INFLUENCE OF THE ELECTROCHEMICAL TREATMENT OF ALUMINUM 2024 T3 FOR APPLICATION IN CF/ EPOXI/ALUMINUM COMPOSITES

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Abstract: This work deals with the processing and characterization of carbon fiber/ epoxy/aluminum composites obtained from anodized and non-anodized aluminum plates. The electrochemical treatment employed was the phosphoric anodization, after chemical pickling. After the treatment, the samples were laminated. The aluminum plates were intercalated with CF/epoxy prepreg layers. The next step was the hot molding process of the plates to obtain the metal fiber laminate with and without previous treatment. Thus, allowing to evaluate the influence of the anodization process. Several interface characterization techniques were used, such as: laminar, translaminar (Iosipescu) and compression shear strength, in addition to optical macroscopy. After the results analysis, it was verified that the adhesion properties were shown to be superior in the composites produced with the anodized plates. Additionally, the treatment proved to be a valuable tool of obtaining metal/fiber laminates, since most of the plates produced with non-anodized aluminum delaminated after a few weeks in stock. While the treated aluminum composites did not delaminate after months of their production.

Keywords: Aluminum, Anodizing, Composite. Metal fiber laminate. Carbon fiber. Epoxy