ABSTRAK

Pada tugas akhir ini, besi cor kelabu Fc-25 dipanaskan pada suhu 850˚C selama 15 menit didinginkan menggunakan variasi media pendingin udara paksa, oli, dan air. Karakteristik mekanis berupa pengujian kekerasan dan pengamatan struktur mikro dilakukan pada masing-masing sampel sebelum dan sesudah proses *quenching*. Pengujian kekerasan menggunakan mesin uji kekersasan Vickers dengan beban 10 Kg dan waktu penahanan 10 detik. Pengambilan titik pada masing-masing sampel sebanyak 10 titik. Nilai kekerasan yang didapatkan pada tiap-tiap media pendingin berbeda-beda. Pada spesimen sebelum perlakuan panas sebesar 192,9 HVN. Setelah perlakuan panas kekerasannya meningkat. Pada pendingin udara paksa sebesar 192,9 HVN, oli 352,6 HVN, dan air 378,6 HVN. Hasil pengamatan struktur mikro sebelum perlakuan panas memiliki struktur mikro grafit tipe C, *pearlite*, dan *ferrite* yang mendominasi. Dengan menggunakan media pendingin udara paksa terbentuk *austenite*, grafit, dan *pearlite*, oli terbentuk *martensite* dan *bainite*, serta menggunakan media pendingin air terbentuk *martensite* dan ukuran grafit yang semakin kecil.

Kata kunci : *Bainite, besi cor kelabu Fc-25, quenching, kekerasan Vickers.*

ABSTRACT

In this final paper, gray cast iron Fc-25 was heathen up on temperature 850 ˚C for 15 minutes and cooled down using forced air cooling media variations, oil, and water. The mechanic characteristic was in the form of hardness testing and microstructure observational conducted in each sample before and after the quenching process. The hardness test used a Vickers hardness test machine with a 10 Kg load and 10 seconds of holding time. The number of pick up points for each sample is 10 points. The hardness value obtained in each cooling media is different. The specimen before heat treatment was 192,2 HVN. The hardness increases after heat treatment. On the forced air cooler 192,2 HVN, oil 352,6 HVN, and water 378,6 HVN. The result of the microstructure observation before the heat treatment had the dominant microstructure of type C graphite, pearlite, and ferrite. By using forced air cooling media, austenite, graphite, and pearlite are formed, oil is formed martensite and bainite, and using water cooling media, martensite and graphite are formed which are getting smaller.

Keywords: Bainite, gray cast iron Fc-25, quenching, Vickers Hardness.