

# NON-NEWTONIAN COUPLE STRESS EFFECTS ON THE FRICTIONAL AND FLOW-RATE PERFORMANCES OF WIDE COMPOSITE SLIDER BEARINGS

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## Abstract

Based upon the micro-continuum theory, the frictional and flow-rate performances of wide composite slider bearings lubricated with non-Newtonian couple stress fluids are mainly concerned. Comparing with the Newtonian-lubricant composite slider-bearing case, the effects of non-Newtonian couple stresses provide a reduction in values of the friction parameter and the volume flow rate required. These improvements on bearing characteristics are more emphasized with increasing values of the couple stress parameter. A numerical example and the predicted results are also included for engineering application.

**Key Words:** couple stress effects, composite bearings, frictional performance, flow rate performance.

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