

Research Project Title	Bonding Strengths between WPVC Composite and HCS by Applying the Tensile Forces Parallel and Perpendicular to the Bonding Area
Research Project Credits	6
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Abstract

This research aims to study the bonding strength between Wood/polyvinyl chloride (WPVC) and high carbon steel flat bar (HCS) by using an epoxy adhesive as bonding agent. The test is separated into 2 parts. The first part is performed by applying the tensile force parallel to bonding area. The results are presented in terms of the influence of bonding area, epoxy thickness, and the surface roughness of WPVC and HCS. For the second part, the tensile force is applied perpendicular to bonding area. The test considers the effects of epoxy thickness and surface roughness of WPVC and HCS. The test results indicate that the surface roughness affect directly the bonding strength for both cases of applying the tensile force parallel (increase 95.24%) and perpendicular to the bonding area (increase 71.15%). The epoxy thickness slightly affects bonding strength when the tensile force is applied parallel to bonding area but significantly affect bonding strength when the tensile force is applied perpendicular to bonding area. When the bonding area increases, bonding strength decreases due to the effect of stress concentration. In addition, the experiments 2 and 4 bonding areas give slightly different results in terms of the bond strengths.

Keywords: Wood/polyvinyl chloride (WPVC)/ High carbon steel flat plate (HCS)/ Tensile force applied parallel to bonding area/ Tensile force applied perpendicular to bonding area