

FLOATING CONCRETE BY USING THERMOCOL

^{#1}Prof. Y.D.Nagvekar, ^{#2}Abhishek Gandhi, ^{#3}Rishab Udawant, ^{#4}Viraj Nanekar, ^{#5}Vrushab Lalwani.



^{#1}Asst. Professor, Department of Civil Engineering,
PVPIT Bavdhan, Pune, Maharashtra.

^{#2,3,4,5}Department of Civil Engineering
PVPIT Bavdhan, Pune, Maharashtra.

ABSTRACT

This research investigates the properties of the lightweight concrete by using a Thermocol. In this technique the Thermocol is used for preparation of the light weight concrete and density is reduced to attain the maximum efficiency, whereas the self-weight of the structure is minimized thereby reducing the dead load on structure

Keywords: use of EPS in concrete Blocks, strength comparison.

ARTICLE INFO

Article History

Received: 3rd June 2018

Received in revised form :
3rd June 2018

Accepted: 5th June 2018

Published online :

6th June 2018

I. INTRODUCTION

This research investigates the properties of the light weight concrete by using a Thermocol. In this technique the Thermocol is used for preparation of the light weight concrete and density is reduced to attain the maximum efficiency, whereas the self-weight of the structure is minimized thereby reducing the dead load on structure.

Floating concrete is a fluid mixture of density less than water, which is suitable to build floating structures, reducing the consumption of land for buildings. This project report addresses the procedure of preparation of mix proportion of floating concrete, materials used & various test results of compressive strength at the age of 7 days & flow, for acceptance of this concrete

II. LITERATURE REVIEW

1. Shaik Hakeem Thousif Ahmed "Experimental Study on MEPS Concrete: From this Paper I refer Modified Expanded Polystyrene [MEPS] aggregates are the artificial aggregates developed from nonbiodegradable Expanded Polystyrene waste [EPS] based on Heat Treatment Method [HTM]. In HTM, EPS waste is placed in closed hot air oven at 1300 C for 15 minutes. EPS waste become hardened & forms as MEPS aggregates. MEPS aggregates are used as MEPS fine aggregate [MEPS CA] & MEPS Fine Aggregate [MEPS FA] by sieving based on their sizes. The present

investigation directed towards the development and performance evaluation of the MEPS aggregate concrete containing MEPS CA, MEPS FA, Water, Super Plasticizer and OPC partially replaced by pozzolonic materials like GGBS, Silica Fume, Fly Ash, nano TiO₂, Nano Fe₂O₃ and Nano MgO at different levels. The final optimal mixture of MEPS aggregate concrete was selected among experiments under consideration to manufacture the light weight bricks. The compressive strength is inversely proportional to workability were compared with similar concrete composites as reported earlier.

2. Abhijit Mandlik "Lightweight Concrete Using EPS

Expanded polystyrene (EPS) geofoam is a lightweight material that has been used in engineering applications since at least the 1950s. Its density is about a hundredth of that of soil. It is utilized in reducing settlement below embankments, sound and vibration damping, reducing lateral pressure on sub-structures, reducing stresses on rigid buried conduits and related applications. Expanded polystyrene waste in a granular form is used as lightweight aggregate to produce lightweight structural concrete with the unit weight varying from 1200 to 2000 kg/m³.

3. Aman Mulla Lightweight Expanded Polystyrene Beads Concrete From this Paper I refer-The Expanded polystyrene beads are the material which substitutes in the place

offineaggregate. The main objective of this investigation is to find a concrete mix proportion which gives better results than the Burnt Brick (compressive strength and density), and to study the properties, such as density, compressive strength and splitting tensile strength of lightweight Expanded Polystyrene (EPS) beads concrete. Then its properties are compared with M20 grade conventional concrete.

III. METHODOLOGY

The thermocol concrete blocks are to be casted by replacing the coarse aggregate by thermocol. As thermocol has a less density it reduces the self weight of the block to be caste.

Casting of block Procedure:-

A tray for mixing the different material required to make concrete was brought.

Cement, aggregate, water, Thermocol of required quantity were taken and were mixed properly.

The steel moulds 150X150X150 were oiled properly before filling the mortar.

The mortar was filled into the moulds in three layer with hand compaction after adding each successive layer.

After filling the molds completely with the mortar, it was compacted again to remove air voids from the mortar.

The excess mortar was removed and the surface was levelled.

After a setting time of 24 hours concrete samples were demoulded and were taken for curing.

Curing was done in a water tank.

Blocks cast

6 blocks of conventional concrete were casted.(M1)

6 block of 100% Thermocol (M2)

6 block of 90% Thermocol (M3)

6 block of 80% Thermocol (M4)

6 block of 60% Thermocol (M5)

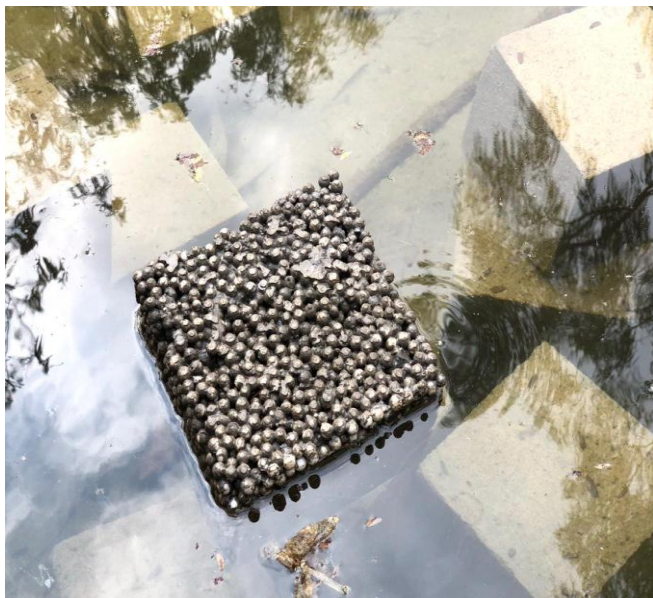


Fig: floating concrete block

IV. RESULT

Cubes	Thermocol	7 Days Mpa	AVERAGE	28 Days Mpa	AVERAGE
M1	0%	10		32	
		12.22	13	32.33	32
		16.2		28.45	
M2	100%	0.755		2	
		0.8	0.816	2.08	2.17
		0.88		2.44	
M3	90%	1.33		3.42	
		1.64	1.54	3.55	3.90
		1.65		4.75	
M4	80%	1.72		3.33	
		2	1.78	5.42	4.33
		1.64		4.26	
M5	60%	3.42		6.89	
		3.68	3.55	7.467	6.78
		3.55		6	

V. CONCLUSION

From the above results of eps concrete blocks, total strength of concrete is very less compare to conventional concrete. So Eps concrete cannot be used as a structural member to carry or transfer load. But can be used as partition walls or for Aesthetic purpose only.

REFERENCES

1. Shaik Hakeem Thousif Ahmed "Experimental Study on MEPS Concrete and Brick using Nano Materials" International Journal of Innovative Research in Science, Engineering and Technology Vol. 6, Issue 6, June 2017.
2. Hitesh Panchall "REVIEWSON DIFFERENT ENERGY ABSORBING MATERIALS FOR PERFORMANCE ANALYSIS OF SOLAR STILL" International Journal of Advance Engineering and Research Development @IJAERD-2014, All rights Reserved
3. Elamurugu.P "A Brief Review on GGBFS and Thermocol Concrete" Volume-6, Issue-5, September-October 2016 International Journal of Engineering and Management Research Page Number: 145-147
4. Gowthama prasanth "Experimental Investigation of Floating slab with Incorporated Pumice stone and Vermiculite" October 2016 | IJIRT | Volume 3 Issue 5 | ISSN: 2349-6002
5. B. Devi Pravallikal "The Study on Strength Properties of Light Weight Concrete using Light Weight Aggregate" International Journal

of Science and Research (IJSR) ISSN (Online): 2319-7064
Index Copernicus Value (2013): 6.14 | Impact Factor
(2015): 6.391

6. Asst.Prof. Jayalakshmi Dheiveekan “ECO-FRIENDLY
CONCRETE” ICRTEM 2017.

7. Abhijit Mandlik “Lightweight Concrete Using EPS ”
International Journal of Science and Research (IJSR) ISSN
(Online): 2319-7064

8. Aman Mulla “Lightweight Expanded Polystyrene Beads
Concrete” International Journal of Research in Advent
Technology (E-ISSN: 2321-9637) Special Issue National
Conference 2016