

ABSTRACT

PROCESS FOR RECYCLING LITHIUM IRON PHOSPHATE BATTERIES

The invention relates to a method of recycling lithium iron phosphate batteries with the aim of enabling the isolated recovery of elements from black mass. Black mass comprising at least cathodic and anodic components is immersed in a pH 13-14 solution to obtain a first leachate and first solid residue. The first leachate is immersed in a 4-6M acid solution to obtain a second leachate. The second leachate is passed through a first ion-exchange column where fluoride ions are retained and a second ion-exchange column where copper ions are to obtain a second eluate. The pH of the second eluate is adjusted to about 2.5-5 and a quantity of phosphoric acid that is sufficient to achieve an equivalent stoichiometric ratio of ferric iron and phosphate anions is added to obtain a first solution and an iron (III) phosphate precipitate. The first solution is combined with the first leachate to obtain a second solution. The pH of the second solution is adjusted to about 6.5 to a residual precipitate and a lithium solution.

[Fig. 1]