

Structural and tribological behavior of AISI L6 tool steel

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Abstract : Tool steels constitute a family of carbon steels and alloy steels that are characterized by good wear resistance. These steels are destined for manufacture of tools used for forming, cutting and machining operations of metals and alloys. Among these steels, AISI L6 Tool steel alloy with nickel, chromium, molybdenum and vanadium for hot work, it is used in applications of punches, trim dies, blanking dies, embossing dies, forming dies, and shear blades. The aim of this work is to study the tribological behavior of AISI L6 steel before and after a hardening treatment at 780 °C. Structural characterization and tribological behavior of steel were investigated using Optical Microscopy (OM) and wear testing by friction on a Ball/Pin-on-disc Tribometer. The results obtained show a decrease in coefficient of friction due to improvement of wear resistance of AISI L6 steel by hardening treatment. This improvement is favored by precipitation of very hard particles offering a better resistance to displacement of dislocations.

Keywords : tribology, wear, heat treatment, hardening, structure, AISI L6