

Title: Hybrid Composite Fiberglass Structure with Embedded Aluminum Phosphate New Fire Retardants Additive: Effect of Fiberglass Types

Book :

Advanced Engineering for Processes and Technologies II

Document Type :

Book Chapter

Author: Asmalina Mohamed Saat, Syarmela Alaauldin, Asmawi Malik, Md Salim Kamil, Abdul Latiff Mohd Zaini

Publisher: Springer, Cham

ISSN: 1869-8433

DOI: https://doi.org/10.1007/978-3-030-67307-9_4

Abstract:

Composite fiberglass is a common material used in marine industry to fabricate marine sport equipment, boats, yachts and others. The material is expected to have a performance such as high strength, economic and safety especially related to fire incidents. However, in composite fiberglass, the resin in the system has high flammability properties and becomes the acceleration factor of fire propagation after ignition. The current system is a combination of ATH and APP and produces optimum fire-retardant performance. The mixture with a fire-retardant additive leads to an extra procedure and risk to the mechanical properties of the structure. Thus, this study is conducted to evaluate the mechanical and fire retardants performance of various hybrid multilayer fiberglass composites embedded with aluminum phosphate (0 wt%, 5 wt%, 10 wt%), a new fire-retardant additive. The highest mechanical strength was observed in samples with in all samples with 5wt% of aluminum phosphate additive. A combination layer of CSM, WR and CSM shows the optimum result for mechanical strength and fire-retardant properties.

.

Keyword.

Composite fiberglass, ATH, APP ,AlPO₄, Fire-retardant coating.