A PLANT DESIGN ON PYROGALLOL DERIVATIVE FOR BIODIESEL ANTIOXIDANT ADDITIVE PRODUCT

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

A PLANT DESIGN ON PYROGALLOL DERIVATIVE
FOR BIODIESEL ANTIOXIDANT ADDITIVE

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Biodiesel is a rapidly growing renewable energy source in Indonesia. However, its instability during storage is still an issue that needs to be solved. The currently available antioxidant in the market are mostly insoluble in oil-based samples, thus it is not very applicable for biodiesel. In the previous research, the synthesis of a new antioxidant product resulted in pyrogallol derivative. It is a modified, soluble antioxidant in biodiesel that is formed from the reaction between pyrogallol and methyl linoleate using 2,2-diphenyl-1-picrylhydrazyl. Pyrogallol derivative, when applied to biodiesel, shows excellent results and has the potential to be widely used in the biodiesel industry in Indonesia. In this research, an upscaling of the pyrogallol derivative production was designed and calculated from the production, process equipment selection, marketing plan as well as financial plan. The designed plant, when running for 8 hours a day, 25 days in a month, have a capacity of 958 kg/month. This is enough to supply 60% of the biodiesel quota in Indonesia.

Keywords: pyrogallol, methyl linoleate, biodiesel, antioxidant, plant design

DEDICATION

To the ones that have been my support system,
no matter how small it may seem
To the future of education in Indonesia,
with the hopes that it will grow and bloom

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