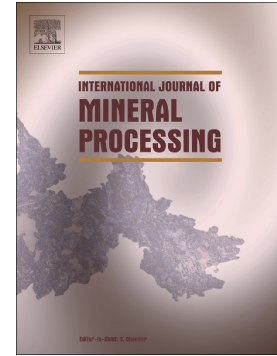


Accepted Manuscript

Effect of typical impurities for the formation of floating slimes in copper electrorefining

Shila Jafari, Mikko Kiviluoma, Taina Kalliomäki, Elisabeth Klindtworth, Arif Tirto Aji, Jari Aromaa, Benjamin P. Wilson, Mari Lundström



PII: S0301-7516(17)30209-0
DOI: doi:[10.1016/j.minpro.2017.09.016](https://doi.org/10.1016/j.minpro.2017.09.016)
Reference: MINPRO 3102

To appear in: *International Journal of Mineral Processing*

Received date: 27 April 2017
Revised date: 14 August 2017
Accepted date: 26 September 2017

Please cite this article as: Shila Jafari, Mikko Kiviluoma, Taina Kalliomäki, Elisabeth Klindtworth, Arif Tirto Aji, Jari Aromaa, Benjamin P. Wilson, Mari Lundström, Effect of typical impurities for the formation of floating slimes in copper electrorefining. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. *Minpro*(2017), doi:[10.1016/j.minpro.2017.09.016](https://doi.org/10.1016/j.minpro.2017.09.016)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Effect of typical impurities for the formation of floating slimes in copper electrorefining

Shila Jafari¹, Mikko Kiviluoma¹, Taina Kalliomäki¹, Elisabeth Klindtworth², Arif Tirto Aji¹, Jari Aromaa¹, Benjamin P. Wilson¹, Mari Lundström¹

¹ *Laboratory of Hydrometallurgy and Corrosion, Department of Chemical and Metallurgical Engineering (CMET), School of Chemical Engineering, Aalto University, P.O. Box 16200, FI-00076, Aalto, Finland*

² *Heterogeneous Catalysis and Technical Chemistry, Institute of Technical and Macromolecular Chemistry (ITMC), RWTH Aachen University, Worringerweg 2, 52074, Aachen, Germany*

Abstract

In electrorefining, Group 15 impurities arsenic, antimony and bismuth, may precipitate within the bulk electrolyte as floating slimes and contaminate the copper cathodes. In order to determine the impurity specific thresholds related to the formation of suspended solids, synthetic copper electrorefining electrolytes with different concentrations of arsenic, antimony and bismuth were investigated by a continuous filtration method. The amount and composition of the floating slimes obtained were evaluated in terms of the initial impurity concentrations present in the synthetic electrolyte. As a result, the specific influence of arsenic, antimony and bismuth on the floating slime formation was ascertained. The results suggest that there is an upper limit in electrorefining electrolytes for antimony (Sb) of 800 mg/L for floating slime formation, although the limit for Bi was less clear. Furthermore, the structure of the synthetic floating precipitates produced were analyzed using both SEM-EDS and XRD and showed typical amorphous structure of floating slimes with particle size of approximately 25 μm and predicted composition of BiAsO_4 , SbAsO_4 , Sb_2O_3 and Bi_2O_3 .

Download English Version:

<https://daneshyari.com/en/article/4769136>

Download Persian Version:

<https://daneshyari.com/article/4769136>

[Daneshyari.com](https://daneshyari.com)