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Study on Strength Development of Geo-Polymer Concrete

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Abstract: ***Geo Polymer concrete is a green concrete better than OPC based concrete as the carbon di oxide emission is low compared to OPC. An attempt is made to understand strength properties of Geo Polymer concrete in this research.***
Keyword: **S** ***GGBS, NaOH***

I. INTRODUCTION

Geo-Polymer concrete has a lot of variables in its design. The attempt is to link few of the variables to get the desired strength

II. MATERIALS

Following materials have been used in the preparation of GPC

A. Fly Ash
B. GGBS
C. Sodium Hydroxide
D. Sodium Silicate
E. Water
F. Fine Aggregates
G. Coarse Aggregates

The following ratios were used for mix design

SL.NO	Design parameters	VALUE	UNIT
1	The wet density of GPC	2400	Kg/m^3
2	Ratio of sodium silicate to Sodium Hydroxide	2.5	Constant
3	The water content Chosen for Mix	120	Liters
4	The water content in sodium silicate	30	Percentage
5	FA percentage	16	Percentage
6	GGBS percentage	4-20% of binder	Percentage
7	Corse aggregate percentage	56	Percentage
8	Fine aggregate percentage	44	Percentage
9	Molarity consider for solution	8&16	Molarity



Figure 1 Mixed GPC

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III.RESULTS AND DISCUSSION

The following results were obtained after testing Cylinders samples at the 28day age.

DIA	8M	16M
75mm dia	34.46	23.23
100mm dia	37.98	26.1
150mm dia	42.04	36.44

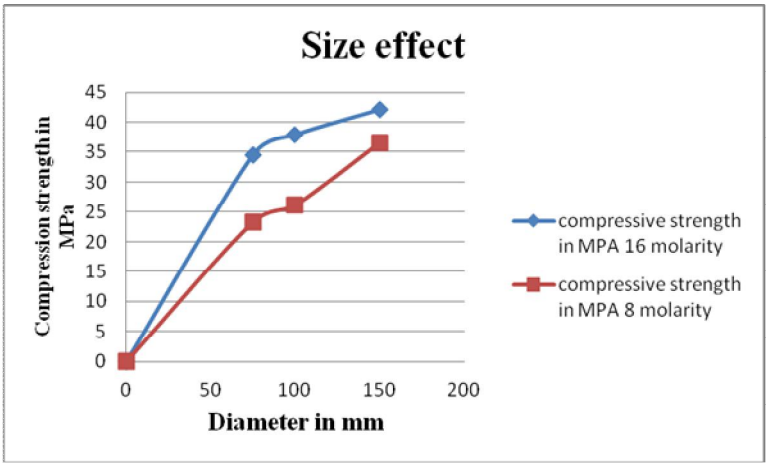


Figure 2 Graph of size vs strength

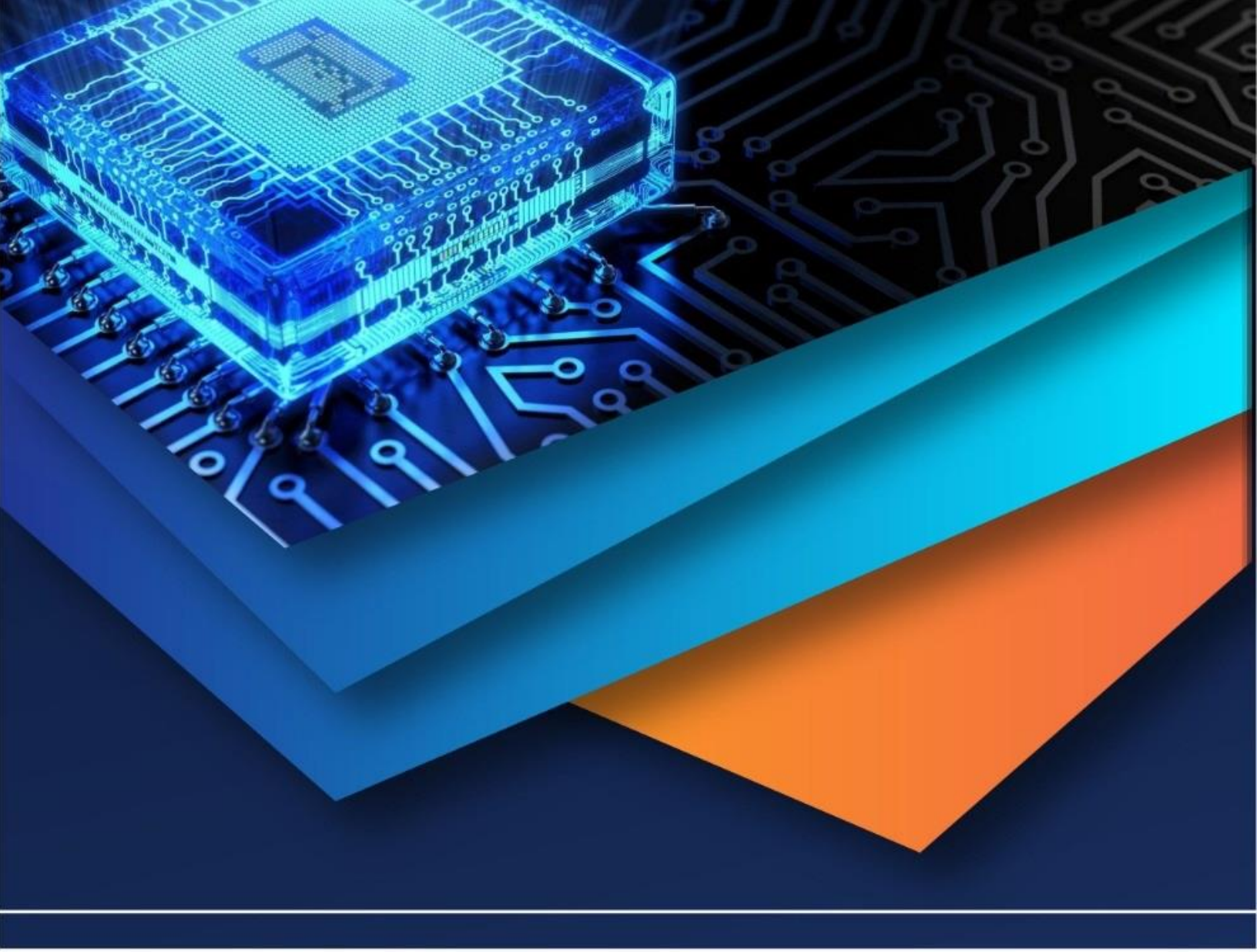
IV.CONCLUSIONS

It was observed that increase in molarity increased the strength of specimens. Reduction in size of specimens decreased the strength irrespective of molarity.

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