Dynamic Compression Properties of Paper-Based Wet Friction Material

by

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(Received on Sep. 30, 2002 & accepted on Jan. 17, 2003)

Abstract

The objective of this study is to investigate the dynamic compression properties of paper-based wet friction material experimentally and theoretically. First, the frequency characteristics of storage and loss modulus were measured changing the material size and lubricant viscosity. It was found that under wet conditions the loss modulus increases with frequency compared to that under dry conditions and that the effect is greaters for larger material size and for larger lubricant viscosity. Next, the dynamic response of a poroelastic block saturated by viscous fluid which was put between two impermeable rigid planes and subjected to compressive vibration was analyzed theoretically. The experimentally obtained results were accounted for qualitatively in the calculation and the mechanisms of dynamic compression properties were discussed.

Keywords: Dynamic response, Paper-based friction material, Poroelasticity, Compression, Wet clutch

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