IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 2, August 2026
Impact Factor: 8.2

Use of Plastic Waste and Ceramic Waste in Paver Blocks

Prof. Rohit Vijay Savyanavar, Suyash Vinod Mokashi, Aditya Rajendra Gurav
Aniket Lahu Sidruk, Mustkim Abdul Kazi
Department of Civil Engineering
Dr. A. D. Shinde College of Engineering, Bhadgaon

Abstract: *Rapid urbanization and industrial growth have increased the generation of plastic and ceramic waste, creating serious disposal and environmental challenges. This project investigates the effective utilization of plastic waste and ceramic waste in the manufacturing of paver blocks as a sustainable construction material. The aim is to reduce landfill waste while producing durable and economical paving blocks suitable for pedestrian walkways, gardens, parking areas, and low-traffic roads.*

Rapid urbanization has increased the generation of plastic and ceramic waste, creating serious disposal and environmental problems. This project studies the reuse of waste plastic and broken ceramic material in paver block manufacturing as a sustainable alternative to conventional materials. Using these waste materials can reduce landfill disposal, lower construction cost, and promote eco-friendly construction.

This project focuses on using waste plastic and broken ceramic pieces in the manufacturing of paver blocks. Large amounts of plastic and ceramic waste are dumped in landfills, causing environmental pollution. Reusing these materials in paver blocks provides an eco-friendly and practical solution.

In this project, plastic waste is shredded or melted and ceramic waste is crushed into small pieces. These are mixed with cement, sand, and aggregates, then cast into paver block moulds. After curing, the blocks are tested for strength and durability.

Keywords: Plastic Waste, Ceramic Waste, Paver Block, Sustainable Construction, Waste Recycling, Eco-friendly Building Material.

I. INTRODUCTION

Rapid urbanization and industrial growth have increased the generation of plastic and ceramic waste, creating serious disposal and environmental challenges. This project investigates the effective utilization of plastic waste and ceramic waste in the manufacturing of paver blocks as a sustainable construction material. The aim is to reduce landfill waste while producing durable and economical paving blocks suitable for pedestrian walkways, gardens, parking areas, and low-traffic roads.

Rapid urbanization has increased the generation of plastic and ceramic waste, creating serious disposal and environmental problems. This project studies the reuse of waste plastic and broken ceramic material in paver block manufacturing as a sustainable alternative to conventional materials. Using these waste materials can reduce landfill disposal, lower construction cost, and promote eco-friendly construction.

This project focuses on using waste plastic and broken ceramic pieces in the manufacturing of paver blocks. Large amounts of plastic and ceramic waste are dumped in landfills, causing environmental pollution. Reusing these materials in paver blocks provides an eco-friendly and practical solution.

In this project, plastic waste is shredded or melted and ceramic waste is crushed into small pieces. These are mixed with cement, sand, and aggregates, then cast into paver block moulds. After curing, the blocks are tested for strength and durability.

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 2, August 2026
Impact Factor: 8.2

This method helps reduce waste disposal problems, saves natural resources, and lowers the cost of construction materials. The paver blocks produced can be used for footpaths, gardens, parking areas, and pavements.

II. OBJECTIVES

- To utilize plastic waste in paver block manufacturing.
- To use ceramic waste as aggregate replacement.
- To study compressive strength and durability of the blocks.
- To promote eco-friendly and cost-effective construction materials.
- To reduce environmental pollution caused by plastic and ceramic waste disposal.

III. NEED OF PROJECT

Plastic takes many years to decompose, and broken ceramic is often dumped as waste. Reusing them in paver blocks helps in waste management and reduces pressure on landfills.

The need for this project is to manage increasing plastic and ceramic waste in an effective way. These wastes create pollution and occupy landfill space. Using them in paver blocks helps reduce waste disposal problems, saves natural resources like stone aggregates, and produces eco-friendly, economical construction materials for pavements and walkways.

IV. METHODOLOGY

Waste plastic is collected and shredded. Ceramic waste is crushed into small pieces. These materials are mixed with cement, sand, aggregate, and water. The mix is poured into moulds to form paver blocks. After curing, the blocks are tested.

Plastic waste is collected, cleaned, and shredded, while ceramic waste is collected and crushed into small pieces. These materials are mixed with cement, sand, aggregates, and water in required proportions. The mixture is poured into paver block moulds, compacted, and allowed to cure. After curing, the paver blocks are tested for strength, water absorption, and durability.

Fig. Plastic Waste

Fig. Ceramic Waste

Copyright to IJARSCT
www.ijarsct.co.in
DOI: 10.48175/IJARSCT-38116

IJARSCT
International Journal of Advanced Research in Science, Communication and Technology
International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal
ISSN: 2581-9429
Volume 6, Issue 2, August 2026
Impact Factor: 8.2

Fig. Effects of Plastic on Ecosystem

Materials Used:

- Cement: acts as binding material.
- Sand: fills voids and improves finish.
- Aggregate: provides strength.
- Plastic waste: used as partial replacement material.
- Ceramic waste: crushed and used instead of some aggregate.
- Water: for mixing and curing.

Testing:

- Compressive Strength Test: checks load-carrying capacity.
- Water Absorption Test: checks how much water block absorbs.
- Durability Test: checks performance over time.

Advantages:

- Reduces plastic and ceramic waste.
- Eco-friendly and sustainable.
- Saves natural resources.
- Cost-effective construction material.
- Good for footpaths and pavements.

Expected Outcome:

- Sustainable disposal of plastic and ceramic waste.
- Economical and eco-friendly paver block production.
- Reduction in landfill burden.
- Suitable paver blocks for footpaths, landscaping, and low-load pavement works.

Keywords: Plastic Waste, Ceramic Waste, Paver Block, Sustainable Construction, Waste Recycling, Eco-friendly Building Material.

Copyright to IJARSCT
www.ijarsct.co.in
DOI: 10.48175/IJARSCT-38116