EFFECT OF HEAT TREATMENT ON WEAR BEHAVIOUR OF FORGED STEEL BALLS

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Abstract: Grinding balls efficiency is an important goal to reach. Forged and cast balls are widely used as raw material grinding media in several industrial areas. They are used by various raw material preparation fields. A search for a better service life is a goal most desired by all manufacturers. To improve the performance and increase the service life of ball mill grinding, various approaches have been used among which addition of alloying elements, the use of appropriate heat treatment or the change in manufacturing process. Since grinding balls are subjected to extreme abrasive and impact conditions; heat treatment must promote the desired properties. The scope of this work is to study the effect of heat treatment on the wear behavior of steel forged balls. Samples of law alloyed carbon steel were austenitized at different temperatures and are subsequently tempered at 250°C then cooled in water. Samples were observed by optical and SEM microscopy. Hardness and friction tests were measured on all the samples. The obtained results showed the effect of the temperature austenitization variation on wear behavior and hardness values of the studied forged steel balls.

Keywords: Steel forging, grinding balls, microstructure, heat treatment