

# Pengaruh sonikasi dengan media air untuk serbuk timbal sebagai elektroda positif terhadap kapasitas baterai lead-acid = Effect of sonication leady oxide with distilled water as positive active material in lead-acid battery toward the capacity

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## Abstrak

### [<b>ABSTRAK</b><br>

Penelitian ini dilakukan untuk mengetahui pengaruh sonikasi dengan media air terhadap serbuk timbal sebagai material aktif elektroda positif (PAM) dan hubungannya terhadap kapasitas baterai lead acid. Serbuk timbal yang dipakai merupakan standar pabrik yang di produksi dengan metode ball mill (Shimadzu). Serbuk timbal hasil sonikasi kemudian dianalisa dengan Partikel Size Analyzer (PSA), X-ray diffraction (XRD), GSAS, SEM/EDS dan Gravimetric Free Lead Test. Aglomerasi serbuk timbal terjadi pada awal proses sonikasi. Telah didapat serbuk timbal dengan ukuran nano (92 nm) pada sonikasi 600 menit. Serbuk timbal hasil sonikasi digunakan sebagai elektroda positif yang dipasangkan dengan elektroda negatif dari standar pabrik. Kapasitas mula yang dihasilkan ternyata lebih kecil dari kapasitas standar pabrik hal ini karena hilangnya komponen free lead pada serbuk timbal hasil sonikasi. Semakin kecil free lead yang terkandung dalam serbuk timbal hasil sonikasi dengan media air, PAM secara mekanik tidak stabil, proses formasi sulit dan kapasitas baterai yang dihasilkan semakin kecil. Ditemukan pula bahwa semakin besar ukuran partikel serbuk timbal sebagai bahan material aktif positif maka umur pakai baterai semakin baik.

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### <b>ABSTRACT</b><br>

Our goal in this research was to determine the effect of sonication leady oxide with distilled water as positive active material (PAM) and relation to the lead acid batteries capacity. Industrial product leady oxide (ball mill method) was used as raw material in this research. The prepared leady oxide was characterized and analyzed by particle size analyzer (PSA), X-ray diffraction (XRD), GSAS, SEM/EDS and Gravimetric Free Lead Test. Agglomeration occurs at the beginning of sonication. Been obtained the nanostructure leady oxide with particle size 92 nm at 600 minutes sonication. It?s sonication results are used as positive electrode which coupled with industrial negatives plates. The resulting initial capacity is smaller than Industrial product because loss of free lead components on leady oxide sonication results. The lack of free lead components in leady oxide as a result of water solvent sonication, cause PAM is mechanically unstable and difficult to form, and hence the plates have lower capacity. It was also obtained that larger particle size of leady-oxide , the life cycle of the battery is getting better;Our goal in this research was to determine the effect of sonication leady oxide with distilled water as positive active material (PAM) and relation to the lead acid batteries capacity. Industrial product leady oxide (ball mill method) was used as raw material in this research. The prepared leady oxide was characterized and analyzed by particle size analyzer (PSA), X-ray diffraction (XRD), GSAS, SEM/EDS and Gravimetric Free Lead Test. Agglomeration occurs at the beginning of sonication. Been obtained the nanostructure leady oxide with particle size 92 nm at 600 minutes sonication. It?s sonication results are used as positive electrode which coupled with industrial negatives plates. The resulting initial capacity is smaller than Industrial product because loss of free lead

