

# Pellet feed production via the concentration of flotation tailings

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## **ABSTRACT**

*This investigation addressed the possibility of producing pellet feed at a silica content of  $\leq 1.0\%$  using a representative sample of Samarco's mechanical flotation tailings. This sample contained 11.0% Fe and presented an  $F_{80} = 116 \mu\text{m}$  and a  $d_{50} = 63 \mu\text{m}$ . The higher silica content was verified in the coarser fractions and the higher iron content in the fraction  $-37 \mu\text{m}$ . Specular hematite is the most abundant mineralogical phase in the fraction  $-37 \mu\text{m}$ . The technological tests used one of four methods: magnetic concentration using a wet high-intensity magnetic separator, magnetic concentration using a SLon high-gradient magnetic separator, reverse flotation or direct flotation. The methods using the magnetic concentrator SLon, reverse flotation and direct flotation did not present results meeting the target of the study: iron content in the concentrate (rougher stage) greater than 34% or iron recovery greater than 80%. Cleaner stages were not achievable with the resulting concentrates. In contrast, the most successful method consisted of using wet high-intensity magnetic separators (WHIMS) as a rougher stage and reverse flotation as a cleaner stage. Using this route, it was possible to produce a pellet feed with a silica grade of 1.0% and high specular hematite content.*

Key words: Pellet feed, Magnetic concentration, Flotation, Iron/iron ores