"AN EXPERIMENTAL STUDY ON BEHAVIOR OF CONCRETE BY THE PARTIAL REPLACEMENT OF CEMENT WITH RED MUD AND FINE AGGREGATE WITH WASTE FOUNDRY SAND AND QUARRY DUST"

Pooja P.K.

9th Semester, Integrated M.Tech, Department of Construction Technology , School of Engineering .Central University of Karnataka, Kalburgi-585367, Karnataka, India.

Contact: isct1212@gmail.com. Mobile No: 8123523865

ABSTRACT

The Concrete is apparently the most broadly utilized construction material on the planet with around six billion tons being delivered each year. It is generally utilized because of its high strength and stability. In this project work, cement is replaced with red mud and it is a by product of the bayer's process. Fine aggregate is replaced with waste foundry sand which is the by product of the metal industry and quarry dust is the waste generated by stone cutting quarries, both are partially replaced with fine aggregate. The production of cement results in emission of many CO2 in atmosphere, which is responsible for global warming. Hence, the researchers now a days are concentrating on utilization of waste material having supplementary cementitious properties, which can be substituted in concrete as a partial replacement to OPC, without compromising on its strength, which will bring in the reduction of cement production leading to the reduction in discharge of carbon-di-oxide, in addition to sustainable management of the waste. It is a very difficult problem for available of fine aggregate so research was made to replacement of fine aggregate for specific need. Therefore in the present study M30 grade of concrete is considered to partially replace cement, by red mud. Natural sand is replaced with waste foundry sand and quarry dust (35%WFS and 25%QD is used because of eco-friendly and gives optimum concrete strength) are used in the study. The compressive strength, split tensile strength and flexural strength tests were conducted on the cubes, Cylinder and beams respectively.

Keywords

Concrete , Aggregate, Waste foundary sand, Quarry dust ,Flexural, Compressive,Split tensile Strength.