INTI SARI

Tujuan dari penelitian ini adalah untuk melihat pengaruh *carburizing* pada baja karbon rendah terhadap kekerasan dan struktur mikronya. Sebagai bahan karburasinya adalah arang kayu mahoni, arang tempurung kelapa, soda makan dan batu kapur.

Proses *carburizing* dengan *Pack carburizing* yaitu benda baja yang akan dikarburisasi dimasukkan ke dalam oven yang dikelilingi dengan campuran bahan – bahan : arang ± 70 %, soda makan (*sodium carbonat*) ± 20 – 25%, batu kapur (*calsium carbnat*) ± 2,5 – 3,5%, kemudian dipanaskan pada temperatur 900 ^{0}C dan di tahan dengan tiga variasi waktu penahanan 1 jam, 2 jam dan 3 jam. Hasil *carburizing* setelah di *quenching*. Kemudian dilakukan uji kekerasan *Vickers* dan analisa struktur mikro pada suatu benda uji yaitu (bahan awal, *carburizing*, *carburizing* dan *quenching)*.

Hasil pengujian menunjukkan perubahan dengan waktu penahanan, dimana semakin tinggi waktu *carburizing* (1 – 3 jam), semakin keras permukaan benda kerja dan juga semakin halus struktur yang terjadi. Pada inti butir berangsur – angsur mengecil, dan pada kulit struktur ferrit tertutup perlit sejalan dengan masuknya karbon.

ABSTRACT

The objective of this study is to observe the effect of carburizing of low carbon steel on its hardness and microstructure. As material carburizes is charcoal mahogany, charcoal coconut shell, sodium carbonate and calcium carbonate.

Carburizing process with Pack Carburizing is material to be carburized is put into oven. The material was surrounded by materials: charcoal $\pm$ 70%, soda food (sodium carbonate) $\pm$ 20 – 25%, lime stone (calcium carbonate) $\pm$ 2.5 – 3.5%, then heated at temperature 950°C and maintain with duration time variation. The duration is 1 hour, 2 hours, and 3 hours. The carburizing result after quenching process. After that, Examination including hardness Vickers test and microstructure analysis on materials (the beginning carburizing materials, carburizing process and the quenching process).

The result shows during examination was correlated with carburizing duration, increasing of carburizing duration (1-3 hours), the surface of the material is harder and finer its microstructure. Granules core little by little become smaller, and on surface ferrite are covered by perlite along with penetration of carbon.