

Article

Innovative flotation collectors from Kao to meet new sustainability demands

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The mining industry is increasingly pivoting towards sustainability, a shift driven by global demands for industries to operate in a manner that is more considerate of the environment and society. By the use of cutting-edge technologies, operations such as mineral flotation aim to optimize resource profitability and minimize their carbon footprint. In this context, Kao is more committed than ever to sustainability. Our goal is to deliver solutions by offering specific proposals with ESG perspectives in the chemical business.

More concretely, the iron flotation industry mainly depends on various petroleum-origin collectors to efficiently separate gangue minerals from the valuable iron minerals through a reverse flotation process. In line with Kao's ESG philosophy and thanks to our knowledge of top performance surfactants and expertise on in mining solutions, Kao has developed sustainable collectors that bring a new approach to the iron industry by offering a reduced carbon footprint compared to standard collectors.

The new sustainable COLMIN collectors not only focus on enhancing sustainability but also on improving the performance, with a focus on high selectivity, low final SiO₂ content, foam control and low dosages. Different COLMIN collectors have been tailored to provide solutions depending on the iron ore characteristics and flotation targets for recoveries and iron ore quality.

In cases where iron ore is highly contaminated, standard flotation collectors may not yield the desired results, often leading to low purity Fe quality and high SiO₂ contents. Under such circumstances, the new sustainable collectors COLMIN 010 and COLMIN 011 collectors can be employed to produce high quality iron ore with reduced SiO₂ content (*Figure 1*). Specifically, COLMIN 010 is designed to significantly reduce SiO₂, while COLMIN 011 can be used to enhance selectivity.

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Leveraging Kao's flotation knowledge combined with the newly developed sustainable collectors can lead to solutions in the iron industry to improve the flotation process and ore quality while also reducing its carbon footprint.

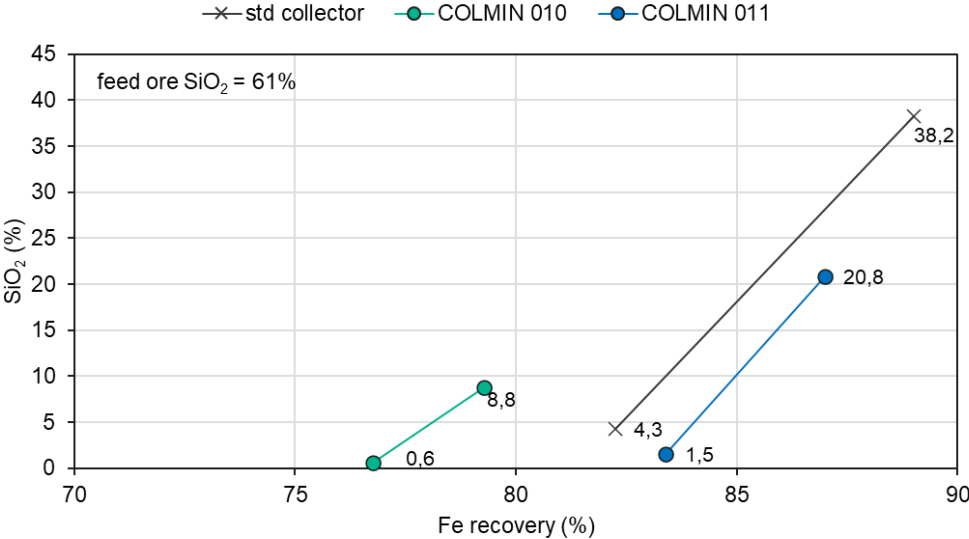


Figure 1: Performance of new COLMIN sustainable collectors in reverse flotation of iron ores at two different dosages