ANALISA PENGARUH MEDIA CETAK PADA PENGECORAN *PULLEY* MOBIL BERBAHAN DASAR MESIN *TEXTILE* BEKAS

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ABSTRAK

Kemajuan teknologi industri semakin berkembang pesat, salah satunya industri logam. Kemajuan industri logam berperan penting di industri otomotif karena banyak menggunakan material dari logam. *Pulley* merupakan komponen yang fungsi sebagai penghubung mekanis ke kompresor AC, *Alternator, Power Steering,* dan pompa air dengan menggunakan *V-Belt* sebagai elemen pemindah daya. Penelitian ini bertujuan untuk mempelajari pengaruh pasir cetak terhadap struktur mikro dan kekerasan hasil pengecoran *Pulley* berbahan dasar mesin *textile* bekas. Hasil uji komposisi kimia *pulley* berbahan dasar mesin *textile* bekas di dapat kadungan Fe sebesar 92,89% sebagai unsur yang paling dominan. Kemudian kandungan unsur seperti C sebesar 3,1336%, selain unsur C terdapat unsur lain yang dominan yaitu Si sebesar 2,0036%. Lalu ada unsur tidak dominan seperti Mn sebesar 0,4795%, Cu sebesar 0,1729% dan Cr sebesar 0,1295% serta ada 11 unsur lain dengan kandungan di bawah 0,07%. Struktur mikro *pulley* dengan perbesaran 100x terlihat bentuk grafit yaitu grafit serpih memanjang (grafit eutektik lamellar). Struktur mikro *pulley* dengan variable pasir cetak basah memiliki jumlah grafit banyak. Dimana perlite dominan terlihat dengan ukuran yang besar sehingga material tersebut memilik sifat keras yang baik. Struktur mikro *pulley* dengan variable pasir cetak kering penyusunnya lebih dominan perite dengan ukuran perlite yang sedang sehingga material ini bersifat sedikit ulet dan lebih lunak. Hasil pengujian kekerasan *Pulley* dengan pasir cetak basah memiliki nilai kekerasan rata-rata 146,403 BHN dan *Pulley* dengan pasir cetak kering yaitu sebesar 115,043 BHN. Sehingga *pulley* memiliki sifat kekakuan dan ketangguhan dengan tingkat pemuluran yang tinggi karena terdapat unsur Si sebesar 2%.

Kata kunci: *Pulley*, pasir cetak, komposisi kimia, struktur mikro dan kekerasan.

AN ANALYSIS OF PRINT MEDIA INFLUENCE ON THE CASTING OF CAR PULLEY MADE FROM USED TEXTILE MACHINARY

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ABSTRACT

The advances in industrial technology has been developing rapidly, and one of them is metal industry. The advance in metal industry plays crucial role in automotive industry since most materials used is metal. Pulley is the component which serves as mechanical connector to AC compressor, Alternator, Power Steering, and water pump using V-belt as its power transfer element. This research aims to study the influence of molding sand on the micro structure and the hardness of pulley casting made from used textile machinery. The result of the chemical composition test on used textile machinery pulley showed 92.89% Fe content as the most dominant element. Furthermore, the other content such as C element was measured to be 3.1336%, whereas the other dominant element beside C was Si amounted at 2.0036%. There was also some non-dominant element such as Mn as much as 0.4795%, Cu as much as 0.1729% and Cr as much as 0.1295%, and there were 11 other elements below 0.07%. The micro structure of the pulley with 100x magnification showed long graphite flakes (lamellar eutectic graphite). The micro structure of pulley with the wet molding sand variable had much graphite. It is in which perlite is dominantly seen in big size so that the material has a good level of hardness. Meanwhile, the micro structure of pulley with dry molding sand variable was dominantly consisted of medium-sized perlite. Thus, its characteristics is more resilience and soft. The result of the hardness test on pulley with wet molding sand showed that the mean hardness value was 146.403 BHN while the test on pulley with dry molding sand showed that the mean hardness value was 115.043 BHN. Therefore, the pulley has stiff and tough characteristic with high level of elasticity because it has Si element of 2%.

Keywords: Pulley, molding sand, chemical composition, micro and hardness structure.