

HTECH FEASABILITY REPORT

1. SUMMARY

Hydrocarbon spills on travel ways are currently cleaned by using degreaser. The problem with the degreaser is that it does not eliminate oil but merely moves it from one point to the next. Lubritech has proposed a product, i.e. HTech that converts hydrocarbons to inert organo-silicates. Benchfloats and Bikerman tests were carried out using a Booyesendal plant feed sample to determine the effects of Lubritech's HTech product on the flotation kinetics and froth stability.

HTech improved the flotation kinetics at all dosages with little or no effect on the chrome entrainment. The increase in flotation kinetics can be ascribed to an increase in the fine particle recovery. At relatively high dosages of HTech the froth stability increased resulting in an increase in the entrainment. The net effect was a decrease in the PGM grade recovery profile with an increase in the chrome entrainment.

It can be concluded that the HTech product is safe for use and will have little or no negative impact on the flotation circuit of the concentrator plant. Based on the results it is not recommended to exceed dosages of 30,000L of HTech per month. Exceeding this dosage will increase the froth stability and chrome entrainment and decrease the grade recovery profile.

2. INTRODUCTION

The North UG2 and Merensky mines at Booyesendal are mechanised room and pillar operations. Mechanisation reduces risk as well as operating costs of underground operations. One unfortunate drawback of mechanised mining is spilling of oil contaminants in the form of hydraulic oil, engine oil and diesel. These contaminants have adverse effects on the flotation circuit resulting in loss of revenue due to PGM recovery losses and penalties arising from high chrome in concentrate (contaminants increase entrainment).

Hydrocarbon spills on travel ways are currently cleaned by using degreaser. The degreaser acts as a carrier effectively lifting the oil from the contaminated surface. The degreaser-hydrocarbon mix is washed with water from the contaminated surface, ultimately ending up in the flotation circuit via either

the storm water return flow or through contaminated ore. The problem with the degreaser is that it does not eliminate oil but merely moves it from one point to the next.

What is required is a product that converts the hydrocarbons into a product which is less harmful to the flotation circuit.

Lubritech has identified such a product in the form of HTech. The product has shown promise in effectively converting oil contaminants to inert organo-silicate particles through an irreversible process.

3. RESULTS & DISCUSSION

The overall result for the HTech product was very positive. The flotation kinetics improved for all dosages of HTech with little or no effect on the chrome entrainment. The increase in flotation kinetics can be ascribed to an increase in the fine particle recovery. Malvern analysis on the fast floater concentrate showed an improvement of 35% in the ultrafine (sub 10 micron) size fraction.