

CHAPTER V

CONCLUSION AND SUGGESTION

5.1 Conclusion

In this work, 80% wt/wt cardanol was separated from decarboxylated CNSL and used for preparation of cardanol polysulfide (CPS) as vulcanizing agent. The appropriate conditions for the preparation of CPS were reaction temperature of 140 °C, non-solvent, reaction time of 3 hrs and excess elemental sulfur, giving 28 %wt of sulfur content. From FT-IR, ¹H NMR, ¹³C NMR and a sulfur analysis, CPS is a complex mixture of sulfide resin, comprising mono-, di-, polysulfide linkages between double bond carbons of an alkyl side chain of cardanol.

CPS used as vulcanizing agent is mixed with natural rubber and other additives. The vulcanization characteristics and mechanical properties of vulcanized rubbers were tested. The vulcanization characteristics are delta torque and optimum cure time and mechanical properties are tensile strength, elongation, modulus, hardness and rebound resilience. The optimum cure time of rubber containing CPS was reduced and delta torque was increased when the CPS content was increased. Rubber containing CPS was found to have mechanical properties better than rubber without CPS. Then accelerated aging test was investigated and the results were compared to unaged specimens. It was found that the CPS containing rubbers have lower reversion in the vulcanizates. This work showed that CPS can be used as the vulcanizing agent and CPS improves mechanical properties of the rubber and reduces the reversion of rubber containing CPS.

5.2 Suggestions

The use of CPS as vulcanizing agent should be further studied, i.e. natural rubber latex blended with CPS and studying blend CPS with other rubbers. The preparation of the ready used products could the possibility in industrial applications of rubber containing CPS as vulcanizing agent and be studied.



ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย