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# DEVELOPMENT OF A FURFURYL ALCOHOL BASED SURFACE COATING

By

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The work described in this thesis was carried out by me at University of Sri Jayawardenapura under the supervision of Professor A.M.Abeysekera and Dr. Sudantha Liyanage and a report on this has not been submitted to any University for another degree.

7.10.99

Date

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We certify that the above statement made by the candidate is true and that this thesis is suitable for submission to the University for the purpose of evaluation.

Prof. A.M. Abeysekera

Date 17/11/99

Dr. Sudantha Liyanage

Date 17/11/99

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# ABSTRACT

## DEVELOPMENT OF A FURFURYL ALCOHOL BASED SURFACE COATING

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Furfuryl alcohol is a member of the furan family which can be utilized by acid hydrolysis of furfural. The polymerisation of furfuryl alcohol in the presence of an acid catalyst resulted in a dark brown coloured resin. The resin was cured by using p-toluene sulphonic acid. The cured resin has a shiny black surface finish. The cured furfuryl alcohol polymer has excellent physical and chemical properties which would enable it to be used as a coating for a laboratory table.

Tests were carried out to examine its suitability as a laboratory surface coating. Tests for chemical resistance, heat resistance, good adhesion, resistance to penetration of water, scratch resistance, test for brittleness were performed on the furfuryl alcohol based coating and compared with an epoxy paint and an ordinary wood paint both of which are commercially available.

The furfuryl alcohol based resin and the epoxy coating have almost similar properties. Both have high chemical, heat and scratch resistance, good adhesion and resistance to penetration of water. Significant differences between the two being the furfuryl alcohol based resin was slightly attacked by chloroform whereas the epoxy paint was attacked by concentrated $H_2SO_4$. The furfuryl alcohol based coating cracked in the bend test indicating that its flexibility has to be improved. The ordinary wood paint failed at most tests carried out in the study. Therefore, the furfuryl alcohol based coating is much superior to the ordinary wood paint in its properties and very much similar to the epoxy paint.