PONGSRI WAIYAVATJAMAI : SYNTHESIS OF ORGANOTIN COMPOUNDS AS LUBRICATING OIL ADDITIVES. THESIS ADVISOR : PIENPAK TASAKORN Ph.D , 172 pp. ISBN 974-576-985-1

Organotin compounds were synthesized by Grignard method , for use as lubricating oil anti-oxidant and anti-rust additive. The following organotin compounds synthesized were tetrabutyltin , tetraoctyltin, tetraphenyltin , tributyltin chloride , trioctyltin chloride , triphenyltin chloride , dibutyltin dichloride , diphenyltin dichloride , tributyltin diethyldithiocarbamate , trioctyltin diethyldithiocarbamate, triphenyltin diethyldithiocarbamate , dibutyltin bis diethyldithiocarbamate , diphenyltin bis diethyldithiocarbamate. A test on solubility of organotin compound in lubricating oil base , indicated that dibutyltin dichloride and dibutyltin bis diethyldithylocarbamate showed best results. Anti-oxidant characteristics were investigated by TGA method , It was found that dibutyltin bis diethyldithiocarbamate at 0.1 % wt in base oil could reduce oxidation product 3.6 % comparable to a commercial anti-oxidant which was 3.9 % base on additive-free base oil. A test for anti-rust property , by ASTM D 665 , indicated that organotin chloride caused moderate to severe rusting while low rusting was observed for tetraorganotin and organotin diethyldithiocarbamate.

Dibutyltin bis diethyldithiocarbamate was added to dewaxed oil , it could be used satisfactorily as anti-oxidant. However , it was not effective when used with reused lubricating oil treated by acid/clay process.