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## Recovery of lithium carbonate by acid digestion and hydrometallurgical processing from mechanically activated lepidolite

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### Abstract

Lithium extraction from hard-rock ores has regained importance due to the increased demand for this metal to supply the growing battery market. Therefore, several studies have been focused on the lithium extraction from ores, however, leaching and purification steps are sparsely studied. Thus, the main objective of this study was to evaluate the main factors affecting the water leaching step and the subsequent purification operations for lithium recovery from a lepidolite concentrate, which was processed by mechanical activation and sulphuric acid digestion. In the leaching step, among the variables studied, only one, the leaching temperature, showed a significant effect on the lithium extraction, taking into account the range of values tested. Thus, the recommended operating value for the leaching time and the L/S ratio is the minimum, while for the leaching temperature is 50°C. After optimizing the leaching operation, the purification of the leachate obtained, by neutralization, was thoroughly performed by efficient removal of impurities (Fe, Al, Mn and Ca), allowing to obtain lithium carbonate as final product, as well as other relevant by-products, such as rubidium and potassium alums.

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