

CHAPTER V

CONCLUSION AND SUGGESTION

5.1 Conclusion

The flame retardant property of 100% acrylic emulsion paint can be improved using ammonium polyphosphate (APP) and aluminium trihydroxide (ATH). Each material act in different way to retard the fire.

The flame retardant paint in this research was obtained from the advantages of APP and ATH which showed the synergistic effect due to the decreasing of each flame retardant content in the emulsion paint formula. Formula **9** containing TiO₂:APP:ATH at 10:20:10 exhibited the highest OI value 33.81%. Because of the good water solubility of APP, the increasing of APP in the formula affected on the water resistant property of 100% acrylic emulsion paint.

This research tried to optimize both properties (100% acrylic emulsion paint with the high value of Oxygen Index > 26% and showed the best water resistant property at 18 hrs. After the flame retardant filler content and ratio of APP:ATH were varied the best formulations as **10** and **11** with the OI value 28.5% and 26.7%, respectively were disclosed. Both formulations had 10% TiO₂ content but different in APP:ATH ratio at 10:15 and 10:10, respectively. For the new anti-fungal containing paint, *Aspergillus niger* was used to evaluate for the antifungal property. The antifungal test resulted in formulation **12** which contained 1.0% captan as good as the existing material zinc omadine. From these results, it could be concluded that 100% acrylic emulsion paint could improve the flame retardant property when flame retardant filler as APP with ATH at 20 and 25% was used. This work could also show a new 100% acrylic emulsion paint formulation containing new potent fungicide.

5.2 Suggestions for further work

Further work that should be performed involved the examination on water resistance property of 100% acrylic emulsion paint by using another grade of APP such as FR CROS 489 reacted-coated APP from BUDENHIEN IBERICA which has low solubility in water.