

EFFECT OF PARTICULATE ADDITIVES TO LUBRICANTS IN WEAR BEHAVIOR OF TOOL STEEL

**NASRI S. M. NIMER, HAIDAR A. ALSABTI AND
MUNAF H. RODHA**

Abstract

The executed work as a whole has shown an urgency and favorable prospects of practical use of firm powder additives on the basis of (graphite) and soft metal (Copper) powders at a range of concentration (2–5) %wt and (1–3) %wt respectively. Improving the characteristics of liquid lubricants was experimentally revealed at friction contact surfaces by using the composite additive powders of the graphite – copper (mixing) in comparison with a case of separately introduction of the same of graphite and copper powders, entered separately by using two types of lubricants, die and castor oils. The antifriction ability of powder lubrication and the state of powder layer are strongly related to the service conditions. Therefore, the effects of sliding velocity and normal load under powder lubrication were studied using a pin on disc contact apparatus according to ASTM G-99 specification. Tribological characteristics significantly improved that is the wear rate dropped by about (88%) with copper powder additive and about (91%) with graphite powder compared with the case of using the lubricant oil without additives.

Keywords: lubricants, additives, wear, tool steel