



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

# IJRSET

International Journal of Innovative Research in  
**SCIENCE | ENGINEERING | TECHNOLOGY**

# INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 11, Issue 3, March 2022

**ISSN** INTERNATIONAL  
STANDARD  
SERIAL  
NUMBER  
INDIA

Impact Factor: 7.569

9940 572 462

6381 907 438

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# Experimental Investigation of Rubber Crumb as a Replacement of Aggregate

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**ABSTRACT:** In the past few decades, pollution rising is one of the major problem world is facing right now. We all are trying in various ways to improve the pollution causes by different ways. Waste tyres are one of those which contribute majorly in population rise. Waste tyres are crushed into fine powder or in a various sizes and are used to replace aggregates. Rubber Crumb are added as 5% 10% 15% increment to replace aggregate. This study aims to investigate about waste tyres how they will work as a replacement of aggregate and to check their compressive strengths, flexural strength

**KEYWORDS:** Waste Tyres, Rubber Crumb, Fine Powder, Compressive Strength

**WASTE TIRES  
RUBBER CRUMB**

## I. INTRODUCTION

As we know tyres are not easily biodegradable even after a long period landfill treatment. As of now the major concern environmental issues all around the world is disposal of the waste materials. There are many creators trying to be creative so that waste disposals can be of some use and they can reduce major environmental issues. As a civil engineer we are also trying to solve the environmental issues by investigating if rubber crumb can be used as a replacement of aggregate. Rubber crumb is recycled rubber which is produced from scrap tyres .In the process of recycling the tyres steel and tyre cords are removed and tyre rubber is separated.

Over the two decades, researchers have underscored to use waste tyre rubbers in concrete and were remarked that recycling of waste tire rubbers is most viable in concrete as a partial replacement to mineral coarse aggregates. Due to the fact that waste tyre rubber, as a non-biodegradable materials, has a relatively long lifetime, interest in replacing coarse aggregate in concrete mixtures with rubber derived from waste tyres, i.e rubberized concrete has attracted the attention of civil engineers and building industry to provide environmental friendly concrete with recycled tyre rubber. At present enormous quantities of tires are already stockpiled or land filled. By the year 2030 the number of tires from motor vehicles is expect to reach 1200 million representing almost 5000 millions tires to be discarded in a regular basis. Tyreland filling is responsible for a serious ecological threat. To reduce the environmental impact like conserve energy and minimize waste emissions. Hence, the properties of concrete with rubber as partial replacement for coarse aggregate is need to be researched.

## II. OBJECTIVES

**This research focusses on studying the strength of concrete with rubber crumb as partial replacement for coarse aggregate.**

- To solve disposal problems
- To reduce global pollution caused by burning of tyres
- Utilize the tyres in concrete
- To study and compare the strength variations of concrete
- To determine the effectiveness of rubber crumb as a aggregate replacement material in concrete.

### SCOPE OF PROJECT WORK

- Scope of the present investigation is carried out to study the strength properties of concrete with 0% 5% 10% 15% replacement of aggregate with crumb rubber
- Scope of this project to use waste tyres and explore engineering properties in civil engineering (buildings etc)
- On behalf of future investigation of concrete properties should be investigated with fine aggregate replacement, perhaps with even smaller rubber particles such as waste tyre powder,

### III. METHODOLOGY

#### CEMENT

The 53 Grade OPC cement used for making of concrete Grade OPC provides high strength and durability to structures because of its optimum particles size distribution and superior crystallized structure .

The physical properties of cement are soundness , setting time, fineness, and strength.

#### COARSE AGGREGATE

Aggregates are the most mined material in the world. Coarse aggregates of size 20mm is sieved and used for making concrete.



**Fig Coarse Aggregate**

#### RUBBER CRUMB

The chipped rubber samples were obtained by cutting the tire manually. The scrap tire rubber chips passing through the 20mm sieve size were used in the study



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**Fig Rubber Aggregates**

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