

CHAPTER V

CONCLUSION

Sulfurized palm oil, as an additive, was synthesized by addition of sulfur to the double bond in molecule of palm oil at temperature 200 °C for 2 hrs. The sulfurized palm oil which had total sulfur range of 10-15 % by weight exhibited good physical properties, especially in extreme-pressure property. The increased molecular weight and viscosity of sulfurized palm oil with sulfide bridges linking fatty groups improved the film covering the surface of the metal to have more resistance in load carrying weight.

From the experiment, it was discovered that the amount of sulfurized palm oil, the concentration of sulfurized palm oil and the viscosity of base oil affected the extreme-pressure property of product. Regarding to the amount and concentration of sulfurized palm oil, the higher the amount and concentration, the higher the extreme-pressure property. Regarding to the viscosity of base oil, the higher the viscosity, the higher the load carrying weight obtained. It may be concluded that the sulfurized palm oil synthesized could be employed as a good lubricant additive.

In addition, the corrosion was the important factor which limited the amount and concentration of additive. Because of the high corrosion causing a higher expense for repairing, the use of the machine was short. Regarding to the corrosion, it was found that the corrosion was high when the amount and concentration of sulfur in palm oil increased. So it was not suitable to blend the sulfurized palm oil in high concentrations. On the other hand, the load carrying weight of extreme-pressure property should have the high concentration and

high amount of sulfurized palm oil. In the experiment, it was found that the concentration range of total sulfur in sulfurized palm oil which caused lower corrosion was not over 0.5 % by weight. Other properties, i.e., pour point, flash point, viscosity and solubility of various sulfurized palm oils in various base oils provided similar results and gave a positive test in specification.

