



## DEVELOPMENT OF MODIFIED CARBOHYDRATE ADHESIVES

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A process for manufacturing maize starch based high quality and environmental friendly adhesives was investigated by using borax and poly vinyl alcohol as modifiers. Maize starch was denatured by oxidation with Hydrogen peroxide in the presence of divalent Copper ions as a catalyst to produce oxidized starch and co-polymerized with modifiers to develop the adhesive formulations. Urea, Borax and Poly Vinyl Alcohol were used for this cross-linking process with varying their composition up to 6 %<sub>w</sub>. Lap joints were prepared with wood strips under 15 kgcm<sup>-2</sup> pressure for 4 minutes by varying the temperature range from 60 °C to 135 °C and bonding capacities were evaluated by subjecting to shear strength tests. The results indicated that development of modified adhesive from starch with borax and poly vinyl alcohol was better than that with urea. 120 °C and 4 minutes at 15 kgcm<sup>-2</sup> was the optimum conditions for the curing these prepared adhesives.

**Keywords:** adhesive, carbohydrate, starch, oxidation, co-polymerization.