ABSTRAK

Pada kendaraan sepeda motor, connecting rod berfungsi untuk menghubungkan piston dengan crankshaft atau poros engkol, selanjutnya meneruskan tenaga yang dihasilkan oleh piston ke poros engkol. Pada saat ini banyak beredar connecting rod imitasi dimasyarakat, dimana pada connecting rod imitasi lebih cepat mengalami kerusakan dibandingkan connecting rod asli, itu dikarenakan adanya perbedaan mechanical properties yang tidak sesuai dengan standar nya. Tujuan dari penelitian ini dilakukan untuk mengetahui perbandingan nilai kekuatan tarik pada connecting rod asli dan imitasi. Dimana dilakukan beberapa metode pengujian untuk mengetahui perbedaan dari masing – masing sample diantaranya : uji komposisi kimia, uji metallografi, uji tarik. Dari hasil pengujian material connecting rod asli dan imitasi, hasil uji komposisi kimia diketahui kadar karbon (C) pada connecting rod asli sebesar 0.176% dan pada connecting rod imitasi sebesar 0.170%. Selain itu unsur chromium (Cr) pada connecting rod asli sebesar 1.15% dan pada connecting rod imitasi sebesar 0.933%. Dari hasil uji metallografi pada connecting rod asli dan imitasi didapati fasa didominan dengan ferit dan pearlit. Hasil uji tarik pada connecting rod asli memiliki nilai rata – rata sebesar 1084.5 N/mm^2 (Mpa) dan pada rata – rata nilai kekuatan tarik pada connecting rod imitasi sebesar 916.96 N/mm^2 (Mpa).

Kata kunci : Connecting Rod, SCM 415 (JIS G 4105), komposisi kimia, kekuatan tarik, struktur mikro.

ABSTRACT

In a motorcycle vehicle, the connecting rod serves to connect the piston to the crankshaft or crankshaft, then forward the power produced by the piston to the crankshaft. At present there are many circulating imitation connecting rods in the community, where the connecting rod imitation is damaged more quickly than the original connecting rod, it is due to differences in mechanical properties that are not in accordance with the standard. The purpose of this study was to determine the comparison of the value of the tensile strength of the original connecting rod and imitation. Where some testing methods are carried out to determine the differences of each sample including: chemical composition test, metallographic test, tensile test. From the results of testing the original connecting rod material and imitation, the results of the chemical composition test revealed that the carbon content (C) of the original connecting rod was 0.176% and the connecting rod imitation was 0.170%. In addition, the element chromium (Cr) in the original connecting rod is 1.15% and the imitation rod is 0.933%. The results of the metallographic test on the original and imitation connecting rod were found to be dominated by ferrite and pearlite. The results of the tensile test on the original connecting rod have an average value of 1084.5 N / mm ^ 2 (Mpa) and on average the value of the tensile strength on the connecting rod is 916.96 N / mm ^ 2 (Mpa).

Keywords: Connecting Rod, SCM 415 (JIS G 4105), chemical composition, tensile strength, microstructure.