



DESIGN, FABRICATION AND TESTING OF BRASS HONEY COMB SANDWICH STRUCTURES

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Abstract

Brass alloy honeycomb structures were designed and fabricated to find the mechanical properties. Fabrication process was done by hydraulic press method which was reduced core corners without any cracks as per the dimensions. Because the rolling formations were given slight deviation from the geometry and it was not perfect matching during the bonding. To overcome this problem folding method was introduced to manufacture the panels. In folding process, a new folding tool was successfully developed to get fabrication of honeycomb core to achieve the desired shape of honeycomb panels with that bonded by common adhesive and which were used to compare the bending properties of panels. The deformation behaviours of honeycomb panels were investigated by the three-point bending test. The load-displacement graph obtained to various core heights at the 30^o C and showed various stages of deformation. The experimental results of the specimen were compared with theoretically analysis of the panels with various regions. Brass used as a conductive elastomeric EMI gaskets in various industries. Compared to the aluminium core its given good bending properties and less shear properties which can be used in high temperature Applications

Key words: Brass Sandwich panel, Honeycomb core, 3-point bending test, Shear stress, face bending stress & Natural frequency

I. Introduction

The honeycomb sandwich construction can embrace an unrestrained variety of materials and panel designs. The composite structures provide enormous usefulness as an ample range of core and facing material combinations can be selected. Compared to other materials honey comb structure improved Strength, Stiffness to weight and strength to weight ratios. The honey comb panel consists of two thin face sheets and core with adhesive layers. The core was hollow hexagonal shape with specified thickness and this research panel used face sheets and core material made of brass for gaskets applications. A review of prose indicates that miniature work on flexural bending test, Facing bending stress and Natural frequency of honeycomb panels has been carried out. [1] Numerical Investigation into Effect of Cell Shape on the Behaviour of Honeycomb Sandwich Panel [2] Failure modes for sandwich beams of GFRP laminate skins and Nomex honeycomb core are investigated. A failure mode map for loading under 3-point bending is constructed, showing the dependence of failure mode and load on the ratio of skin thickness to span length and honeycomb relative density. [3] Honeycomb core made of polypropylene. The core is welded to a Twintex skin by means of a welding foil theoretical thickness of approximately 0.7 mm. Honeycomb sandwich panels are layered structures that consist of at least five layers two thin face sheets are bonded to a thick honeycomb core. Because of the wide range of panel parameters, numerical modelling is needed to provide insight into the structural characteristics of a particular panel the