

“REJECTION ANALYSIS OF HONEY COMB SANDWICH PANEL FOR ADVANCE LIGHT WEIGHT HELICOPTER”

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ABSTRACT: The continuous growth of composite materials honey comb sandwich panel for Advance light weight helicopter in used Composite materials. The advance composite materials made and Research and development light weight composites materials these materials combined in used materials Kevlar -1226, Carbon – 801, and Glass-7781 in used three materials in made by new Composite materials. This is composite material is main Properties light weight materials but Developments and manufacturing cast of composite material is very high, but those composite is very smart Applications in higher level of Industry like aircraft industry, Aeronautical Industry, Aerospace Industry, etc. the composite materials is found out the Mechanical Properties and physical properties and other some of properties fined. This is composite material is used in generalized small size of Components of helicopters, Aircraft, airlines vehicles in used the composite materials is density (ρ) kg/m³ and other physical properties find of those composite materials.

Key Words: Density, Tensile strength, Tensile Modulus, Hardness, Stress, Core Failure

1. INTRODUCTION: The advance composite material is presented to the high strength of the composite materials and high metallic bond in composite at the model and sandwich panel is Application for Advance of light helicopter. The advance composite materials made and Research and development light weight composites materials these materials combined in used materials Kevlar -1226, Carbon – 801, and Glass-7781 in used three materials in made by new Composite materials. This is composite material is main Properties light weight materials but Developments and manufacturing cast of composite material is very high, but those composite is very smart Applications in higher level of Industry like aircraft industry, Aeronautical Industry, Aerospace Industry, etc. The composite materials are found out the Mechanical Properties and physical properties and other some of properties fined. This is composite material is used in generalized small size of Components of helicopters, Aircraft, airlines vehicles in used the composite materials is density (ρ) kg/m³ and other physical properties find of those composite materials. The composite materials in Kevlar – 1226, and Carbon – 801 the evolution of materials: use of modern and Advance composite materials in the very popular smart Industry in is used Composites materials it is the very important materials is requirement of the temperature range of Application of this composite materials all things of information correct in the Research paper. Core bond defects have been detected in most forms of materials typically used for aircraft sandwich panel construction, including both composite and metal faced sandwich panels, and aluminum and Names core materials.

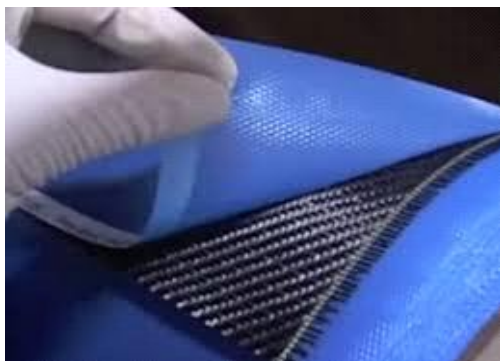


Fig. 1 Carbon Fiber Material with Protected Layer

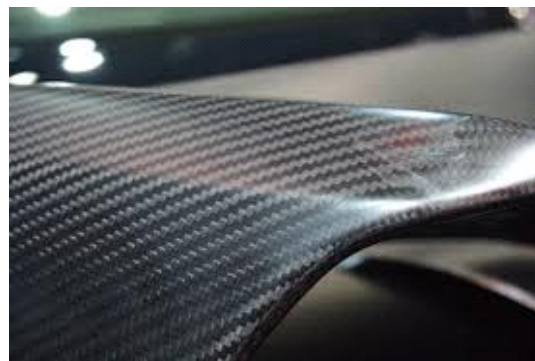


Fig. 2 carbon Material

Inspection for these defects is difficult, and only recently has an effective NDI method been found for detecting fillet bond failures. Conventional NDI has not been reliable because there is usually still sufficient contact between the core and adhesive, even when the interface is completely disbanded, to enable transmission of ultrasonic waves.



Figure. 3 Final composite Materials

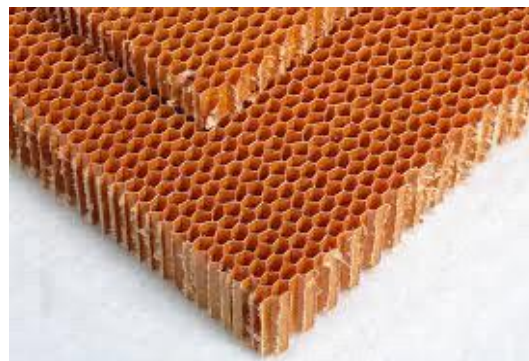


Figure. 4 Honeycombs Hexagonal Nomex core

2. SPECIFICATION OF MATERIALS AND EXPERIMENT METHODS

2.1 MATERIALS : In this Research paper is specified of materials The Quantity and standards values of materials is Layer form is used in aircraft, and air-vehicles' used in lamination theory is Applied in layer on aircraft structure body's

S.No	Materials	Single Min. values N/mm^2	Acceptance	Prod. Avg. Values N/mm^2	Acceptance	Types of Failure to be Acceptance
1	Kevlar - 1226	28		31		Tensile
2	Carbon 801	56		62		Te. And I. Lami.
3	Glass 7781	42		50		Tensile

2.2. MANUFACTURING PROCESSES

Materials	Modulus of Elasticity (GPa)	Compressive Strength (GPa)	Volume density (ρ) g/cm^3
E-glass	76	1750	2.57
Kevlar	131	2750	1.44
Carbone	228	3950	1.8
Epoxy	2.8	53	1.2

In this Research Paper are used to the manufacturing processes Hand lay-up method and vacuum begging moldings processes

Specimens making According ASTM Parameters'

This test specimen is done along with component and curing.

This test specimen is cut into (50×50) mm² dimension (3 pieces). This surface to be made rough and clean with acetone



Fig. 2.2.1 vacuum bag molding preparations

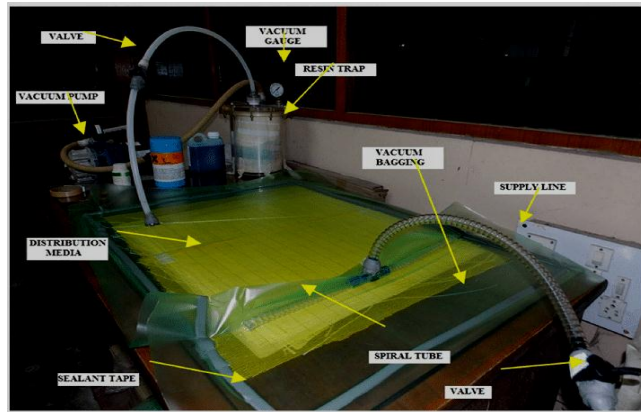


Fig.2.2.2. Complete processes

This is processes is vacuum bag molding processes in molding materials in condensing of materials in vacuum chambers in removing the air of the chamber.

Curing cycle for first phase bonding:

Temperature 120°C ± 5°C

Vacuum -0.75 bar. At 90°C reduce to 0.5 bar.

Pressure : initial 1.5 bar At 90°C, add 1.5 bar.

Dwell : 60 minutes

3. EXPERIMENT SET-UP, and Testing of composite material Specimens



Figure 2.2.1 Flatwise Tensile Test

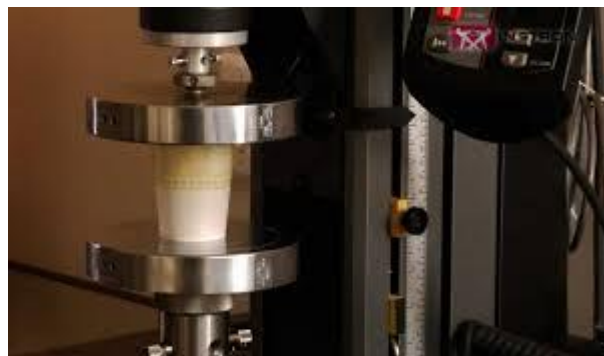


Figure 2.2.2 Compression Test

3.RESULT AND DISCUSSION

In this paper fined out the result according to the Exteripent and theoretically Anaysis of physical and Mechanical Properties of the composite materials for the honeycomb Sandwich panel making Comparing the analytical and experimental results shown in Table 3, one can see that good agreements were obtained between analytical approaches and experiments. This implies that analytical approach introduced in this study can be utilized for the pseudo- Bending stiffness evaluation of the honeycomb sandwich panel. More detail investigation about the lower-weigh and higher-performance structure design for honeycomb sandwich panel can be executed through analytical approaches for different design variables.

4. RESULT AND DISCUSSION OF THE TABLE

S.No	Properties	Honeycomb Sandwich panel
1	Density (ρ) g/cm ³	1.92 g/cm ³

2	Tensile strength (σ_t) (MPa)	3450
3	Tensile Modulus (E) (MPa)	175
4	Thermal Expansion coeff.	$2.2 \times 10^{-6} / ^\circ\text{C}$
5	Stress (σ) (N/mm^2)	450
6	Core Failure	446 Kgf

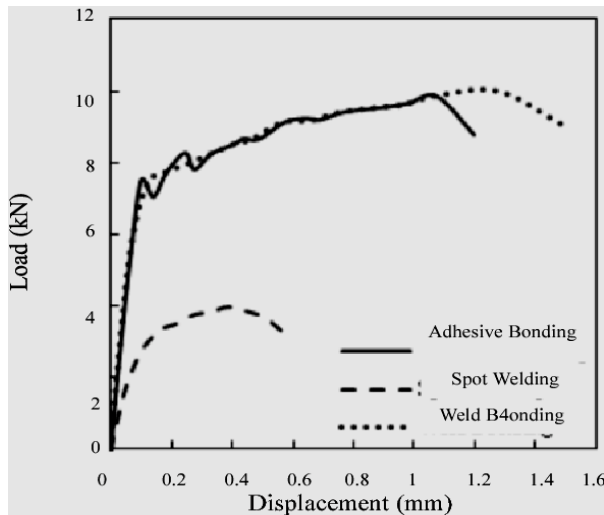


Fig. 3.1 Graph b/w displacement and load

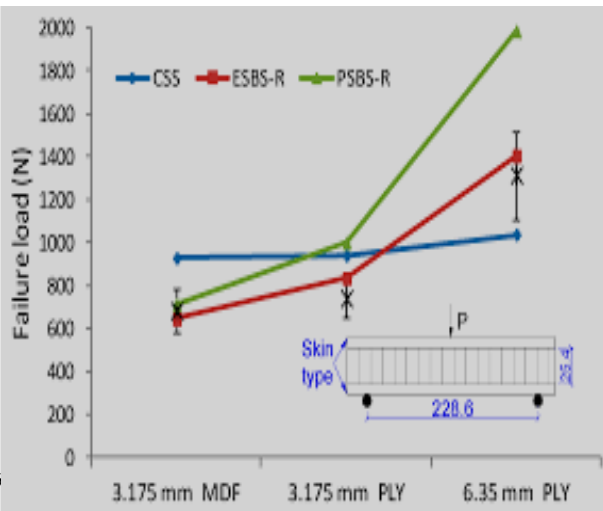


Fig. 3.2 Graph b/w distance and Failure load

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CONCLUSION

This paper has presented certain Honeycomb sandwich panel for composite materials and some applications of advanced materials the selection of adequate technique is given by types of composite applications, quality parts size of production, casts, etc. The high property of composites and large applications of the honeycomb sandwich panel led to chance the materials parts with composites in cutting edges ranges of economy.

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