Preparation and characterization of PVB : Influence of thermal, mechanical and light transmittance properties

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PVB copolymer was prepared by precipitation method from the acetalization of polyvinyl alcohol and butylaldehyde and it was structurally, morphologically and optically characterized by FT-IR, XRD and SEM, UV-Vis investigation. In H-NMR and FT-IR analysis, the resulting polymer from hydrolysis and acid condensation shown successful synthesis. TGA and DSC analysis showed PVB has better thermal stability than that of PVA due to acetalization of intermolecular substitution of hydroxyl unit in vinyl acetate moreover PVB gave optically very excellent transparency and good adhesion properties. Broad halo in WAXD confirms that PVB is semicrystalline in nature. UV-Vis result showed PVB has almost 99% transmittance and predicted that transmittance depends on the characteristics of glass adherend. T-peel test was taken place according to ASTM D1876 and Cu foil adherend was used and adhesion strength showed average 2.56 MPa.