ANALYSIS OF THE INFLUENCE OF AEROSIL MIXTURE COMPOSITION ON FIBERGLASS REINFORCED COMPOSITE WHICH WILL BE APPLIED TO FENDER MANUFACTURING USING THE HAND LAY UP METHOD

by
Ary Prayogo
Study Program of Automotive Engineering, Engineering Departement of
The State Polytechnic of Jember

ABSTRACT

Composite is a material that is formed from the combination of two or more materials that have stronger mechanical properties than the forming materials. The advantages of composite materials are that they have a lighter density, are corrosion resistant, and have stronger mechanical properties. Fiberglass is a fiber that has an important role as a reinforcing material in composite materials. So that the high or low mechanical strength of the composite material is very dependent on the fiber used. Aerosil is a fine powder that both has a role as a reinforcement and has a function to add mechanical strength to composite materials. In this study using the hand lay up method. Hand lay up is the process of making composites by pouring liquid resin into a mold filled with reinforcing material in the form of fiber which is carried out in stages until it reaches the required thickness. The volume fraction used is 30% of the ratio of aerosil and fiberglass with a mixture of AF-1 (10%:20%), AF-2 (15%:15%), AF-3 (20%:10%). The results of the tensile test with the AF-1 mixture variation (10%:20%) had the highest tensile strength value of 28.3 N/mm^2 compared to the AF-2 mixture variation (15%:15%) which was 24.8 N/mm^2 and the mixed AF-3 variation (20%:10%) has the lowest tensile value of 21.5 N/mm^2. The results of the bending test with the mixed AF-1 variation (10%:20%) had the highest bending strength value of 234 N/mm^2 compared to the AF-3 mixed variation (20%:10%) which was 195 N/mm^2 and the AF-3 mixed variation (20%:10%). 2 (15%:15%) had the lowest bending value of 117 N/mm^2.

Keywords : *Composite, Aerosil, Fiberglass, Fender, Hand Lay Up, Tensile, Bending.*