

Dry Sliding Wear Behavior of Polymer Composites in Contrast to Metals

Anne Bolvari

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Archard

PTFE

PTFE

Synopsis :

The material design to minimize the adhesive wear of polymer composites and metals was studied using wear model. Especially for polymer composites, wear rate is largely influenced by the property of transfer films, but in the existing theory of Archard the transfer film phenomenon is not incorporated. Therefore the new equation of wear theory involving this phenomenon is proposed in this paper. By this new equation it is suggested that the superior adhesive wear performance can be brought from good ductility and low coefficient of friction. PTFE is just this kind of material, and thermoplastic composites filled with PTFE can be used widely for the tribological use because of this good performance of low wear.

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要旨

高分子材料および金属材料の凝着磨耗を最小にする設計法を、磨耗モデルを使って検討した。特に高分子材料については、磨耗率は移動膜の性質によって大きく影響されるが、Archard 式には移動膜現象は入れられていない。そこで、移動膜現象をとり入れた新しい高分子の磨耗式を提案した。本モデルから、優れた耐凝着磨耗材料は、高い摩擦係数と低い磨耗係数とを併せ持つ移動膜を発生させるもので

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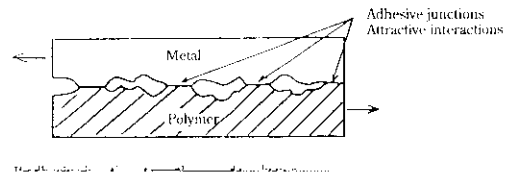
あることが示唆される。PTFE は、まさにこの要件にあてはまる材料であり、PTFE を充填した熱可塑性樹脂は、移動膜形成による優れた磨耗低減作用のため、広範囲なトライボロジー用途に使用できる。

Synopsis:

Highly adhesive wear behavior of polymer composites and metals was studied using wear model

2 高分子材料における凝着磨耗

2.1 移動膜



の相手との接着力は、この界面ですべりを妨げるに十分大きい。そ



PTFE :

2.5×10^{-5}