Nanoadditives SiO_2 and TiO_2 in Process Fluids

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Productivity growth in the machining industry is associated with a reduction in the cost of cleaning and recycling contaminated process fluids. The proper use of process fluids or lubricants can bring a significant reduction in friction and the amount of wear, thereby leading to a reduction in power consumption. The use of nanolubricants in modern technologies is a major advancement. Nanolubricant is a new system composed of nanometer-sized particles dispersed in a base lubricant. The use of nanoadditives in the form of nanoparticles is highly efficient due to their high chemical and biological activity. The doping of lubricants with nanoparticles is one of the ways to solve problems with the removal of bacteria, whereby improving the biological, chemical and technological stability of process fluids. In the article, we monitor the effects of doping process fluids with nanoparticles of silica (SiO_2) and titanium dioxide (TiO_2) on the friction coefficient of friction pairs of Si_3N_4 balls against steel 16MnCr5, EN 10084-94 and Si_3N_4 balls against aluminium AlCu4BiPb balls.

Keywords: nanoadditives, tribology, wear, friction pair, process fluid

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