

## PAVER BLOCK USING SLAG CEMENT AND RECYCLED CONCRETE AGGREGATE

### Prefabricated interlocking paver blocks for sustainable pavement construction

Paver block is an environment-friendly and labour intensive technology which is widely used in many countries to solve special-purpose paving problems. One major advantage of using concrete paving blocks is that they can be re-assembled easily using various construction patterns. Slag cement is a binding material, that sets and hardens independently and binds all the materials used in the construction of paver block. Paver blocks with recycled coarse aggregate obtained from concrete demolition waste has been used as alternative source of aggregates for new construction. A product was developed using the agro industry waste for naturally coloring the complete block that will not fade with time. This is important because of the material scarcity and cost escalation of aggregate to produce paver block. The developed slag cement and recycled concrete aggregate paver blocks showcased a better strength characteristic, pleasant natural colour and reduced cost of product by reducing the use of cement in the concrete paver block by partial replacement with rice husk ash.

| Features / Highlights                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Technical Details                                                                                                                                                                                                                                                                                      |
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| <ul style="list-style-type: none"> <li>• Uses recycled concrete aggregate instead of virgin materials in concrete</li> <li>• Replaces partially the slag cement content with rice husk ash</li> <li>• Strength can be easily altered for wider application</li> <li>• High wear and tear resistance</li> <li>• High skid resistance texture</li> <li>• Low cost (Rs. 23 per block for 30MPa strength)</li> <li>• Satisfied Indian Standard IS 15658-2006 requirements</li> </ul> | <ul style="list-style-type: none"> <li>• Dense microstructure</li> <li>• High compressive strength – wide range 30 to 40 MPa</li> <li>• Less than 3.5% water absorption</li> <li>• Abrasion resistance – less than 2 %</li> <li>• Size tolerance – less than 1mm</li> <li>• High durability</li> </ul> |

### Applications

- Wider range of application for pathways, vehicle parking sites, cycle ways and for motor ways. The developed paver block is suitable for both light weight to heavy weight vehicle usage.



Typical recycled concrete aggregate



Typical casting



Compression test



Typical water absorption test

## Status of Technology

- Mix development using slag cement and recycled concrete aggregate
- Design and development of building blocks for grades M30 to M40
- Rice husk ash used up to 20% as slag cement replacement
- Density ranges from 2350- 2400 kg/m<sup>3</sup>

## Future Plan

- Development of blocks with partially adding black colour pigments for mass production
- Demonstrating wider area like walkway in parks, pathways etc.



For further details:

Director, CSIR-Structural Engineering Research Centre, CSIR Campus, Taramani, Chennai - 600 113.

Tel.: 91-44-22549201; director@serc.res.in; <http://serc.res.in>

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