

## ABSTRAK

### PENGARUH VARIASI REDUKTOR DAN *ADDITIVE* DALAM REDUKSI SELEKTIF BIJIH MANGAN

Oleh

WINDI

Telah dilakukan reduksi selektif pada bijih mangan dengan menggunakan metode reduksi karbotermik, dimana tujuan dari penelitian ini yaitu untuk mengetahui pengaruh variasi reduktor dan *additive* pada proses reduksi selektif bijih mangan terhadap kadar dan nilai *recovery* mangan setelah proses reduksi. Proses reduksi dilakukan dengan waktu tahan selama 1 jam dan pada suhu 1150 °C, serta penambahan variasi reduktor 1,5 % arang cangkang sawit, antrasit, grafit, dan variasi *additive* 10 % Na<sub>2</sub>SO<sub>4</sub>, K<sub>2</sub>SO<sub>4</sub>, MSG. setelah reduksi sampel kemudian dikarakterisasi dengan XRF, XRD, dan SEM-EDS, hasil reduksi menunjukkan bahwa Variasi jenis reduktor dan *additive* saat mereduksi sangat mempengaruhi peningkatan persentase mangan. Dari hasil penelitian reduktor terbaik diperoleh pada reduktor arang cangkang sawit dengan perolehan persentase kadar mangan sebesar 54,242 % dari yang semulanya sebesar 40,397 % dengan hasil peningkatan sebesar 13,845 %. Sedangkan *additive* terbaik diperoleh pada *additive* K<sub>2</sub>SO<sub>4</sub> dengan perolehan persentase kadar mangan sebesar 52,767 % dari yang semulanya sebesar 42,476 % dengan hasil peningkatan sebesar 10,291 %.. Penggunaan variasi jenis reduktor dan *additive* mempengaruhi nilai *recovery* Mn pada hasil proses reduksi. *Recovery* mn paling tinggi didapat dengan jenis reduktor Arang Cangkang Sawit yaitu sebesar 98,851 %, sedangkan *Recovery* mn paling tinggi didapat dengan jenis *additive* K<sub>2</sub>SO<sub>4</sub> yaitu sebesar 91,703 %.

**Kata Kunci:** bijih mangan, reduksi karbotermik, reduktor, *additive*, separasi magnetic, XRF, XRD, SEM-EDS.

## ABSTRACT

### EFFECT OF REDUCTANT AND ADDITIVE VARIATION IN REDUCTION MANGANESE ORE SELECTIVE

By

WINDI

Selective reduction of manganese ore has been carried out using the carbothermic reduction method, where the purpose of this study is to determine the effect of reductant and additive variations on the selective reduction process of manganese ore on manganese content and recovery value after the reduction process. The reduction process is carried out with a holding time of 1 hour and at a temperature of 1150 °C, as well as the addition of reductor variations of 1.5 % palm kernel shell charcoal, anthracite, graphite, and additive variations of 10 % Na<sub>2</sub>SO<sub>4</sub>, K<sub>2</sub>SO<sub>4</sub>, MSG. The reduction results are then characterized by XRF, XRD, and SEM-EDS. The reduction results showed that variations in the type of reductant and additives when reducing greatly affect the increase in the percentage of manganese. From the research results, the best reductor was obtained in the palm kernel shell charcoal reductor by obtaining a percentage of manganese content of 54.242 % from the original 40.397 % with an increase of 13.845 %. While the best additives are obtained in additives K<sub>2</sub>SO<sub>4</sub> with the acquisition of a percentage of manganese content of 52.767 % from the original 42.476 % with an increase of 10.291 %. The use of variations in the type of reductant and additives affects the value of Mn recovery in the reduction process results. The highest Mn recovery was obtained with the type of Palm Kernel Shell Charcoal reductor, which amounted to 98.851%, while the highest Mn recovery was obtained with the type of additive K<sub>2</sub>SO<sub>4</sub> which amounted to 91.703 %.

**Keywords:** manganese ore, carbothermic reduction, reductant, additive, magnetic separation, XRF, XRD, SEM-EDS.