CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

The results and discussions of the determination of the permeability coefficient for both hydrogen and chlorine gas in different test materials as presented in chapter four and the recommendation for the future study were concluded in this chapter.

5.1 Conclusions

5.1.1 From the hydrogen permeability coefficient for 0.15 mm thick Teflon determined at room temperature (25°C) compared to the literature value, there is a consistent number from the experiment and the literature value, which is 4.5×10^{-6} cm^3 (STP) cm/cm^2 min atm.

5.1.2 The permeability of gases increased with an increasing temperature as described by Barrer (1968).

5.1.3 The permeability of gases are independent of thickness of test materials except for epoxy vinyl ester resin which the permeability inversely varies with the thickness.

5.1.4 From the determination of the hydrogen permeability coefficient, Fluorodyn materials are potential materials because of their high rate of hydrogen transfer.

5.1.5 The Breakthrough Time of gases varied with the thickness of test materials.

5.1.6 From chlorine permeability determinations, epoxy vinyl ester resin is currently the most acceptable sheathing material since it has the longest Breakthrough Time.

5.2 Recommendations

5.2.1 The standardized coating procedure of test materials is required to prevent a major defect in surface protective coating.

5.2.2 The representative gas, 96% chlorine, 3% air and 1% hydrogen saturated with water should be used as a challenge gas in order to study the effect of the representative gas on the properties of the acceptable sheathing material.

5.2.3 The acceptable sheathing material should be applied on the sensor and tested in the laboratory and the plants.