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Classification of Liliopsid Genus SEPIENTUM AND HEN EGG SHELL HYBRID bolstered material

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ABSTRACT

The invention is an attempt to utilize the benefits offered by renewable resources for the event of composite materials supported compound and particles of natural fibers with hen egg shell. Natural fibers have the advantage that they're renewable resources and have bio degradable properties. During this invention, powder material of natural fibre monocot genus sepientum and hen egg shell ar invented with bio synthetic resin mistreatment molding methodology. This invention focuses on institution of superior mechanical and material properties of the hybrid composite. During this revealing, flexural rigidity check, tensile check, impact check and hardness of hybrid composite at dry and wet conditions are reportable. The revealing includes the method to form the composite and additionally the variability of merchandise in automotive, furniture, upholstery, house hold merchandise and laptop merchandise.

1. INTRODUCTION

Fiber strengthened chemical compound composites have received widespread attention within the past four decades as a result of their high specific strength and modulus. Commonly, composites victimization high strength fibers like carbon, aramid and glass area unit employed in broad vary of applications from region structure to automotive elements and from building materials to equipment. But, this sort of composites was foreign from overseas and want high value to supply it. this example has junction rectifier to the event of different materials. thus totally different technologies are developed. With the classic fibre strengthened polymers, however, there area unit usually considerable issues with regard to re-use or utilization when the tip of the life time, in the main owing to the compound of miscellaneous and typically terribly stable fibres and matrices. an easy lowland disposal is additional and additional excluded once concerning the increasing environmental sensitivity. thus environmentally compatible alternatives area unit searched for and examined, e.g. recovery of raw materials, CO2-neutral thermal activity, or biodegradation in bound circumstances. a noteworthy possibility could also be given by construction materials from renewable resources consisting of natural fibres, embedded into alleged biopolymers also as economically and ecologically acceptable producing technologies.

2. MATERIALS AND STRATEGIES

Material used

1. Genus Musa sepientum and Hen egg shell (hybrid) fibre particle strengthened composite

2.1 Chemical Treatment

The fibers were cleansed ordinarily in clean running water and dried. A glass beaker was taken and an answer comprising 6 June 1944 NaOH and eightieth H2O was ready. when adequate drying of the fibers in traditional shading for 2–3 hours, the fibers were taken and soaked within the ready NaOH resolution. Soaking was administered at totally different time intervals reckoning on the specified strength of the fiber. For our study, the fibers were soaked within the resolution for three hours. when finishing the soaking method, the fibers were taken out and washed in running water and dried for one more a pair of hours. after, the fibers were taken for consecutive fabrication method, specifically the procasting method.

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2.2 blessings of chemical treatment

Chemical treatment with NaOH removes the wetness content from the fibers, thereby increasing its strength. Chemical treatment additionally enhances the flexural rigidity of the fibers. This treatment clears all the impurities within the fiber material and additionally stabilizes the molecular orientation.

TABLE I. TECHNICAL PARAMETERS

1	Power unit		Electric
2	Loading capacity	(ton)	1.6
3	Centre of gravity for a lifting load	(mm)	600
4	Wheel base	(mm)	1442
5	Weight without battery	kg	3530
6	Mast tilt	degree	1 to2
7	Load Lifting height	(mm)	8000
8	Fork dimensions	s/e/l (mm)	50 / 100 / 1150
9	Fork carriage type		FEM II B
10	Minimum turning radius	(mm)	1702
11	Travel speed (loaded/unloaded)	Km/h	12/12
12	Lifting speed (loaded/unloaded)	m/s	0.32/0.60
13	Lowering speed (loaded/unloaded)	m/s	0.54/0.46
14	Service brake Type		Hydro mechanical
15	Voltage / Rated capacity	V / Ah	48/700

Final stuff undergoes the fabrication and testing strategies as declared below:

a) Moisture absorption check [ASTM D570]

b) Flexural check [ASTMD790]

c) Tensile check [ASTM D638]

d) Impact check [ISO 180]

TABLE II. CHEMICAL COMPOSITION OF Fe 540: IS 2062

C %	Mn %	S %	P %	Si %	Carbon Equivalent (CE) Max %
0.2	1.6	0.045	0.045	0.045	0.44

TABLE III. MECHANICAL PROPERTIES OF Fe 540: IS 2062

Quality Structural Type	Tensile Strength		Yield	Elongation
	Thickness (mm)	Minimum (N/mm2)	Stress (N/mm2)	Range %
Fe 540-HT	Up to 16	540	350	20-25
	16 to 32	540	340	20-25
	32 to 63	510	330	20-25
	Above 63	490	280	20-25

2.3 wetness Absorption check Procedure

Water absorption tests were administered consistent with ASTM D570 by immersing the specimens in deionized water tub at 250C. when immersion for forty eight hours, the specimens were taken out from the water and every one surface water removed employing a clean dry textile. The specimens were reweighed to the closest zero.1 mg among one minute of removing them from water. Then, the samples were tested to flexural, tensile, and impact analysis.

2.4 Flexural check

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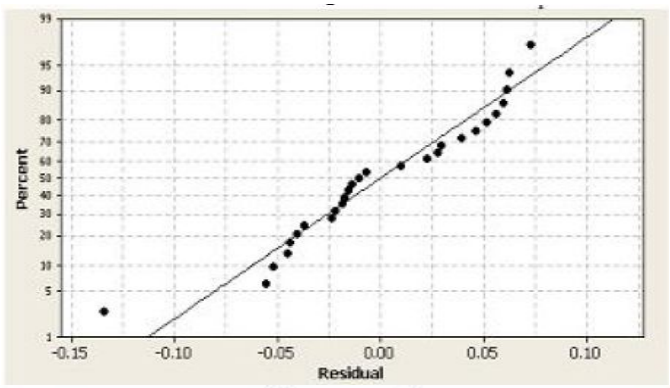
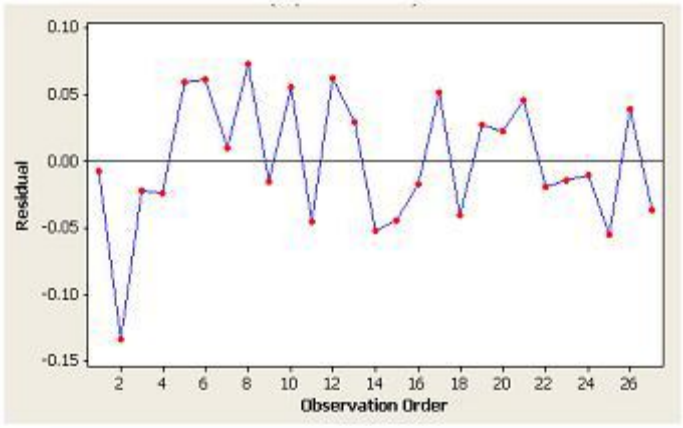
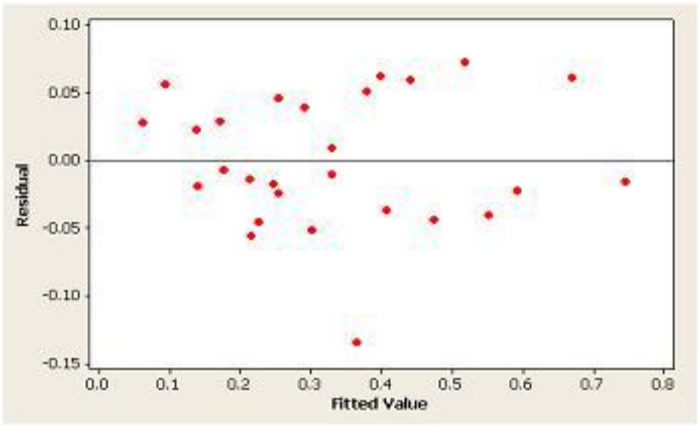
The flexural tests were performed on the universal testing machine, victimization the 3-point bending fixture consistent with ASTM D790 procedure. The samples were tested for untreated conditions with a load of 615.6 N and typical values obtained were E=27420N/mm2 , p= 1347.717 N/mm2 and EI = 39187882 N/mm2
The samples were tested for water conditions with a load of 615.6 N and typical values obtained were Young's modulus (E) =28894.02N/mm2







2.5 Tensile check

The tensile tests were performed consistent with ASTM D638 procedure. The samples were tested for untreated conditions with a load of 2746N and typical values obtained were average deformation ΔL = zero.03247and E = 26855.56N/mm2
The samples were tested water conditions with a load of 2746N and typical values obtained were average deformation ΔL = zero.034515 and E = 25264.38N/mm2

2.6 Impact check

The impact strength of the samples was measured victimization AN Izod impact check machine. All check samples were notched. The procedure used for impact testing was ISO one hundred eighty. The check specimen was supported as a vertical cantilever beam and broken by one swing of a setup. The setup striked the face of the notch. The untreated samples were tested and located to own the impact constant values of Impact strength of twenty one.733 J/m.
The water treated samples were tested and located to own the impact constant values of Impact strength of twenty one.089 J/m.

3. CONCLUSION

The hybrid stuff (Banana stem fibre and Hen egg shell) finds a a lot of application. This material is employed in the auto sector as replacement of plastic fibres that is already existing . The plastic fibre, that features a high carbon composition causes a drag for surroundings and what is more it's not a degradable one. thus these plastic fibres aren't eco friendly. so as to over return this downside the hybrid stuff (Banana stem fibre and Hen egg shell) employed in this project is replaced with plastic fibres. This hybrid stuff has less carbon composition and it's a degradable one. the fabric properties additionally permit to aim at applications that area unit nowadays dominated by fibre strengthened plastics. even so, there a restrictions with regard to extreme environmental conditions. an important branch of applications is to be seen e.g. in covering components with structural tasks in automobile and railway style, in article of furniture trade, and within the field of leisure trade.

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