

## Studies of Oxidation Mechanism of Biodiesel from Soybean Oil under Accelerated Oxidation Conditions

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Maintaining fuel quality of biodiesel for widespread use as an alternative fuel will depend on development of technologies to increase its resistance to oxidation during long-term storage. Biodiesel from soybean oil is highly unsaturated and this makes it very prone to oxidation. The methylene groups adjacent to the double bonds are particularly susceptible to free radical attack. Multiple double bonds on the same fatty acid chain are more susceptible to oxidation than would be indicated by the number of double bond alone. Linoleic and linolenic acids, with two and three bonds, respectively, oxidize readily in soybean oil. The autoxidation reaction produces hydroperoxides which can polymerize with other radicals to produce high molecular weight. Although extensive researches have been tried to exhaust emissions, no attempt has been made so far to research for the stability of oxidation of biodiesel from soy bean oil in Korea. In this study, we studied for oxidation mechanism and oxidation characteristics of biodiesel from soybean oil under accelerated oxidation conditions in Korea.