BUDGET FOR THE PRODUCTION OF ECO-FRIENDLY COMPOSITE TILES

S/N	ITEM	DESCRIPTION	UNIT COST (N)	TOTAL COST(N)
1.0	**Raw materials collection/purchase**			
	i. Plastic waste	Variety of thermo plastic waste materials from different locations.		100,000
	ii. Reinforcement materials	Collection and purchase materials such as fine sand, fly ash, marble, rocks, cement, etc.		150,000
	Sub-Total			250,000
2.0	**Sample Purification/Preparation**			
	i. Cleaning/washing and drying	Sorted plastic waste	150,000	150,000
	ii. Sieving of reinforcement materials and shredding of plastic waste	Crushing/shredding of plastic waste materials and sieving of fine sand, fly ash	250,000	250,000
	Sub-Total			400,000
3.0	**Equipment**			
	Shredder	Reduce plastic waste to uniform small pieces	1,500,000	1,500,000
	Washer	Wash shredded plastic to remove impurities	1,200,000	1,200,000
	Melter (Pyrolysis reactor)	To melt plastic at controlled without degradation	4,500,000	4,500,000
	Mixer	To blend different plastic types and reinforcing materials	2,000,000	2,000,000
	Sub-Total			9,200,000
4.0	**Supplies/Consumables**			
	i. Stainless steel moulds	Various sizes	25,000	250,000
	ii. Trowel	Metallic plate	50,000	100,000
	iii. Lubricating oil	10 Litre	5,000	50,000
	iv. Metal bucket	25 Litre	10,000	50,000
	v. Plastic bucket	100 Litre	15,000	45,000
	vi. Safety goggles		10,000	40,000
	iv. Hand gloves		15,000	60,000
	v. Safety boots		25,000	100,000
	Sub-Total			695,000
5.0	**Characterization**			
5.1	Raw materials (plastic waste, fine sand, fly ash, cement,)			
		X-ray Fluorescence (XRF)	15,000	75,000
		X-ray Diffraction (XRD)	20,000	100,000
		Scanning Electron Microscopy (SEM)	10,000	50,000
		Fourier Transform Infrared (FTIR) spectroscopy	10,000	50,000

		Brunauer, Emmett Teller (BET)	25,000	125,000
		Gas chromatograph-mass spectroscopy (GCMS)	15,000	75,000
5.3	Finished Product Analysis			
	i. Structural integrity			
		a. Compressive strength	10,000	100,000
		b. Flexural strength	5,000	50,000
		c. Coefficient of friction	5,000	50,000
		d. Water absorption	5,000	50,000
		e. Density	2,000	20,000
	ii. Durability Test			
		a. Resistance to wear	10,000	100,000
		b. Hardness	5,000	50,000
		c. Impact resistance	10,000	100,000
		d. Abrasion resistance	7,000	70,000
		e. Transverse resistance	10,000	10,000
		f. Tribological	15,000	150,000
		g. Morphological	10,000	100,000
	iii. Chemical analysis			
		a. Leaching	5,000	50,000
		b. Off-gassing	8,000	80,000
	iv. Environmental and safety			
		a. Fire resistance	10,000	100,000
		b. Weather resistance	15,000	150,000
		c. Slip resistance	10,000	100,000
		d. Lifecycle analysis	20,000	200,000
	Sub-Total			2,005,000
6.0	**Travels**			
		Raw material collection/Purchase		150,000
		Transport, round trip for taking samples for characterization		100,000
		Accommodation and feeding	60,000/day	180,000
	Sub-Total			430,000
7.0	**Others/Miscellaneous**			
		Internet/Data for browsing		200,000
		Contacts/visits/consultations		100,000
		Fuels for running generator set		150,000
		Allowances for adhoc staff		500,000
	Sub-Total			950,000
	Personal costs/Allowances			
	Principal Researcher			300,000
	Team Members (4x)		240,000	960,000
	Technical Support (2x)		120,000	240,000
	Sub-Total			1,500,000
	Grand Total			**15,430,000**