NATURALLY RED COLOURED PAVER BLOCKS USING RED SOIL STABILIZATION TECHNIQUE

Technology for naturally red coloured low cost paver blocks. Produces paver blocks which never loses its colour due to wear and tear

Concrete paver blocks have replaced of brick paver bricks which had become scarce due to building construction boom and the scarcity of raw materials like clay and fire wood. The casting method for paver block is more advantageous in making the complicated shapes and sizes compared to the wet pressing type of fabrication. Paver blocks with wider range of colour combinations are produced by using a different type of oxide components. In general, lean layer of coloured concrete is laid and the remaining portion is cast with plain concrete for reducing the cost. In a long run, the top coloured layer is losing its colour due to wear and tear and fade its appearance. In view of the material scarcity, cost escalation due to the colour pigments and the fading of colour, the present research work developed product using the naturally available soil for naturally colouring the complete block, which may not fade in long run. Red soil is a cheaper material, which is naturally available all over the country, and it can be a good source for producing red colour paver blocks. In addition, it replaces scarce fine aggregate requirements, which lower paver block cost. The developed red coloured stabilised soil paver blocks has revealed better strength characteristics, pleasant natural colour and reduced cost of products.

Features / Highlights

- Uses naturally available red soil as pigment
- Replaces fully or partially the scarce river sand requirement
- Strength can be easily altered for wider application
- High wear and tear resistance
- Low cost (Rs. 25 per block for 30MPa strength)
- Increased thermal comfort

Technical Details

- Density Range – 2200 to 2400 kg/m^3
- Compressive strength –wide range 20 to 50 MPa
- Less than 3.5% water absorption
- Abrasion resistance – less than 1 %
- Size tolerance – less than 1mm

Applications

- Wider range of application like pathways, vehicle parking sites, cycle ways and for motor ways. The developed paver blocks are suitable for both light weight to heavy weight vehicle usage. These self-interlocking paver blocks can be suitable for laying above the permeable concrete pathways for better usage.

Silty red soil

Typical mixing view

Typical casting

Typical stacking, curing and unloading view

Status of Technology

- Using different source materials, perliminary studies are carried out and several mix designs have developed
- Design and development of building blocks for different strength grades between M20 to M50
- Soil stabilisation technique for naturally coloured using red soil
- Silty red soil (red loam soil) and gravel red soil (laterite soil) types are studied for developing naturally coloured paver blocks

Future Plan

- Development of blocks with partially adding red colour pigments for mass production
- Demonstrating wider area like assembly grounds

CSIR-SERC
ENGINEERING SUSTAINABLE STRUCTURES

Member of CISQ Federation
RINA
CERTIFIED MANAGEMENT SYSTEM
ISO 9001

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
https://www.facebook.com/csirserc https://twitter.com/csir_serc