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RECYCLING APPROACH OF WASTE TOWARDS DEVLOPMENT OF COMPOSITE MATRIALS

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Abstract : After preparation , now it is the time to test the material to see the changes made by mixing of different materials. The values are noted down and presented in the tabular form.

The aim of this research work is to provide the possibility of making a waste material as a useful material, but after the destructive testing of the prepared material various types of conclusion can be drawn on the bases of results of the experiment.

In this testing we used the Universal Testing Machine to the test the tensile strength and bending strength of the composite material. The Impact Testing Machine is used to test the impact energy of the composite material.

Tensile Strength Test

The tensile strength test is done on the Universal testing machine and the machine is calibrated as follows:

Range = 0-40 kN

Total Division = 500

1 Division = 0.08 kN

Gap = 0- 4 kN

The test result for tensile strength are as follows:

Table : Showing tensile strength

S. No.	Material	Size (l*b*t) in cms	Division	Load (kN)	Area (cm^2)	Tensile Strength (MPa)
1	Base with no fiber	18.5*17.5*0.3	8	0.58	0.10	6.4
2	Human hair sheet	18*17.5*0.6	16	1.45	1.9	7.9
3	Coconut hair sheet	17.5*18*0.5	15	1.25	5	2.11
4	Dry grass	19.5*18*0.8	13	0.86	3.3	2.75

	sheet					
5	Polyethene sheet	17*17.5*0.7	17	1.2	1.7	9.20

Flexural Strength Test

The bending test is also performed on the Universal testing machine and the machine is calibrated as follows:

Range = 0- 40 kN

Total Division = 500

1 Division = 0.08 kN

Gap = 0-4 kN

The test result for flexural strength are as follows:

Table Showing flexural strength

S. No.	Materials	Size (l*b*t) In cms	Division	Load (kN)	Area (cm^2)	Flexural Strength (MPa)
1	Base with no fiber	18.5*17.5*0.3	53	4.32	32.5	4.9
2	Human hair	18*17.5*0.6	59	4.64	42	28.8
	sheet					
3	Coconut hair sheet	17.5*18*0.5	47	3.68	42	10.2
4	Dry grass sheet	19.5*18*0.8	37	3.04	42	9.2
5	Polyethene strand sheet	17*17.5*0.7	57	4.48	54	3.4

Impact Strength Test

The impact energy of the materials is observed by placing the materials in izod configuration and the machine is calibrated as follows:

1 Division = 2 Joules

The result of the impact test are as follows:

Table Showing impact energy

S. No.	Materials	Size (l*b*t) in cms	Division	Impact Energy (J)
1	Base with no fiber	21*7.5*0.3	8	16

2	Human hair sheet	21*7.5*0.6	13	25
3	Coconut hair sheet	21.5*8*1	17	39
4	Dry grass sheet	21*8*0.8	13	27
5	Polyethene strand sheet	21*7.5*0.7	15	25

Discussion

In the tensile test with the addition of fiber the load carrying capacity increases from the base version. The tensile strength of composite varies depending on the tensile strength of the fiber material like it is maximum in the case of human hair and minimum for dry grass.

In the flexural test again human hair and polyethene strand sheet shows good bending result and dry grass in turn decreases the flexural strength from the base version.

In the impact test, energy absorbing capacity of all composite materials increases with the addition of fiber materials. Coconut hair and dry grass fiber sheet have good energy absorbing capacity.

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