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Data set on Optimized Biodiesel Production and Formulation of Emulsified *Eucalyptus teriticornisis* Biodiesel for usage in Compression Ignition Engine

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Data article

Data set on Optimized Biodiesel Production and Formulation of Emulsified *Eucalyptus tereticornis* Biodiesel for usage in Compression Ignition Engine

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Abstract

This data article presents the experimental values pertaining to the bio-oil extraction, optimizing biodiesel production and formulation of emulsified fuel blends of *E.tereticornis* bio-oil for its use in compression ignition engine. The *E.tereticornis* leaves were collected from the interior region of Puducherry, India. Soxhlet extraction process, in the presence of n-hexane, yielded 5.2% of bio-oil. Based on the free fatty acid content, base catalysed transesterification process was adopted along with use of sodium hydroxide and methanol. Optimization of biodiesel yield was carried out by varying the operating parameters. A biodiesel yield of 74.19% was obtained at eighty minutes reaction duration, 1.8 l/gms of sodium hydroxide, 70°C reaction temperature and 8:1 oil to molar ratio. Furthermore, the physiochemical properties improved by emulsifying the obtained biodiesel with 5% of water in presence of surfactant through experiments carried out based on Taguchi's DOE method.

Keywords: Biodiesel, Transesterification, Emulsification, Taguchi's method, Catalyst concentration.

Specifications Table

Subject area	Alternate fuels
More specific subject area	Biofuels
Type of data	Figures and Tables
How data was acquired	Experimental investigations in the biodiesel laboratory
Data format	Raw as well as tabulated
Experimental factor	Optimization of biodiesel production and emulsified fuel formulation based on Taguchi's DOE
Experimental features	Bio-oil extraction through solvent extraction method using soxhlet apparatus and water based biodiesel emulsification.
Data sources	Antoine Lavoisier Fuels and Lubricants Laboratory, Hindustan Institute of Technology and Science
Data accessibility	Data is along with this article

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