CASE STUDY

CLAYS IN FLOTATION – Kemtec X600 Application

Unlocking the value in treating difficult ores

Abstract

Swelling clays are a major challenge in flotation. Liberated clays are prone to absorb/adsorb water and reagents during grinding. As the clays begin to swell, they reduce available water and other surfactants needed for flotation. This often results in higher pulp viscosities in the plant, which in turn increases the pressure load against the flotation mechanism. As the mechanism must work harder, lower air rates are commonly seen in the plant. This has a negative *knock-on* impact on flotation kinetics.

Introduction

Kemtec Mineral Processing Pty Ltd (part of the Sinoz Group) is a company that assists Sinoz Group companies to make the most out of Sinoz Group's quality reagents.

It is not uncommon for mines to be presented with challenges in the form of various aluminosilicates and clays in their ores. Common problem clays include:

- Montmorillonite
- Bentonite
- Smectite
- Vermiculite

Methodology

Recently, Kemtec was asked to provide options to improve a customer's flotation performance when dealing with problem ores.

Kemtec was invited to site to perform on-site test work to find a suitable reagent regime to improve flotation performance for problematic ores (see Figure 1).

Figure 1: On site test work and Support

Results

During the process Kemtec identified a suitable reagent Kemtec X600. Kemtec X600 is a proprietary polymer-based product specifically designed to passivate the clay surface when added to the grinding circuit.

The product can easily be dosed to the circuit as a liquid and can be delivered to site in IBC or bulk. Depending on the mineral type and abundance, the

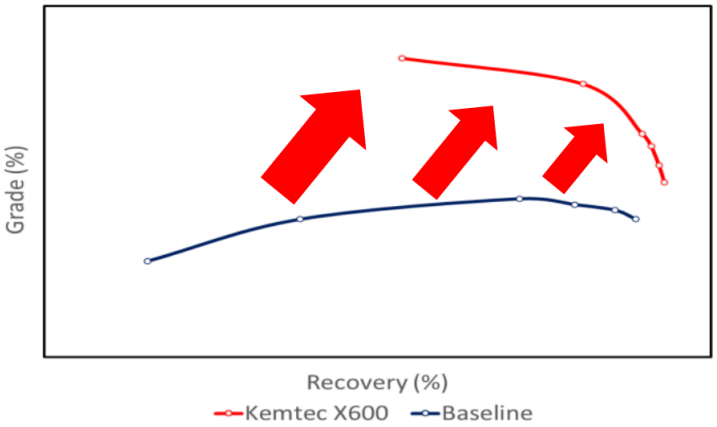
typical dose for effective results ranges between 150-300g/t.

Relatively simple laboratory test work determined the ideal dose rates required to passivate the clays in the customers ore. This allowed our customer to turn 'rock' which was previously considered to be waste into economically processable ore.

Figure 2 shows the impact on grade/recover due to the attrition of Kemtec X600.

The impact was to allow economic extraction of 25,000 tonnes of contained copper metal production.

Figure 2: Grade/Recovery Improvement.



As part of the on-site work, Kemtec and the customer also investigated a range of other reagents to efficiently determine future research pathways.

Kemtec possesses the ability to test work at its laboratory in Melbourne, Australia. However, we often find the best way to innovate and serve our customers is to partner with them at their site.

Conclusion

Kemtec and our team of dedicated technologists were able to assist in developing a customised solution based on our combined understanding of chemistry, hydrodynamics and plant operation.

Our customer's re-characterisation of 'waste' to 'ore' is a brilliant example of how the Sinoz Group can assist leading mine operators to think differently to make a real difference to their operation.

Working together to mine responsibly.

If you have any questions or if you would like to understand more about Kemtec and the Sinoz Group, please reach out on the numbers/emails below.

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