

ABSTRAK

Proses *roasting* bertujuan untuk mengurangi atau menghilangkan kadar sulfur didalam konsentrat. Pada saat *smelting* kadar sulfur didalam konsentrat sangat mengganggu karena energi yang seharusnya digunakan untuk reaksi oleh logam akan tetapi digunakan untuk reaksi dengan sulfur. Penelitian ini bertujuan untuk menganalisis pengaruh variasi waktu *roasting* terhadap massa, kadar, dan *recovery* Cu pada tembaga hasil proses *smelting*. Pada penelitian ini digunakan variasi waktu *roasting* selama 0, 60, 120, dan 180 menit dengan rentang temperatur 800°C-850°C. Setelah dilakukan proses *roasting*, konsentrat ditimbang sebesar 120 gram setiap sampelnya kemudian dilakukan proses *smelting* dengan penambahan *flux* kapur sebesar 30 gram, kokas sebesar 60 gram, dan silika sebesar 13 gram selama 90 menit dengan temperatur sekitar 1200°C-1300°C.

Hasil dari penimbangan massa tembaga menunjukkan bahwa waktu *roasting* 120 menit memiliki massa tertinggi, sebesar 42 gram. Dari hasil pengujian XRF waktu *roasting* 180 menit memiliki kadar Cu tertinggi sebesar 99,425% dan kadar Fe paling rendah sebesar 0,565%. Dari hasil perhitungan *recovery* Cu menunjukkan bahwa waktu *roasting* selama 180menit memiliki *recovery* Cu tertinggi sebesar 80,459%. Dari hasil yang telah didapat, dapat disimpulkan bahwa seiring bertambahnya waktu *roasting*, maka massa, kadar Cu, dan *recovery* Cu semakin meningkat dan waktu *roasting* selama 180 menit merupakan waktu *roasting* yang paling baik karena menghasilkan *recovery* Cu yang paling tinggi dan mempunyai kadar Fe paling rendah.

Kata Kunci: *Roasting, Smelting, Tembaga, Recovery Cu*

ABSTRACT

The roasting process aims to reduce or eliminate the sulfur content in the concentrate. At the time of smelting the sulfur content in the concentrate is very disturbing because the energy that should be used for reactions by metals is used for reactions with sulfur. This study aims to analyze the effect of variations in roasting time on the mass, grade, and recovery of Cu in copper produced by the smelting process. In this study, variations of roasting time were used for 0, 60, 120, and 180 minutes with a temperature range of 800°C-850°C. After the roasting process, 120 grams of concentrate was weighed for each sample, then a smelting process was carried out with the addition of 30 grams of lime flux, 60 grams of coke, and 13 grams of silica for 90 minutes at a temperature of around 1200 °C-1300°C.

The results of weighing the copper mass showed that the roasting time of 120 minutes had the highest mass, amounting to 42 grams. From the results of the XRF test, the roasting time of 180 minutes had the highest Cu content of 99.425% and the lowest Fe content of 0.565%. From the calculation of Cu recovery, it shows that the roasting time of 180 minutes has the highest Cu recovery of 80.459%. From the results obtained, it can be concluded that as the roasting time increases, the mass, Cu content, and Cu recovery increase and a roasting time of 180 minutes is the best roasting time because it produces the highest Cu recovery and has the lowest Fe content.

Keywords: *Roasting, Smelting, Tembaga, Recovery Cu*