Chemical desulfurization method for lead-acid batteries

Can a pulsing method extend the life of a lead acid battery?
In this instructable a novel (resistive) pulsing approach is described for driving the lead-sulfate back into solution that is faster than the more traditional inductive method. Sulfation is not the only aging mode in lead acid batteries,so while desulfation may extend the life,it will not do so indefinitely.

How to desulfurize lead paste by regenerated alkali?
The desulfurization of lead paste by regenerated alkali was as follows: (i) desulfurization was conducted by adding waste lead paste to a beaker containing a certain volume of regenerated NaOH solution and stirred. (ii) After the desulfurization reaction was complete, filter residue and filtrate were obtained by vacuum filtration.

What is a direct desulfurizer for lead paste?
NaOHwas used as the direct desulfurizer for lead paste,and lime was used to regenerate NaOH from the mother liquid at sufficient concentrations for desulfurization.

How much desulfurizer is required for sodium-calcium double alkali lead paste slurry?
Hence,based on the minimum specific gravity of industrial lead paste slurry,the concentration of desulfurizer required for sodium-calcium double alkali lead paste desulfurization was estimated to be at least 2.32 mol/L. 3.2. Mechanism of a novel process of lead paste pre-desulfurization

Is the pre-desulfurization process for lead paste economically feasible?
Thus,the proposed pre-desulfurization process for lead paste using the Na-Ca double alkali method is economically feasiblein industrial applications. A pilot-scale experiment would be necessary to predict the economic benefit more precisely for future large-scale industrial application.

How can a lead sulfate be returned to a solution?
Various methods of driving the insoluble lead-sulfate back into solution have been proposed and tried,all based on over-voltage. One rather intrusive method is to replace the sulfuric acid electrolyte with a greatly weakened version and then apply an over-voltage for a prolonged period of time before restoring a full strength electrolyte.

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This study presents the implementation of a desulphurization process for lead recycling under different chemical and physical conditions using pyro-metallurgical processes. Desulphurization...

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A green, efficient, and short route for recovering metal lead from spent lead-acid batteries has a great advantage in both environmental protection and sustainable development of lead industry. This paper developed a new scheme to recover metal lead by direct electrolysis in (NH4)2SO4 solution with desulfurized lead paste. Cyclic voltammetry showed ...

In this paper, a novel method of recovering PbO from lead pastes of spent lead acid batteries by desulfurization and crystallization in NaOH solution after sulfation was proposed.

Reconditioning batteries by Desulfating: Desulfating a lead-acid battery with a battery reconditioner or desulfator is considered the conventional method of desulfurization. It is a method where the device generates pulses ...

Actually you may find it shocking that lead-acid batteries dislike the pulse charging technique, given that many car alternators enforce a half-wave charging cycle with extensively fluctuating frequency over a large to substantial load current. Pulse Charging Method. When we talk about sealed "maintenance -free" (MF) lead-acid batteries particularly, choosing ...

Spent lead paste (SLP) obtained from end-of-life lead-acid batteries is regarded as an essential secondary lead resource. Recycling lead from spent lead-acid batteries has been demonstrated to be of paramount significance for both economic expansion and environmental preservation. Pyrometallurgical and hydrometallurgical approaches are proposed to recover ...

The sulfation of lead-acid batteries can render your gadgets useless. Some issues that you may experience include: Long charging times; Loss of starting power; More heat build-up ; And, if a sulfated battery is left untreated, it will eventually fail to work. You will have no other solution than to spend hefty amounts on battery replacement. Of course, this won"t be possible again and ...

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In this study, we propose a facile route for the recovery of lead from spent lead paste by pre-desulfurization followed by low-temperature reduction smelting. The effects of ...

With the increasing demand for lead acid batteries, there were a great number of spent lead acid batteries generated. They have the dual characteristics of resource and harm, making the recovery an important subject. In this paper, a novel approach to recover lead oxide from spent lead acid batteries by desulfurization and crystallization in sodium hydroxide ...

This study proposes a new closed-loop pre-desulfurization process for lead paste, which consumes only lime

as the indirect desulfurizer, produces sodium sulfate as a by ...

Lead-acid batteries are important to modern society because of their wide usage and low cost. The primary source for production of new lead-acid batteries is from recycling spent lead-acid batteries. In spent lead-acid batteries, lead is primarily present as lead pastes. In lead pastes, the dominant component is lead sulfate (PbSO4, mineral name ...

Herein, dual rotating liquid film reactors (RLFRs) and lime are proposed to construct a recyclable, ultra-fast, and value-added desulfation method. Parameter optimization and kinetic calculations prove that the above ...

This study proposes a new closed-loop pre-desulfurization process for lead paste, which consumes only lime as the indirect desulfurizer, produces sodium sulfate as a by-product, and regenerates...

The invention relates to a method of desulphurizing battery paste in the process of recycling lead-acid batteries. The paste desulphurizing stage of the method according to the invention...

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