

Abrasive wear effect on Polyethylene, Polyamide 6 and polymeric particle composites

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An agricultural machine construction is exposed to significant effects of functional areas wearing. The application of polymeric materials and composite materials seems to be prospective. The abrasive wear resistance was tested on rotating cylindrical drum device with the abrasive cloth of the grain size P120. Various modifications of polymeric particle composites, Polyethylene and Polyamide 6 were tested. The polymeric particle composites research and production were focused on knowing the dependence among a two-component epoxy adhesive and various concentration and fraction of corundum hardening particles Al_2O_3 . Polymeric particle composites showed a potential possibility to resist to high abrasive wear (evaluated decreases in volume) when applying the hardening phase of the grain sizes F80 and F240 and the concentration no exceeding 45%. They showed a low density ρ 1.20 till 2.00 $\text{g}\cdot\text{cm}^{-3}$ comparing the steel ($\rho = 7.75 \text{ g}\cdot\text{cm}^{-3}$).

Keywords: polymers, polymer particle composite, resistance, two-body abrasion with impact, wear

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