# Lead extraction from lead-acid batteries

How are lead-acid batteries separated?
Usually,spent lead-acid batteries are separated in lead recycling plants by dismantling and sorting into four fractions: lead paste,metallic fragments,waste acid,and plastic case ( Worrell and Reuter,2014; Zhang et al.,2019 ). The processing of lead paste is relatively complex because it contains refractory lead sulphate.

Can spent lead-acid batteries be recycled?
Recycling spent lead-acid batteries has always been a research hotspot. Although traditional pyrometallurgical smelting is still the dominant process,it has serious environmental drawbacks,such as the emission of lead dust and SO 2,and high energy consumption. This study presents a clean process for recycling spent lead-acid battery paste.

Can a cleaner pyrometallurgical lead-acid battery recycling system reduce SO2 generation?
This study proposed a cleaner pyrometallurgical lead-acid battery (LAB) recycling method for lead extraction and sulfur conservation without an excessive amount of SO 2 generation. A reducing atmosphere was introduced to the lead paste recycling system to selectively reduce PbSO 4 to PbS.

How is Lead extracted?
The material is processed via reductive leachingusing calcium chloride and ferrous ions to extract the lead from lead paste. The lead in the leaching liquor can be recovered as metallic lead powder via electrowinning using soluble anode (iron sheet).

What is a lead-acid battery?
Lead-acid batteries are the oldest type of rechargeable batteryand have been widely used in many fields,such as automobiles,electric vehicles,and energy storage due to the features of large power-to-weight ratio and low cost ( Kumar,2017 ).

Can Akaganeite and calcium sulphate recover lead from battery paste?
The final leaching residue is a mixture of harmless akaganeite and calcium sulphate. The experimental results show that the proposed process is promisingfor the recovery of lead from spent lead-acid battery paste. 1. Introduction

This study proposed a cleaner pyrometallurgical lead-acid battery (LAB) recycling method for lead extraction and sulfur conservation without an excessive amount of ...

The development of simple hydrometallurgical route for possible recovery of total lead from spent motorcycle battery ash leach liquor in hydrochloric acid solution has been investigated using ...

The development of simple hydrometallurgical route for possible recovery of total lead from spent motorcycle

battery ash leach liquor in hydrochloric acid solution has been investigated using combination of leaching, cementation, ...

Ethylenediaminetetraacetic acid (EDTA) has been widely used as an effective reagent for removal of lead from soil because of its high lead extraction efficiency caused by ...

This thesis enhances the advantages of the soluble lead battery by introducing a novel method to produce electrolyte for the soluble lead battery directly out of spent lead acid...

This study proposed a cleaner pyrometallurgical lead-acid battery (LAB) recycling method for lead extraction and sulfur conservation without an excessive amount of SO 2 generation. A ...

China is the largest lead-acid battery (LAB) consumer and recycler, but suffering from lead contamination due to the spent-lead recycling problems. This paper ...

Recycling lead from spent lead-acid batteries has been demonstrated to be of paramount significance for both economic expansion and environmental preservation. ...

This work presents a new methodology for the extraction of lead from slag, based on the complexing effect of EDTA, a chelating ligand that has the ability to solubilize ...

The lead-acid batteries represent about 60% of batteries sold in the entire world [1], [2], [3]. Lead is a material very easy to recycle and, provided that adequate ...

The recovery of lead from spent lead acid battery paste (SLP) is not only related to the sustainable development of the lead industry, but also to the sustainable evolution ...

An innovative and environmentally friendly lead-acid battery paste recycling method is proposed. The reductive sulfur-fixing recycling technique was used to ...

Spent lead-acid batteries have become the primary raw material for global lead production. In the current lead refining process, the tin oxidizes to slag, making its recovery ...

The proposed process is an attractive solution to extracting Pb from spent lead-acid battery paste. The lead in the raw material was recovered via a direct ...

cling all the lead in scrap batteries. The method reduces energy consumption and eliminates toxic emissions, in contrast to present pyrometallurgical smelting, and the lead produced is pure ...

At the smelting step, named pyrometallurgical process, the lead compounds from the break are reduced to provide metallic lead with low antimony content, by smelting the ...

Qualitative lead extraction from recycled lead-acid batteries slag J Hazard Mater. 2009 Dec 30;172(2-3) :1677-80. ... This work presents a new methodology for the ...

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