

CHAPTER V

CONCLUSIONS AND RECOMMENDATION

5.1 Conclusions

The blending of ethanol and ethyl acetate into fuels has a dramatic impact on phase separation tendency. Based on the experiments carried out, using anhydrous ethanol (99.5% purity) at room temperature (20°C) could be produced in a wide range of component concentrations compared with hydrous Ethanol (95% purity). This result can be confirmed from turbidity value and long term storage stability at least 3 months of each ethanol concentration (95%, 99.5%, 99.9%). It showed that using anhydrous ethanol at room temperature are thus more suitable than 95% ethanol for use as fuel.

Moreover, the addition of ethyl acetate into the blends showed the impact on fuel properties; based on the above results, the blend containing 90% diesel, 5% ethyl acetate and 5% ethanol has very close fuel properties compared to those of diesel fuel. However, cetane improvers should be added as necessary to keep the cetane number >47 within specifications.

In part of engine performance, the results indicated that the presence of oxygenated compounds, ethanol and ethyl acetate, in diesel fuel significantly influence engine emission. Besides, the fuel consumption of those blend were higher than diesel fuel at many ratios. This may be due to the direct consequence of the reduction in cetane number when adding more oxygenate into those of diesel fuel.

5.2 Recommendation

For further research, it is necessary to evaluate the economic of ethyl acetate production in commercial use.