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Leaching of Au and Ag from the copper anode mud in Shilu

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Abstract: The copper anode mud in Guangdong Shilu, with a complicated composition, low contents of Au and Ag and high As content, is a difficult-to-tackle material. By the use of acid leaching and ammonia leaching pretreatment followed by cyanidation, valuable metals were effectively recovered from the anode mud, with high recoveries of Au and Ag, especially, and the environmental pollution caused by As in the anode mud was eliminated. For the test results, the cyanidation leaching rate of Au and Ag was 97% and 94%, respectively, the recovery of Au and Ag was 96.6% and 93.3%, respectively. The process has a simple flowsheet and good adaptability.

Key words: anode mud; cyanidation; gold; silver

钨钼铋复杂多金属矿综合选矿新技术——柿竹园法

由广州有色金属研究院和柿竹园有色金属矿、北京矿冶研究总院、长沙有色冶金设计研究院共同完成的“钨钼铋复杂多金属矿综合选矿新技术——柿竹园法”荣获2001年国家科技进步二等奖。该项成果是国家“八五”、“九五”重点科技攻关项目“柿竹园多金属矿资源综合利用研究”中最重要的研究成果。

柿竹园多金属矿是世界特大型钨钼铋矿床,矿石性质复杂,矿物嵌布粒度细,有用矿物种类繁多,黑白钨共生,含钙矿物可浮性相近,矿物分离难度相当大,长期制约其开发及有效利用。

多单位合作,十年科技攻关,开发出一整套完整的具有自主知识产权的选矿新技术——柿竹园法。该法确定了合理的硫化矿、钨矿物和萤石矿物主干全浮选流程,独创了钼铋等可浮—铋硫混浮,然后相应分离的新工艺;采用了自主开发的具有选择性的高效螯合捕收剂 GYB 和 CF 混浮黑白钨矿物和回收黑钨矿泥,解决了多年来黑白钨矿物必须分步回收及白钨矿与含钙矿物难以浮选分离世界上公认的两大选矿难题;在钨粗精矿加温精选中,采用独创的改性水玻璃新工艺代替沿袭近半个世纪的“彼德洛夫法”,采用浮—磁新工艺从选钨尾矿中回收萤石。在原矿品位较低的情况下,新工艺不仅使精矿品位有所提高,钼铋钨回收率也分别提高 2.86%, 12.64% 和 22.33%。新工艺的应用使企业 2 年内增创利税 6225.875 万元,经济效益十分显著。