CHAPTER V

CONCLUSION

In this research work, the solder masks were prepared by mixing the prevulcanized latex with a thickener. The process of solder mask preparation consisted of two steps. In the first step, the prevulcanized latex was prepared from the natural rubber latex and ingredients. In the second step, the viscosity of the prevulcanized latex was adjusted by carboxymethyl cellulose. The prevulcanized latex was prepared as vulcanized sheets to study the mechanical properties (tensile strength, elongation and hardness); and the solder masks were prepared from prevulcanized latex and a thickener in order to study the physical properties (adhesion strength and viscosity). The formulation of solder marks that gave the appropriate properties in this experiment are shown as follows:

| - 60% Natural rubber latex | 100 | Parts by weight | |
|-------------------------------------|------|-----------------|--|
| - 15% Casein | 0.75 | phr | |
| - 10% Potassium hydroxide | 1 | phr | |
| - 25% Tergitol NP9 | 0.5 | phr | |
| - 50% Zinc oxide | 0.66 | phr | |
| - 50% Tetramethyl thiuram disulfide | 2 | phr | |
| - 33% Zinc dibutyl dithiocarbamate | 0.66 | phr | |
| - 10% Thiourea | 0.66 | phr | |
| | | | |

- 50% Titanium dioxide

2.5 phr

- 20% Carboxymethyl cellulose 25g per 100g prevulcanized latex

The properties of vulcanized sheets from prevulcanized latex and solder mask were acceptable, for example, the tensile strength was 15.36 MPa, the elongation was 850%, the hardness (shore A) was 30.6, the adhesion strength is 30.44 N and the viscosity of solder mask was 26,562.5 cps.

Suggestions for Future Work

1. To study the method and conditions in order to enlarge the quantity to produce prevulcanized latex and mixing the prevulcanized latex with thickener.

2. To explore other methods for producing solder mask from natural rubber latex.