

ABTRAK

RECOVERY TIMBAL (Pb) DARI ANODE SLIME HASIL ELECTROLYTIC REFINING MENGGUNAKAN METODE SULFATISASI

Sonia Rahayu, 2026, 48 Halaman, 9 Tabel, 5 Gambar, 3 Lampiran

Anode slime merupakan residu hasil proses *electrolytic refining* yang masih mengandung timbal (Pb) dan berpotensi untuk di *recovery*. Penelitian ini bertujuan untuk mengidentifikasi karakteristik awal *anode slime*, mengkaji pengaruh metode sulfatisasi terhadap *recovery* Pb, serta menentukan persentase *recovery* yang diperoleh. Proses sulfatisasi dilakukan menggunakan H_2SO_4 dengan variasi konsentrasi 1 M, 2 M, 3 M, dan 4 M pada temperatur 80°C, 100°C, dan 120°C. Hasil proses dianalisis menggunakan *Atomic Absorption Spectroscopy* (AAS) untuk mengetahui kandungan Pb pada filtrat dan endapan. Hasil analisis menunjukkan bahwa kadar Pb awal dalam *anode slime* sebesar 2,48%. Proses sulfatisasi mampu mengubah Pb menjadi $PbSO_4$ dengan persentase sulfatisasi lebih dari 99% pada seluruh perlakuan. Kondisi optimum diperoleh pada konsentrasi H_2SO_4 4 M dan temperatur 100°C dengan kandungan Pb filtrat sebesar 0,035%, kandungan Pb pada endapan $PbSO_4$ sebesar 3,6944%, dan persentase *recovery* Pb sebesar 99,29%. Hasil penelitian menunjukkan bahwa metode sulfatisasi menggunakan H_2SO_4 efektif untuk *recovery* timbal dari *anode slime* hasil *electrolytic refining*.

Kata Kunci: *Anode Slime*, Timbal (Pb), Sulfatisasi, *Recovery*, H_2SO_4 AAS.

ABSTRACT

RECOVERY OF LEAD (Pb) FROM SLIME ANODE RESULTING FROM ELECTROLYTIC REFINING USING SULFATIZATION METHOD

Sonia Rahayu, 2026, 48 pages, 9 Tables, 5 Figures, 3 Attachments

Anode slime is a residue generated from the electrolytic refining process that still contains lead (Pb) and has the potential to be recovered. This study aimed to identify the initial characteristics of anode slime, evaluate the effect of the sulfation method on Pb recovery, and determine the percentage of Pb recovery obtained. The sulfation process was carried out using H_2SO_4 at concentrations of 1 M, 2 M, 3 M, and 4 M with temperatures of 80°C, 100°C, and 120°C. The products obtained were analyzed using Atomic Absorption Spectroscopy (AAS) to determine the Pb content in the filtrate and precipitate. The results showed that the initial Pb content in the anode slime was 2.48%. The sulfation process successfully converted Pb into $PbSO_4$ with a sulfation percentage exceeding 99% under all treatment conditions. The optimum condition was achieved at an H_2SO_4 concentration of 4 M and a temperature of 100°C, resulting in a filtrate Pb content of 0.035%, a Pb content in the $PbSO_4$ precipitate of 3.6944%, and a Pb recovery percentage of 99.29%. These results indicate that the sulfation method using H_2SO_4 is effective for recovering lead from anode slime produced during the electrolytic refining process.

Keywords: anode slime, lead (Pb), sulfation, recovery, H_2SO_4 , AAS.