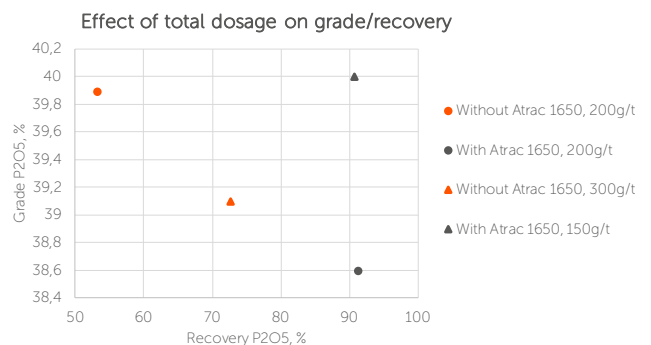
Our project team has developed a synthetic anionic surfactant, **Atrac 1650**, that in combination with fatty acid (ratio 30/70 w/w% respectively) showed outstanding results with the customer feed in a comparative study with pure fatty acid. In the study the following parameters were investigated: dosage, water hardness and temperature.



Results

Laboratory results show that the use of **Atrac 1650** allows you to:

- Ensure selective and strong adsorption of fatty acid at the surface of apatite resulting in excellent recovery
- Keep the same recovery even at 7°C lower temperature
- Achieve high recoveries regardless of the water hardness



Customer validation

Prior to initial industrial trials, Atrac 1650 in combination with fatty acid was evaluated at the customer flotation lab/pilot plant where the findings of the project team were confirmed.

Operational results

Since the introduction of Atrac 1650 to the industrial flotation circuit, the customer has confirmed that its process became more robust and stable regardless of the water quality, pulp temperature and feed variations.

The recovery of apatite at the customer site for many years is stable and is around 95%. Additionally, the total dosage of the chemicals was decreased by 35%.



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