

Project Report on

A STUDY ON UTILIZATION OF USED GREEN SAND AS FINE AGGREGATE IN CEMENT CONCRETE

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ABSTRACT

Metal foundries employ large amounts of the metal casting process. Foundries successfully recycle and reuse the sand many times in a foundry and the remaining sand that is termed as foundry sand is removed from foundry. This study presents the information about the civil engineering applications of **green sand** (foundry sand used in wet condition), which is technically sound and is environmentally safe. Use of foundry sand in various engineering applications can solve the problem of disposal of foundry sand and other purposes.

Green sand consists primarily of silica sand, coated with a thin film of burnt carbon, residual binder (bentonite) and dust. Green sand can be used in concrete to improve its strength and other durability factors. It can be used as a partial replacement of cement or as a partial replacement of fine aggregates and as supplementary addition to achieve different properties of concrete.

In the present study, effect of **green sand** as **fine aggregate replacement** on the compressive strength of concrete having mix proportions of **0.418:1:1.88:3.315** for control mix and **0.417:1:1.759:3.419** for sand replacement was investigated.

Fine aggregates were replaced with six percentages of green sand. The percentages of replacements were **0, 10, 20, 30, 35** and **100%** by weight of fine aggregate. Tests were performed for compressive strength, for all replacement levels of foundry sand at different curing periods (14-days & 28-days). Test results showed that there is appreciable increase in compressive strength, after replacing the fine aggregates with certain percentage of green sand so foundry sand can be safely used in concrete for durability and strength purposes.