

A Review on Green Blocks and Strips Using Plastic Mud

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Abstract - All over India, plastic waste disposal becomes a challenge to the environment. There is no safe way to dispose plastic waste and waste causes serious damage to environment, to overcome this problem the experiment investigation is performed to manufacture blocks from plastic wastages instead cement, aggregates and water. Plastic represents the environmental issue. The disposal of plastic is an uncontrolled manner. So as soon as possible reduced the plastic from the world. In this case mixture of plastic and sand used as decorating materials, plastic blocks, covering strips for beam and columns, tiles as foot paths for road and any residential and commercial buildings, doors and window frames, roofs, ceilings, pavements, bricks, decorating materials, barricades i.e wheels for road side flex rollers showing speed limits with replacement of iron, insulating materials. It is that strength of blocks are increased by using mixture of plastic to the sand. So it is observed that the strength of soil is increased and compressibility is decreased by addition of plastic with sand. The plastic blocks improves the workability and economical. This investigation deals with proper reduction plastic waste and useful things manufacture with plastic and sand. The plastic is molded into any desire shape. So that plastic is best ingredient for civil engineering constructions. Different shades can obtained by mixing coloring agents such as red oxide. Hence in this experiment investigation attempt is made to study regarding the manufacture of blocks by using plastic and sand.

Key words : Plastic waste, compressive strength, tensile strength, strips, workability, eco friendly environment, green blocks.

1. INTRODUCTION

Present and future days plastic utilization is high in all over world. The plastic using is advantage to the people and more disadvantages also. So reduce the plastic for life time. Plastics are the most versatile materials ever invented and have become a universal material, used for everything from water bottles to wings on aircraft. When compared to other materials and have contributed greatly to quality of our everyday life. Plastics are malleable and molded into any types of solid objects. Thus introducing the plastic and sand mixing thoroughly and getting the blocks for civil engineering constructions. As population

grows, plastic uses are also grows day by day life. In the world every year 300 million tons of plastic is producing, 50% of moments, but on the planet for at least several hundred years More than 8 million tons of plastic is dumped into our oceans every year. The quality which is for single use purposes-utilized for just a few of plastic waste in municipal solid waste (MSW) is expanding rapidly. It is estimated that rate of expansion is double for every 10 years, this is due to rapid growth of population, urbanization, development activities and changes in life style which leading widespread littering on the landscape. Plastics have many good characteristics which include versatility, lightness, hardness and resistant to chemicals, water and impart. Plastics are expanded to produce materials of low density. Dissolved in solvents or dispersed as emulsions, they are used in paints, varnishes and adhesives. At present plastics find use in building constructions mainly in thin coverings, panels, sheets, foams, pipes, etc.

2. OBJECTIVES

The main objective of this investigation is to:

- Reduce the disposal problems of plastic waste and make environment eco friendly.
- To improve the strength properties of the blocks.
- To reduce the land fill problems and also to control the depletion of natural resources.
- To reduce the cost effective analysis.

3. NEED

Why we use plastic?

The following are the points for need of plastics in construction:

- Corrosive resistant
- Light in weight
- Easy to transport
- Economical
- Reduce toxic gases
- Perfect shape and very convenient
- Durability is more
- Great workability

- Weather resistance
- Sound absorption
- Fire resistant
- Good appearance

4. METHODOLOGY

- To find properties of plastic waste.
- To find physical properties of sand.
- To conduct mixed design for plastic and sand.
- To study the compressive and tensile strengths.
- To study load bearing capacity.

5. LITERATURE REVIEW

An experimental investigation says that replacement of cement with addition of plastic gives the strength is slightly different. Plastic (70%) and sand (fine aggregate) is 30% gives higher strength, when the addition of suitable admixtures for molding different shapes and sizes.

5.1 Tokyay et al (1997)

The results of Tokyay et al (1997) on different sized shapes and specimen sizes gives compressive strength of high strength concrete. The compressive strength increased 50% and tensile strength increased by addition of waste plastic and tensile strength increased up to 10% replace the weight of the cement instead of cement plastic blocks weight is very less and more durable.

5.2 Dinesh et al (2018)

The studied that the plastic sand paver blocks possess more advantages which include cost efficiency, removal of waste products thus abolishing the land requirement problem for dumping plastic is investigated. The study explains reduction in emission of green house gases by the conversion of fuel gases into synthetic oil.

5.3 Prem Kumar k (2017)

Evaluated that the paper based on experimental results of effect of addition of waste plastics to bricks production in different percentages subjected water curing is conducted to find the characteristic compressive strength and water absorption value of bricks. The test results shows that partial replacement of natural sand by crushed waste plastic at the levels 5 to 10% has good effects on compressive strength.

5.4 Lairenlakpam et al (2017)

The study suggested that the making bricks from sand and waste plastics can be an alternative is the available

traditional clay bricks sand plastics have lower water absorption, bulk density and apparent porosity when compared with those of normal, have higher compressive strength than normal clay bricks.

5.5 Nivetha C et al (2016)

The study represents the proportion PPB-2 which having the PET-30%, Fly ash -25% and quarry dust 45% gives more strength when comparing with all other proportions. Solid waste (quarry dust, fly ash & PET) can be used as a main constituents for the preparation of paver block with the increased strength.

5.6 Rajarapu Bhushaiah et al (2019)

The investigation based on plastic sand bricks, reduce the usage of clay in making of bricks. Compressive strength of plastic sand brick is 5.6 N/mm² at the compressive load of 96KN. Water absorption of plastic sand brick is zero percentage.

5.7 Sarang Shashikant Pawar et al (2017)

The observed paper presents the plastic in paver block 20-40% at plastic may reduce, it is also dangerous to environment and wildlife strength increases up to 30-35%. Economical, increase properties of concrete.

5.8 Panimayam A et al (2017)

The experimental investigation represents the compressive strengths of modified cement concrete are as equal as plain cement concrete. The optimum modifier cement of waste plastics are found to be 4% for paverbricks. The cost of the construction will reduced.

5.9 Mohan D M S et al (2018)

The test results shows that the modified pavement block is applicable in the construction of rigid pavements. The block consists of quarry dust, fine aggregate, plastics out at which the fine aggregate and quarry dust percentage is 60 to 70. The compressive strength of modified pavement block are equal as conventional block. By using plastics in pavement block, reduces the weight up to 15%. The best option for the disposal of plastic and ultimately reduces plastic pollution in the environment.

6. CONCLUSION

The above analysis concludes that the waste plastic is used for manufacture the plastic blocks with mixture of sand. The replacement of cement concrete with plastic and sand is applicable in construction purposes. The cost of the

construction also reduced, environment clean and green, eco-friendly.

7. REFERENCES

- [1] Rajarapu Bushaiah, Shaik Mohammad, D.Srinivasa Rao(2019), "Study of Plastic Bricks made from Waste Plastic" International Research Journal of Engineering(IRJET), e-ISSN:2395-0056, p-ISSN:2395-0072, volume:6, issue:4, pp:1122-1127.
- [2] S.Dinesh, K.Mohammad Shalman Parishee, J.Sriram, M.Mohamed Bashith, R.Jayasankar(2018), "Effective use of Waste Plastic as Manufacturing of Paver Block", International Journal of Advanced Research in Basic Engineering Sciences and Technology(IJARBEST), ISSN:2456-5717, volume:4, issue:5, pp:231-235.
- [3] Mohan D.M.S, Vignesh.J, Iyyappan.P, C.Suresh(2018), "Utilization of Plastic Bags in Pavement Blocks", International Journal of Pure and Applied Mathematics, ISSN:1314-3395, volume:119, No.15, pp:1407-1414.
- [4] A.Panimayam, P.Chinnadurai, R.Anuradha, K.Pradeesh, A.UmarJaffer (2017) "Utilization of Waste Plastics As a Replacement of Coarse Aggregate in Paver Blocks" International Journal of ChemTech Research, ISSN:2455-9555, volume:10, No.8, pp:211-218.
- [5] Sarang Shashikant Pawar, Shubhankar Anant Bujone (2017), "Use of Fly Ash and Plastic in Paver Block", International Research Journal of Engineering and Technology(IRJET), e-ISSN:2395-0056, p-ISSN:2395-0072, volume:04, issue:11, pp:1542-1547.
- [6] K.PremKumar, M.Gouthami(2017), "Production of Construction Bricks by Partial Replacement of Waste Plastics", IOSR Journal of Mechanical and Civil Engineering (IOSR-JMCE), e-ISSN:2278-1684, p-ISSN:2320-334X, volume:14, issue:4, pp:09-12.
- [7] Lairenlakpam Billy graham Singh, Loukham Gerion, pongsumbam boss Singh,SureshThokchom(2017), "Manufacturing Bricks from Sand and Waste Plastics", International Journal of Engineering Technology, Management and Applied Sciences, ISSN:2349-4476, volume:5, issue:3, pp:426-428.
- [8] Nivetha.C, Rubiya.M, Shobana.S, Vaijyanthi.R, G.Viswanatham M.E(2016), "Production of Plastic Paver Block from the Solid Waste(Quarry Dust, Fly Ash & PET)", ARPN Journal of Engineering and Applied Sciences, ISSN:1819-6608, volume:11, No:2, pp:1078-1079.
- [9] Dr.Muhammad Maqbool Sadiq, Muhammad Rafique Khattak(2015), "Literature Review on Different Plastic Waste Materials Use in Concrete", ISSN:2349-5162, volume:2, issue:6, pp:1800-1803