

Filler Elastomers Abrasion at Steady State: Optimal Use Conditions

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Abstract : The search of a mechanism for the elastomer abrasive wear study is an open issue. The practice difficulties are complex due to the complexity of deformation mechanism, to the complex mechanism of the material tearing and to the marked interactions between the tribological parameters. In this work, we present an experimental technique to study the elastomers abrasive wear. The interaction 'elastomer/indenter' implicate dependant ant temporary of different tribological parameters. Consequently, the phenomenon that governs this interaction is not easy to explain. An optimal elastomers compounding and an adequate utilization conditions of these materials that define its resistance at the abrasion is discussed. The results are confronted to theoretical models: the weight loss variation in function of blade angle or in function of cycle number is in agreement with rupture models and with the mechanism of fissures propagation during the material tearing in abrasive wear of filler elastomers. The weight loss in function of the sliding velocity shows the existence of a critical velocity that corresponds to the maximal wear. The adding of silica or black carbon influences in a different manner on wear abrasive behavior of filler elastomers.

Keywords : abrasion wear, filler elastomer, tribology, hyperelastic

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