ONLINE ISSN : 1349-273X
PRINT ISSN : 1346-8804

Journal of the Japan Petroleum Institute
Vol. 48 (2005) , No. 3 pp.121-126

Additive Effect of Carbon Nanohorn on Grease Lubrication Properties

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(Received: June 4, 2004)

Recently, applications of the carbon nanohorn (CNH) have become of great interest in various industrial fields. The load carrying capacity and wear resistance of lithium soap grease containing CNH and heat-treated CNH (HT-CNH) were studied using a Falex friction tester, and compared with those of grease containing reference carbon materials such as graphite, cluster diamond (CD), and graphite cluster diamond (GCD). The load carrying capacity of the greases with carbon materials was always higher than that of the base grease. The greases with CNH and HT-CNH had the same or higher seizure load than those with CD and GCD. In particular, the grease with HT-CNH exhibited good load carrying capacity even at a low concentration of 1 mass%. The grease with 3 or more mass% graphite had the highest seizure load of all greases in this study. The grease with HT-CNH showed the best wear resistance of all greases in this study. The wear resistance of the grease with other solid lubricants was the same or inferior to that of the base grease.

Keywords: Carbon nanohorn, Grease, Wear amount, Load carrying capacity

To cite this article:

Katsunori Kobayashi, Seiichiro Hironaka, Akihiro Tanaka, Kazunori Umeda, Sumio Iijima, Masako Yudasaka, Daisuke Kasuya and Masahiro Suzuki, *Journal of the Japan Petroleum Institute*, Vol. **48**, No. 3, p.121 (2005) .

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doi:10.1627/jpi.48.121

JOI JST.JSTAGE/jpi/48.121
