

BIO-BASED SANDWICH PANELS FOR ADVANCED INDUSTRIAL APPLICATIONS

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ABSTRACT

The presentation focuses on the use and application of natural fibre reinforced polymer composites for advanced industrial sector. The increasing use of glass fibre reinforced petroleum-based products has resulted in depletion of petroleum resources and entrapment of non-biodegradable materials in the environment. Biopolymers or synthetic polymers reinforced with natural fibres can be considered to be a viable alternative to glass fibre-based composites¹. The growing interest in the use of natural fibres in composite applications is due to its many advantages compared to glass fibres such as low tool wear, low density and cost, world-wide availability and biodegradability^{2,3,4}. Sandwich panels possess advantages of weight savings and high strength to weight ratio and are therefore increasingly used in the construction and aerospace industry. In this study, sandwich panels were developed from flax fabric impregnated phenolic resin as skins and nomex honeycomb core by the process of compression molding. The panels were subjected to mechanical and flammability tests. The adhesion between the skin and core was also determined by drum peel test. The peak heat release rates obtained in the cone calorimetry tests indicated that the panels complied with Federal Aviation Administration (FAA) regulations for aircraft interior materials.

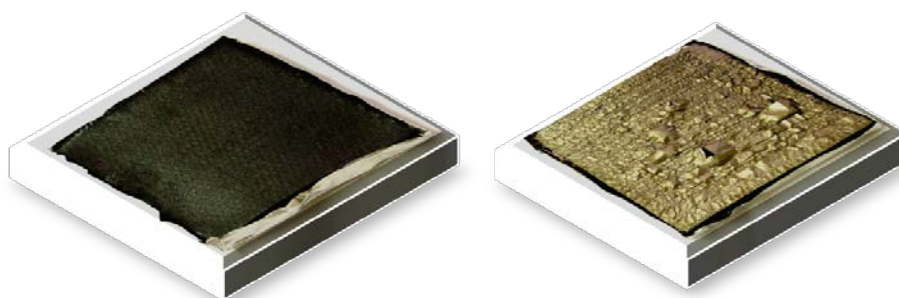


Fig. 1: Surface of panels after cone calorimetric testing

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