

2.800 Tribology
Department of Mechanical Engineering
Massachusetts Institute of Technology
Cambridge, MA 02139
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Homework Exercise (for discussion in class in about two weeks)

1. A composite bearing material has been developed using uniaxial graphite fibers imbedded in polyurethane matrix. The fibers are perpendicular to the sliding surface. Estimate the coefficient of friction and wear rate of the composite when it is sliding against a 52100 steel sphere of 0.02 m in diameter. State your assumptions.
2. Estimate the maximum velocity of sliding that UHMWPE can withstand when it is slid against a cobalt alloy under a normal load of 10% of the room-temperature yield strength of UHMWPE. State your assumptions clearly.