

ABSTRACT

The objective of this study is to investigate the effect of copper particles on wear behavior of steel and the relation between material hardness and dry sliding wear behavior. The heat treatment of Fe-3mass%Cu samples were done at 1273 K and followed by aging process at 873 K. The hardness of all samples were tested using Vickers hardness tester, then, the microstructure of each sample was observed by using optical microscope. It was found that the hardness of material increases proportionally with aging time until it reach peak aged condition, and then continuously decrease, despite both of them exhibit ferritic structure. Pin on Disc wear test was conducted to investigate the wear behavior of copper steel under dry sliding condition. The Pin on Disc test shows that the wear coefficient and the coefficient of friction for peak aged sample are lower than those of the over aged sample. Finer worn surface was found in peak aged samples. Finally, it can be concluded that peak aged sample is better than over aged sample in term of its lower wear coefficient, and finer worn surface.

Keyword: dry sliding, wear behavior, worn surface, copper steel