

ANALISIS PENGARUH VARIASI SUHU *QUENCHING* DENGAN OLI TERHADAP KEKERASAN DAN STRUKTUR MIKRO BAJA *CHROME* UNTUK APLIKASI *HAMMER CRUSHER*

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ABSTRAK

Hammer crusher digunakan untuk menghancurkan *raw material* berupa *limestone* yang diambil dari tempat penambangan. Hal itu menjadikan *hammer crusher* sebagai komponen penting dalam proses pembuatan semen. *Hammer crusher* sering mengalami keausan sehingga mengurangi umur pakai dari *hammer crusher*. Proses *hardening* dilakukan pada temperatur 850°C, 900°C, dan 950°C dengan waktu tahan 30 menit yang kemudian di*quenching* dengan media pendingin oli untuk meningkatkan kekerasan serta mengetahui struktur mikro pada baja *chrome*. Hasil dari penelitian didapatkan nilai kekerasan rata-rata (*as-cast*) sebesar 26,07 HRC, temperatur 850 °C sebesar 27,59 HRC, temperatur 900°C sebesar 26,63 HRC, dan temperatur 900°C sebesar 23,94 HRC. Kekerasan tertinggi didapatkan pada spesimen temperatur 850°C tetapi perbedaannya tidak terlalu signifikan. Dari hasil uji struktur mikro terdapat perubahan batas butir dan membulatnya morfologi karbida seiring dengan bertambah temperatur pemanasan.

Kata kunci: *hammer crusher*, *limestone*, baja *chrome*, *hardening*, uji kekerasan, struktur mikro

***THE ANALYSIS OF THE EFFECTS IN THE QUENCHING
TEMPERATURE VARIATIONS WITH OIL ON THE HARDNESS
AND MICROSTRUCTURE OF CHROME STEEL FOR HAMMER
CRUSHER APPLICATIONS***

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ABSTRACT

Hammer crusher is used to crush raw material in the form of limestone taken from the mining site. This makes the hammer crusher an important component in the cement manufacturing process. Hammer crushers are often subjected to wear and tear, reducing the service life of the hammer crusher. The hardening process was carried out at the temperatures of 850°C, 900°C, and 950°C with the lasting time of 30 minutes, which was then quenched with oil cooling media to increase the hardness and find out the microstructure of chrome steel. The results of the study obtained an average hardness value (as-cast) of 26.07 HRC, the temperature of 850 °C got 27.59 HRC, the temperature of 900 °C got 26.63 HRC, and the temperature of 900 °C got 23.94 HRC. The highest hardness was obtained in specimens of temperatures of 850°C but the difference was not very significant. From the results of the microstructure test, there was a change in the grain boundary and the rounded morphology of carbide as the heating temperature increases.

Keywords: *hammer crusher, limestone, chrome steel, hardening, hardness test, microstructure*

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