Recycling of Plastic Waste In The Manufacturing of Paver Blocks

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Abstract- *The purpose of this research is to study the possibility of using plastic waste as binding material instead of cement. Manufacturing of the paver block, the plastic is based on plastic with a polyethylene terephthalate base. Plastic garbage is transported melt and solid waste mixed with a different proportion of fly ash and mine dust (PET 25-35% fly ash 25% and mine dust in weight 40-50%). Measurement of physical and mechanical properties shows that plastic waste paper blocks and these ratios in plastic give better results than concrete paver blocks.*

Keywords- Fly-ash, mine dust, polyethylene terephthalate, PPB.

I. INTRODUCTION

In order to reduce pollution and maximize the use of natural resources, advancement in the use of garbage in the power block as the main component. CO_2 production occurs during the production of cement which causes global warming. By changing cement Consumption environment can be protected. An attempt was made to reuse solid waste, mine dust, fly-ash and PET for the purpose of not losing strength away from original paver block. From observations of test results, PET can be reused with 50% of the mine dust and 25% of fly-ash in plastic puree block. The physical and mechanical properties of materials used in the plastic paper block were investigated. For testing, 6 cubes cube was inserted to measure compressive strength.

II. MATERIALS

Mine Dust

Mine dust is collected from local stone crushing units near palara Ajmer. It was initially in a state of drought was collected and was rinsed by IS: 4.75 mm sieve before mixing. Specific gravity: 2.57, Fineness modulus: 2.41, Density: 1.85 g / cc, void ratio: 0.42.

Fly Ash

Fly ash (FA) from the thermal power plant, Kota district, Rajasthan, India confirms IS: 3812-1981 is used in the mineral mixture in the dry powder Form physical and chemical properties were given Table 1.

Table-1,Physical and chemical properties of fly-ash.

S.No	**Physical Properties**	
1.	Class	F
2.	Specific Gravity	2.00 TO 2.05
3.	Physical state	Powder Form
S.No	**Chemical Properties**	
1.	Silicon Dioxide (Sio_2)	54.92%
2.	Aluminum Oxide (Al_2o_3)	23.04%
3.	Ferric Oxide (Fe_2o_3)	4.5-4.8%
4.	Calcium Oxide (Cao)	3.84%
5.	Magnesium Oxide (Mgo)	2.82%

Polyethylene Terephthalate

PET is produced by polymerization of ethylene glycol and teraphilic acid. Ethylene glycol is a colorless liquid that comes out of ethylene, and Terephthalic acid is a crystalline solid that is derived from xylene. When the heat is warm together Chemical catalysts, ethylene glycol and teraphthalic acid make PET molten, sticky. The mass which can be cut into frying directly for the later fibers as a plastic or for processing.

Experimental Test Setup

Solid cube confirming IS: 516: 1964 size 70. 6 x 70. 6 x 70. 6 mm is prepared. There total 12 cubes were cast for determination of strength, after 2 hours molds de-molded and subjected to cooling in the room temperature for 3 hours. Crushing load was noted and average Compressive strength of three samples is determined. Various blends are shown in Table 3, respectively. The ratio of the content given in table-2 and Compression strength is compared to everyone as shown in figure 1

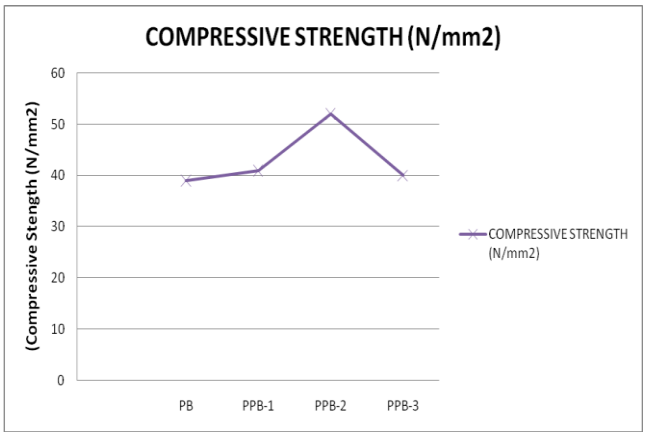
III. RESULTS

Table-3 Proportions percentage of materials and its compressive strength

S.NO	NAME OF PROPORTION	PET (%)	FLY-ASH (%)	MINE DUST (%)	COMPRESSIVE STRENGTH (N/mm^2)
1.	PB	-	-	-	39
2.	PPB-1	25	25	50	41
3.	PPB-2	30	25	45	52
4.	PPB-3	35	25	40	40

GRAPH

Graph between plastic paver block and its compressive strength



IV. CONCLUSIONS

- On the basis of this experimental investigation, it has been found that the ratio gives more strength when comparing PPB-2, PET-30%, fly-ash-25% and mine dust 45% with all other ratios.
- From this, we have concluded that with increased strength, solid waste (mine dust, fly ash and PET) can be used as main obstructions for the preparation of paver block.

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