

CHAPTER V

CONCLUSION AND SUGGESTION FUTURE WORK

Conclusion

In this thesis, tetrazole derivatives can be prepared by two methods as follows :

1. Tetrazole derivatives can be prepared by direct synthesis from sodium azide and nitroarylnitrile.
2. Tetrazole derivatives can be prepared by nitroarylation of the 5-substituted tetrazole compound.

Tetrazole derivatives can be dissolved in 1-hexanol and blended in base diesel fuel.

In this study, 1-hexanol can be blend in base diesel fuel. Because 1-hexanol had not effected on cetane index of base diesel fuel and uesed in the range of 1-hexanol 2.5-5.0 % by volume base on base diesel fuel.

Tetrazole derivatives as 0.05 % by wieght were dissolved in 2.5 % by volume of 1-hexanol base on diesel fuel. The cetane index of their blend compositions was determined and presented in table 4.2. The cetane index of mixtures gave similar values.

These thesis data demonstrated that diesel composition which contained 0.05 % by weight of tetrazole derivatives in added cetane index by 3 units in comparison with base diesel fuel.

The cetane index and cetane number of various diesel composition bases blended with 2.5 % by volume of 1-hexanol and tetrazole derivatives or octylnitrate content 0.05 % weight. Cetane index and cetane number were

increased tendency value but cetane index increased more than cetane number. Because of cetane index was calculated from formula equation in ASTM D976 plus improver value equation. The difference between the calculated and tested cetane number was 1 to 3 units. The cetane number of the blends increased as tetrazole derivatives or octylnitrate content increased. The cetane number of octylnitrate in base diesel fuel was increased 1.9 units. While the diesel composition containing tetrazole derivatives was increased cetane number by 0.1-0.2 unit which were compared with diesel composition base.

Accordingly, tetrazole derivatives were not suitable for using as cetane improver because it was little increasable cetane number.

Suggestion for Future Work

In this thesis, tetrazole derivatives were synthesized. Their yields are good product but price per gram is expensive more than commercial cetane improver. Thus, we should find new chemical cetane improver and the price per gram is equal or decrease the cost of synthesis which it give cetane number more than commercial cetane improver.

The future work is to synthesized tetrazole derivatives such as nitroalkyltetrazole derivatives which it probably give improver cetane number and more than commercial cetane improver. Because it has main structural formula as same as structure of commercial cetane improver additive as hexylnitrate, amylnitrate, octylnitrate, but it has different functional group.

The study effect and comparison of cetane number and cetane index when we used differential base diesel fuel.