ABSTRAK

Pengaruh Proses *Pack Carburizing* Menggunakan Media Arang Kayu Gelam dan Serbuk Cangkang Telur Terhadap Kekerasan Baja AISI 3115 (2019: xii + 49 Hal. + Daftar Gambar + Daftar Tabel + Lampiran)

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Tujuan penelitian ini adalah untuk mengetahui pengaruh proses pack carburizing menggunakan media karburasi arang kayu gelam dan serbuk cangkang telur sebagai katalis terhadap kekerasan baja AISI 3115. Penelitian dilakukan dengan proses carburizing pada temperatur 900° C holding time 120 menit dengan variasi katalis cangkang telur, tanpa katalis, 5% katalis, 15% katalis, dan 25 % katalis, dan menggunakan media quenching berupa oli bekas. Hasil pengujian kekerasan diperoleh peningkatan nilai kekerasan rata-rata spesimen, tanpa katalis sebesar 96,22 HRB, 5% katalis sebesar 96,82 HRB, 15% katalis sebesar 103,20 HRB, dan 25% katalis sebesar 99,46 HRB. Kekerasan material awal sebesar 86,76 HRB. Pengujian metalografi setelah di carburizing terdapat fasa perlit yang lebih banyak dari fasa ferit yang menyebabkan kekerasan material tersebut meningkat. Analisa hasil pengujian kekerasan menggunakan metode ANOVA. Hasil analisa data menunjukkan bahwa F_{hitung} (60,98) > F_{tabel} (4,07). Dapat disimpulkan bahwa uji kekerasan pada variasi persentase katalis memiliki pengaruh terhadap kekerasan baja AISI 3115.

Kata kunci: *Pack Carburzing, AISI 3115, Holding time, Perlit, Ferit*

ABSTRACT

The Effect Of The Pack Carburizing Process Using Gelam Wood Charcoal And Eggshell Powder Towards Hardness Of Aisi 3115 Steel (2019: xii + 49 pp. + List of Figures + List of Tables + Attachments)

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The purpose of this study was to determine the effect of the carburizing pack process using carburizing media of gelam wood charcoal and eggshell powder as a catalyst against the hardness of AISI 3115 steel. The research was carried out by carburizing process at a temperature of 900 ° C holding time 120 minutes with variations percentage eggshell catalyst, without catalyst, 5% catalyst, 15% catalyst, and 25% catalyst, and using quenching media in the form of used oil. The results of the hardness test obtained an increase in the average hardness value of the specimen, without a catalyst of 96.22 HRB, 5% catalyst at 96.82 HRB, 15% catalyst at 103.20 HRB, and 25% catalyst at 99.46 HRB. Initial material hardness of 86.76 HRB. Metallographic testing after carburizing has a pearlite phase which is more than the ferrite phase which causes the material hardness to increase. Analysis of the results of hardness testing using the ANOVA method. The results of data analysis showed that F_{count} (60.98)> F_{table} (4.07). It can be concluded that the hardness test on the variation of the catalyst percentage has an influence on the hardness of AISI 3115 steel.

Keywords**:** *Pack Carburzing, AISI 3115, Holding time, Pearlite, Ferrite*