Peningkatan kadar dan rasio pasir kromit kadar rendah melalui proses benefisiasi dengan variabel jumlah reduktor batubara dan aditif caso4 pada reduction roasting = The enhancement of chromium grade and its ratio from local low grade chromite sand through beneficiation process with the variation of reductant and caso4 as additive dosage on reduction roasting process

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Abstrak

ABSTRAK
Sekitar 95 dari seluruh bijih kromit yang ditambang di dunia digunakan sebagai bahan baku pembuatan ferrochromium FeCr . Pada penelitian sebelumnya, peleburan pasir kromit kadar rendah tidak dapat menghasilkan ferrochromium dengan kadar Cr ge; 60 sehingga pasir kromit kadar rendah harus dilakukan proses benefisiasi untuk meningkatkan kadar Cr dan rasio Cr/Fe sebelum proses peleburan menjadi ferrochromium. Penelitian ini menggunakan pasir kromit kadar rendah asal Kabupaten Konawe, Sulawesi Selatan. Proses benefisiasi yang dilakukan adalah magnetic separation menggunakan medan magnet 800 Gauss dan reduction roasting selama 60 menit pada temperatur 1000 C dengan variabel jumlah reduktor, yaitu 5 lean carbon, stokiometri, 5 excess carbon dan 10 excess carbon serta jumlah aditif CaSO4, yaitu 5 , 10 , 15 , dan 20 . Rasio Cr/Fe dan kadar Cr pada bahan baku pasir kromit adalah 0,9 dan 19,27 . Kromium dalam pasir kromit kadar rendah berada dalam mineral magnesiochromite, aluminian, yang terasosiasi dengan unsur besi dalam struktur spinel. Magnetic separation yang dilakukan pada bahan baku pasir kromit menghasilkan kenaikan rasio Cr/Fe dan kadar Cr menjadi sebesar 1,31 dan 21,33 akibat adanya pemisahan antara kromit yang bersifat paramagnetik dan pengotornya yang bersifat magnetik. Selanjutnya, hasil terbaik dari reduction roasting yang dilanjutkan dengan magnetic separation diperoleh pada proses reduction roasting dengan menggunakan 10 excess carbon dan 20 CaSO4, yaitu menghasilkan rasio Cr/Fe dan kadar Cr sebesar 1,19 dan 20,48 atau setara dengan FeCr yang mengandung 54,5 Cr.
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ABSTRACT
Around 95 of mined chromite ore in the world is utilized as raw material for ferrochromium making process. According to the previous research, the melting of low grade chromite sand could not produce ferrochromium with Cr ge 60 so that low grade chromite sand has to be beneficiated to enhance the chromium grade and Cr Fe ratio before the melting process to produce ferrochromium. This research utilized low grade chromite sand from Konawe District, South Sulawesi. The beneficiation processes that was conducted were magnetic separation, which used magnetic field of 800 Gauss and reduction roasting for 60 minutes at 1000 C with various reductant dosage, 5 lean carbon, stoichiometry, 5 excess carbon and 10 excess carbon along with various dosage of CaSO4 as additive, 5 , 10 , 15 , and 20 . Cr Fe ratio and chromium content in low grade chromite sand are 0.9 and 19.27 . Chromium, in low grade schromite sand, was existed as magnesiochromite, aluminian, which associated with iron in spinel structure. Magnetic sseparation process that was conducted to the raw material, resulted in enhancement of Cr Fe ratio and chromium content to 1.31 and 21.33 due to separation of the paramagnetic chromite from the magnetic

gangue. Furthermore, the best result from reduction roasting followed by magnetic separation was obtained when reduction roasting used 10 excess carbon and 20 $CaSO_4$, which resulted at 1.19 of Cr Fe ratio and 20.48 of chromium content or equivalent to FeCr with 54.5 Cr.