THE TRIBOLOGICAL STUDIES OF A KIND OF P-N ADDITIVES IN RAPESEED OIL

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ABSTRACT

There has been a growing concern for the pollution made by the use of mineral oil because of the worldwide interest in environmental issues. Since the end of 70s, people began to use vegetable oil as the alternative base fluids for environmental-friendly lubricants because it has good biodegradable characters. But to use as lubricants, additives must be added to improve its tribological properties.

In view of this, a kind of benzotriazole derivatives which has a structure as below was synthesized.

![Structure](image)

The tribological properties of them as load-carrying additives in rapeseed oil (RSO) was carried out using a four-ball tester.

The result indicates that these compounds have good antiwear and anti-friction properties. In addition, they can improve the PB value of RSO greatly. The surface analysis of worn balls was carried out using X-ray photoelectron spectroscopy (XPS) and electron probe microanalyzer (SEM) and the tribological mechanism was discussed on the basis of experimental results.