

**A flow-sheet approach to the management of sulfide-rich tailings and evaluation of secondary raw materials. Case-study in the Mirdita copper district, Northern Albania**

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Sulfide-rich tailing dumps constitute a major environmental concern due to the acid drainage production and the release of potentially toxic elements. On the other hand, these partly-processed resources may represent an opportunity of secondary exploitation. The aim of our work is to provide a contribution to the characterization of heterogeneous tailing dumps and to propose a flow-sheet for recycling.

We collected 43 solid samples from two dry-stocked tailing dumps at Repts, a former copper processing site of the Mirdita District, Albania. We performed particle size distribution, mineralogical and geochemical analyses. Our data outlined two classes of materials, based on sulfide content, that we quantitatively related to distinct stages of the former processing flow-sheet.

Gravity separation of pyrite and gold was tested by shaking table. We monitored selected parameters of both the feed and the output materials in order to verify the effectiveness of the method and to create products that comply with industrial requirements. The first tests produced pyrite concentrates that represent the 16-37 wt% of the output, with variable gangue reduction. Moreover, we obtained concentrates at 577-759 ppb gold.

Our quantitative approach allows to plan a rationale recycling of tailings and thus to reduce dump volumes in a cost-effective way.

**Keywords** secondary raw materials, tailings, shaking table, remediation, pyrite, gold, copper mine district