

Atrac[®] 2600 and Atrac[®] 7706

Environmentally friendly collector to improve selectivity of direct flotation of apatite

We have been supplying anionic and non-ionic surfactants as flotation agents to phosphate customers for many years. A customer in Europe challenged our R&D team to improve selectivity of the flotation process while keeping cost and performance targets.

Challenges	<ul style="list-style-type: none"> • Lower apatite losses in tailings • Maintained cost performance
Solutions	<ul style="list-style-type: none"> • Atrac 2600 • Atrac 7706
Benefits	<ul style="list-style-type: none"> • Improved selectivity of flotation • Decrease in total consumption of chemicals by >20% • Consistent performance, maintaining recoveries at >75% regardless of changes in process water and the feed

Challenges for the flotation process improvement

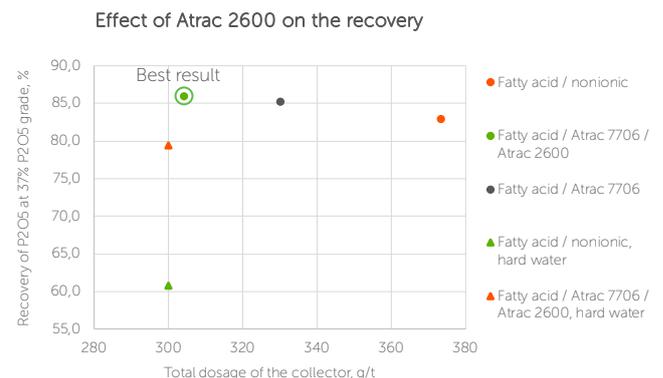
Selectivity of the flotation process is one of the biggest challenges in mineral processing. Usually, improved selectivity results in reduced losses of the valuable minerals into tailings, which provides financial benefits for the mining companies. In direct flotation of apatite, fatty acids are established cost-efficient collectors, however selectivity of the fatty acids is low and secondary collectors usually are needed in order to improve the performance.

Our project team has developed a synthetic anionic surfactant, **Atrac 2600**, that in combination together with fatty acid containing non-ionic **Atrac 7706** (ratio 20/80 to 50/50 w/w% respectively) showed outstanding results with the customer feed in a comparative study with fatty acid boosted by non-ionics.

Results

Laboratory results show that the use of **Atrac 2600**:

- Ensures selective and strong adsorption of fatty acid at the surface of apatite resulting in an **increase in recovery by 3%**
- Increases efficiency of the total collector blend
- Keeps high grade even in hard process water



Customer validation

Atrac 2600 and **Atrac 7706** were recently validated during the industrial trials at the European customer. The results for one-month testing confirmed the laboratory results: selectivity was improved, resulting in an increase of recovery by 3%.

The customer confirmed that the addition of Atrac products to the fatty acid stabilized the flotation process regardless of water quality. The total dosage of the chemicals was decreased by 20%. Additionally, the amount of frother was decreased by 60%.



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