

In this work the degradation of spur gears lubricated in a severe dusty environment studied. An experiment was carried out, which simulates the operation of gears in contaminated media such as the Sahara desert, quarries, or mines. The present study gives the effect of the presence of solid bodies in lubricants during surface contact. This paper shows that the use of a lubricant contaminated by very fine sand particles, leads to significant wear in the first few operating cycles, in zones with a high rate of sliding. This wear is more significant at the gear tooth root than at the tip. In order to understand the wear phenomenon, Scanning Electronic Microscopy (SEM) images were taken. The presence of contaminants, leads to an increase in friction, and therefore raises the temperature; consequently the roughness increases. The roughness values become more significant with the presence of particles smaller than 40 μ m in the lubricant.