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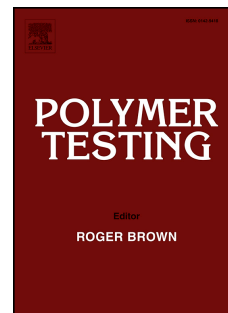
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## Test Method

**Accelerated wear testing of polyurethane hydraulic seal**

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*School of Mechanical Engineering, University of Ulsan, Ulsan 44610, South Korea***Abstract**

The wear characteristics of a polyurethane (PU) hydraulic seal were investigated using a hydraulic seal tester and a pin-on-plate reciprocating tribo-tester, and the results were compared to field data with the aim of developing an accelerated wear test method for hydraulic seals. Tests using a hydraulic seal tester and a pin-on-plate reciprocating tribo-tester were found to reproduce abrasive wear of PU from the field. However, a significant compression set was observed from the test using the hydraulic seal tester. Motivated by the occurrence of abrasive wear from the field, the discolored lubricant and the lubricant with alumina particles were further used for testing using the pin-on-plate reciprocating tribo-tester. The height decrease data of the sealing surface showed that the wear was accelerated by factors of 2.1-3.4 using these degraded lubricants. The outcomes of this work are expected to aid in the design of reliable accelerated life testing for hydraulic seals.

**Keywords:** Abrasive wear, lubricant, particle, polyurethane, seal**\*Corresponding author:** Tel: +82-52-259-2744; Fax: +82-52-259-1680; Email:[khchung@ulsan.ac.kr](mailto:khchung@ulsan.ac.kr) (Koo-Hyun Chung)

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