

2nd World Congress on Petrochemistry and Chemical Engineering

October 27-29, 2014 Embassy Suites Las Vegas, USA

Recovery of molybdates from an alkaline leachate of spent hydrodesulphurisation catalyst e proposal of a nearly-closed process

Helena M V M Soares and Isabel S S Pinto Universidade do Porto, Portugal

In this work, we developed a simple, effective, low-cost and more environmentally friendly process (with low energy requirements and minimized effluent emissions) to recover molybdenum from an alkaline leaching solution of a spent hydrodesulphurisation catalyst, as a final product with high purity and in high yield. Alkaline leaching of spent NieMo hydrodesulphurisation catalysts results in a solution that mainly contains molybdenum and aluminum. Before recovering molybdenum, previous separation of aluminum from the solution, as a precipitate of aluminum hydroxide, was performed by lowering the pH to 8, at room temperature, with a yield of 99.2%. Recovery of molybdenum was studied by precipitation in the form of a salt of strontium or lead molybdate. The first process allowed a recovery of 96% of Mo at 25°C, as tetragonal SrMoO₄, with high purity (99%). Precipitation with lead at 25°C resulted in a maximum recovery of 99.8% of the molybdenum, as tetragonal PbMoO₄, with a purity of 99.5%. Finally, the destination of the final solution is discussed and a flow sheet considering the production of strontium/ lead molybdate is proposed.

hsoares@fe.up.pt