Review Paper on "Manufacturing and Testing of Plastic Tiles"

Kanchan Basale[1]* Pooja Jagtap[2], Yogita Midgule[3], Manjiri Hulpale[4]

[1] Assistant Professor Civil Engineering Department, Dr. D.Y. Patil SOET Charholi, Lohgaov, Pune Maharashtra, India

[2,3,4] UG Research Scholar, Civil Engineering Department, Dr. D.Y. Patil SOET Charholi, Lohgaov, Pune Maharashtra, India

Abstract – ***The general objective of this research work was to contribute to the environment decontamination. Its specific objective to develops sustainable roofing tiles from ecological point of view. In this way this technology contribute in the decontainmenation of the environment since it uses waste material that are burned in municipal land without any use , or accumulated and burned in landfill, causing pollution plastic and rubber are non-biodegradable material so nature cannot absorb them as other waste.***

The typical tiles made from soil or clay will be limited because it destroyed the farmland on the other land the old and tire and plastic increases year and year which brings serious environmental problem so the plastic tiles made from waste plastic will lot to decrease above environmental pressure. The measurement of physical and mechanical properties show that plastic waste tiles whose proportion in plastic 40%give better result than micro-concrete tiles.

Keywords: Non -biodegradable, Sustainable, Decontainmenation.

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1. INTRODUCTION

As the modern life is unthinkable without plastic but there is catch. Today life style we see plastic everywhere .In day to day life the use of plastic in many ways such as plastics bags, toys, tables , tv box, water bottles, so above mention plastic solid in nature. Plastic is an unavoidable use of common man if at a time plastic use and people discard it and thorough out in open atmosphere. Many researchers has conclude that disposal of plastic upto 300 year it is very dangerous to human life as well as earth. Plastic consists unwanted substances and chemical. If we burn plastic then it produces poisonous gases, smell and hazardous material. So we want to help some percent for environment by using plastic material in construction. In our study we mainly concentrate on using this wastage of plastic as row material for the production of tiles. Plastic are non- biodegradable ,synthetic polymers derived primarily from petro-fossil feed stock and made of long chain hydrocarbon with additive and can be moulded into finished product.(excluding compostable plastic or polymer confirming IS/ISO 17088:2008) (Reference -textbook on plastic material by Prof. J.A. Brydson). We are collecting this solid plastic and crush this material to convert it in small and small particles.. Also it process different colour turn plastic material into appropriate colour. This plastic is mix into binding agent and put this homogenous material in to mould it take some time to set and get good tiles. To keep the environment clean and healthy, the plastic waste should be removed as early as possible. The tiles which are produced by this wastage of plastic have better performance and strength as compared to ordinary tiles.

2. LITERATURE REVIEW

In 1998, **Athos Poldidor "**METHOD OF MAKING COMPOSITE TILES CONTAINING WASTE PLASTIC**"** The present invention concerns a manufacturing process and a related product constituted of a tile in plastic material. The process comprises the following operative stages crushing a thermoplastic material of recovery.

Athanas Konin "USE OF PLASTIC WASTES BINDING MATERIAL INTHE MANUFACTURE OF TILES: CASE OF WASTES WITH A BASIC OF POLYPROPYLENE**"** According to konin the plastic waste tiles have low porosity hence it makes tiles impervious in opposition to micro-concrete tiles. The

proportion of 40% of plastic binder gives best result hence gauging is to be used.

Yong Liu "MECHANICAL PERFORMANCE OF ROOF TILES MADE TIRE POWDER AND WASTE PLASTICS" According to the principle that the impact strength is the most important mechanical performance and the modulus of elasticity and elongation at break are the secondly important; a sample that contains equal rubber powder and plastic was taken as the best.

3. MANUFACTURING PROCESS:

Collection of Material: (1) Crushed Plastic(2) M E K P (3) Epoxy Resin

Preparation of tiles consists of a thermosetting casting method. In this method, a plastic material are crushed by using crushing machinery and then this material binds together with binding material like epoxy resin, epoxy hardener(glue) with a small amount of accelerator and hardener MEKP. This mixture should be homogenous and appropriate proportion. We are using thermosetting plastic in our project because it doesn't require any heat and pressure treatment.

Proportion:

- 1:1:6 (Hardner: Epoxy Resin :Plastic material)
- 2:2:6 (Hardner: Epoxy Resin :Plastic material)
- **Result:**

Flexural Test:

Plastic Tiles: Size:300x300x15MM

Sr. No.	Identification Mark	Span	Breaking Load(N)	Remark
1	P1	300	1050.78	Broke
2	P2	300	2378.48	Broke

Mangalore Tiles: Size:300x300x15MM

Sr. No.	Identification Mark	Span	Breaking Load(N)	Remark
1	P1	300	1250	Broke
2	P2	300	1331	Broke

Abrasion Test:

Plastic Tiles: Size:300x300x15MM

Sr. No.	Initial Thickness	Final Thickness	Tw = T1-T2	initial wt of sample	Final wt of sample	Twm
1	15	14	1	41	34.50	2.30
2	15	14.3	0.7	46	40.10	1.93

Comparison of Plastic tile and ordinary tile

Sr. No.	Property	Ordinary Tile	Plastic Tile
1	Aesthetic class	Good	Better
2	Water Absorption	Less	No
3	Visual Abrasion Resistance	More	Less
4	Chemical Resistance	Yes	No
5	Frizz resistance	-	-
6	Coeffient of friction	More	Less
7	Thermal Shock Resistance	More	Less
8	Water curing	less	More
9	Thickness	Less	More
10	Bond Strength	More	Less
12	Strength of floor tile	Less	High
13	Weight	More	Light

FUTURE SCOPE:

After completion of above project is noted that this plastic tiles presenting un economical but in future research on that issue will be possibility make that this tiles economical. We will change the percentage of plastic waste also there are possibility to change the binding material like resin-melamine resin polyester etc this are the chemical which will be economical. If we use fire proof reagent, modern method, colour reagent for making this tiles then it will more glossiness and efficient. If we increase our production in large quantity there will be possibility of chemical present in it will be at low cost.

CONCLUSION:

As above project studied that the plastic is harmful for environment and very much amount plastic waste discard in surrounding in daily routing. So, we try to minimize as well as utilization of this plastic waste in civil construction field by production of plastic tiles with waste plastic material.

We trying to best to do efficient tiles form these materials but presently this tough task to us because of uneconomical production of this tiles it is possible to use another chemical for binding material such as polyester or other which may be economical in future.

REFERENCE:

1. Pile or plastic tiles for flooring and like applications

- Inventer:- Pierre Jean Couquet, Levelanet, France
- Filed:- May 19,1970

2. Method of making composite tiles containing waste plastic

- Inventer:-Atho Polidori, Saludecio, Italy
- Filed:- April 21,1998

3. Use of plastic waste as a binding material in the manufacture of tiles: Case of waste with a basis of polypropylene

- Inventer:- Roberts Mar
- Filed:- 1974 USA

4. Ecoligical roofing tiles made with rubber and plastic wastes

- Inventer:- Gaggino Rosana
- Filed:-Nov 13, 2013

Corresponding Author

Kanchan Basale*

Assistant Professor Civil Engineering Department, Dr. D.Y. Patil SOET Charholi, Lohgaov, Pune Maharashtra, India

E-Mail – kanchan.basale11@gmail.com