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"A NEW PATHWAY TO SUSTAINALBE DEVELOPMENT OF ECO - FRIENDLY BUILDING MATERIALS".

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Abstract : Plastic is the most commonly used by everyone in the world. Plastic waste becomes a major hazardous effect on environment as it is not easily biodegradable. Every year the use of plastic increases similarly so does its waste. Plastic like high density polyethylene (HDPE) and plastic below 50 microns cause major problems. National environment tells that 7.70 million tons of plastic waste was generated in 2017.In this study we have used ecofriendly plastic reducer to make building materials, Collected plastic of 15 Kg sample from Hubli Dharwad region, Out of which we have replaced 15%, 25%, 45%, 60% and 70% in which at the replacement of 60% we have achieved maximum Compression strength of 2.58N/mm^2 .Collected plastic of 5 Kg sample from Hubli Dharwad region, Out of which we have replaced 25%, 30%, 20%, 10% and 5% in which at the replacement of 60% we have achieved maximum Compression strength of 2.58N/mm^2 .The maximum Compression Strength is achieved for the proportion,60% waste plastic+ 15% Quarry Dust+ 15% Baggasse+ 10% Rice husk Ash. The obtained value of Compression test value is 2.58N/mm^2.The maximum Water Absorption test is achieved for the proportion, 60% waste plastic+ 15% Quarry Dust+ 15% Baggasse+ 10% Rice husk Ash. The obtained value of Water Absorption is 0.20%

IndexTerms **– Eco-Friendly Building Materials, Eco-Friendly Plastic Reducer**

I. INTRODUCTION

Plastic plays a predominant role in reusable in this era, as it is compact and light in weight. Common plastic items that are used are covers, bottles, and food packages. The great problem with plastic is its decomposition. Plastic is made of polymer chemicals and they are non-biodegradable. This means that plastic will not decompose when it is placed in earth. Though plastics is a very useful material that is flexible, robust and rigid they become waste after their use and they pollute the air and land. Recycling is processing use waste materials into new products to prevent waste of potentially useful materials. The increase in the popularity of using Eco-friendly, low cost and light weight construction materials in building industry has brought about the need to investigate how this can be achieved by benefiting to the environment as well as maintaining the material requirements and their standards. In this study, plastic waste from factories will be used to incorporate with rice husk, Baggasse and quarry dust to produce bricks. The bricks is then tested to study the compressive strength, water absorption test, Fire resistant test, efflorescence test. Most of the replacements have been done by volume calculation and showed the decreased in compressive strength as the increased plastic waste. In this study, recycled plastic waste have been introduced in the form of crushed. Globally estimated quantity of wastes generation was 12 billion tons in the year 2002 of which 11 billion tons were industrial waste and 1.6 billion tons were municipal and solid waste (MSW). About 19 billion tons of solid waste is expected to generate 4.4 billion tons of MSW. However it is reported that about 600 million tons of waste have been generated in India from agricultural source alone. The quantity of wastes generated are sugarcane bagasse, paddy, wheat straw and husk, wastes of vegetables, coconut husk, cotton stalk etc. In industrial sector inorganic solid waste could be coal combustion, iron, copper, zinc. India is estimated to be 290 million tons per year of industrial waste. In India 4.5 million tons of hazardous waste are being generated annually during different process like electroplating, pharmaceutical and pesticide industries.

However, it is reported that about 600 million tons of wastes have been generated in India from agricultural sources alone. The Quantity of wastes generated from agricultural sources are sugarcane baggage, paddy and wheat straw and husk, wastes of vegetables, food products, tea, oil production, wooden mill waste, coconut husk, jute fibre, groundnut shell, cotton stalk etc. In the industrial sector inorganic solid waste could are coal combustion residues, bauxite red mud, tailings from aluminium, iron, copper and zinc primary extraction processes. Generation of all these inorganic industrial wastes in India is estimated to be 290 million Tons per annum. In India, 4.5 million tons of hazardous wastes are being generatated annually during different industrial process

like electroplating, various metal extraction process, galvanizing, refinery, petrochemical industries, pharmaceutical and pesticide industries.

OBJECTIVES: 1.To collect waste plastic and other replaceable materials from Hubli- Dharwad region 2.To fabricate Eco-friendly plastic reducer system 3.To fabricate different size and shape of moulds using hard plywood 4.To conduct different tests to check the suitability of eco-friendly building materials 5.To comment on rates and market.

II.METHODOLOGY

1.Collection of material like waste plastic, rubber, rice, husk, quarry dust, bagasse from Dharwad district 2.Fabrication of eco-friendly plastic reducer to reduce air pollution due to burning of plastic 3.Use of filter papers inside the pipe to filter the carbon dioxide gas 4.Conduction of different test on ecofriendly building materials 5.Check ecofriendly building materials quality and suitability to present market status with other building materials

PROCEDURE:1.The materials are taken according to the calculated percentage and weighed according in grams.2.The materials will be placed in the tray according to the ratrios which is kept inside the Eco friendly plastic reducer 3.Heat is applied below with the help of rubber as a burning material, Thinner is used for burning the fuel 4.Due to the heat produced the materials will be melted, Similarly the Carbondioxide gas is collected with the help of Pipe 5.The pipe is turn is connected to the tub which has kitchen waste water 6.The Mould is greased before pouring out the melted materials into it 7.The Mixture is compacted in layers and kept for cooling purpose 8.The mould thus prepared is kept in the tub which contains the kitchen waste to get a smooth finish and make it fire resistant.

Fig:Eco-Friendly Plastic Reducer

III.RESULTS AND DISCUSSIONS

The maximum Compression Strength is achieved for the proportion,60% waste plastic+ 15% Quarry Dust+ 15% Baggasse+ 10% Rice husk Ash. The obtained value of Compression test value is 2.58N/mm^2

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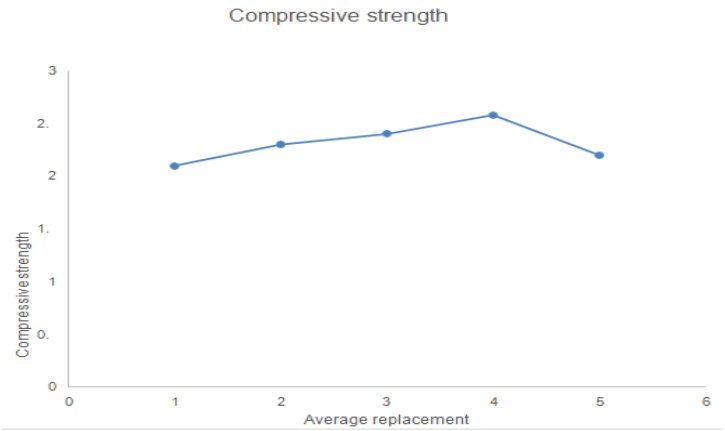
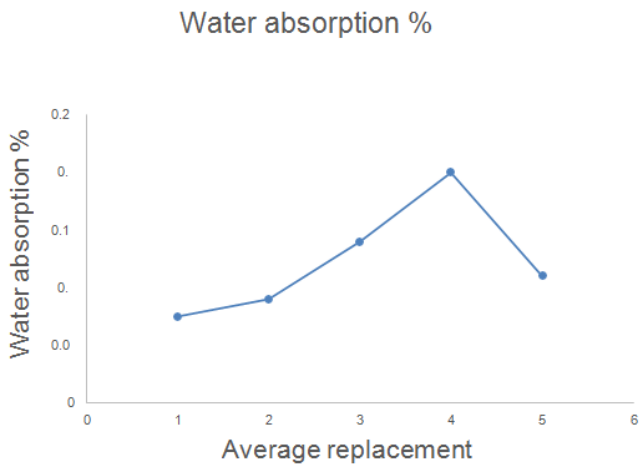


The maximum Water Absorption test is achieved for the proportion,60% waste plastic+ 15% Quarry Dust+ 15% Baggasse+ 10% Rice husk Ash. The obtained value of Water Absorption is 0.20%



IV.CONCLUSION

On the basis of laboratory experiments conducted following conclusions are made

1. Maximum compressive strength with 60% plastic +10% quarry dust+ 15%rice husk+15%bagasse is 2.58N/mm^2
2. Maximum Water Absorption value with 60% plastic +10% quarry dust+ 15%rice husk+15%bagasse is 0.20%
3. TDS and Turbidity removal in the water bath at proportion 60% plastic +10% quarry dust+ 15%rice husk+15%bagasse are 180mg/lit and 18NTU
4. On the basis of above results we conclude that Plastic bricks with 60% plastic +10% quarry dust+ 15%rice husk+15%bagasse are good and are suitable for construction activities
5. Plastic bricks with 60% plastic +10% quarry dust+ 15%rice husk+15%bagasse are fire resistance at 160 - 210 ^{0}C

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