

Experimental study on compressive strength of concrete by partial replacement of waste asbestos sheet

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Abstract:

Concrete is a piece of coarse aggregate, fine aggregate, binding material and water in such extents, that the entire sets into a monolithic mass. When concrete is utilized without help from anyone else it is called mass concrete and when it is reinforced with steel it is called reinforced concrete. Binding material Fine aggregate Coarse aggregate Water Cement or limes are utilized as the binding material. They tie the individual units of fine aggregate and coarse aggregate by ethicalness of its properties of setting or hardening in blend with water. The binding material assists with making up for shortfalls and bestows density to concrete. FINE AGGREGATE serves to make up for shortcomings in coarse aggregate and lessens the amount of cement. The fine aggregate is sand. Crushed stone sand may likewise be utilized. It should go through a sieve having 3/16 square meshes. Fine aggregate ought to be clean, hard, solid, strong and synthetically inert. Its grains ought to be sharp and precise. It ought to be exceptionally siliceous and liberated from contaminations, for example, clay, loam, dust, coal particles and natural matter.

Keywords: concrete, asbestos, powder.

1. Introduction:

Asbestos contains a bunch of six normally happening scilicet minerals, which have regular their eponymous propensity for example long slight fiborous noticeable fiber made out of million of microscopic strands that can be released by abrasion and other cycle [1]. They are usually known as shading asbestos squander is crushed into to the standard size of fine aggregate (sand), It

should go through a sieve having 3/16 square [2].

Coarse Aggregate is the fundamental filler and structures the majority of concrete, broken stones, broken blocks and rock circular segment commonly utilized as coarse aggregates [3]. Granite, basalt are additionally brilliant coarse aggregate. Crushing strength and water snugness of concrete and its protection from mileage rely on the aggregates. The

aggregates ought to be perfect thick, hard, solid tough and sound [4]. Water encourages the spreading of cement over the aggregates and manages the consistency. Water utilized ought to be perfect. Ocean water ought not be utilized as it hinders setting [5].

2. Methodology:

Starting setting time ought to be at least 30 minutes. Final setting time ought not be in excess of 10 hours. Compression strength following 7 days ought to be at the very least 22N/mm. Tensile strength following 7 days ought to be 2.5N/mm. By I.S 90 micron sieve, buildup by weight ought not surpass 10%. Ratio of alumina to that of iron oxide ought not be under 0.65%. Weight of magnesia ought not surpass 5%. Weight of insoluble buildup ought not be more noteworthy than 1.50%.

FINE AGGREGATE

It ought to be spotless and coarse. It ought to be liberated from any natural or vegetable matter; normally 3-4% mud is permitted. It ought to be synthetically inert. It ought to contain sharp, precise, coarse and solid grains. It ought not contain salts which pull in dampness from the atmosphere. It ought to be well evaluation, i.e., it ought to contain particles of different sizes in suitable proportions. It ought to be solid and durable. It ought to be perfect and liberated from coatings of mud and

silt. 3.3 COARSE AGGREGATE It ought to contain sharp, rakish, coarse and sturdy grains. It ought to be perfect and liberated from coatings of dirt and silt. It ought to be solid and durable. It ought to be liberated from any natural or vegetable matter; typically 3-4% earth is permitted. It ought to be perfect and coarse.

COLLECTION OF MATERIALS

Cement utilized is coromandel cement of 53 evaluation (Ordinary Portland Cement) bought from a close by shop. River sand gathered from paalar (kancheepuram district). Hard broken granite stone blue jam is gathered from the quarry close vandalur (kelambakkam route). Asbestos sheet gathered from school

CASTING OF CUBES PROCEDURE

The material needed for casting the cubes are gathered by weight and made ready for use. Take the sand and cement in a plate, blend it completely, at that point blend in with 20mm coarse aggregate. After blending of the fixing, measure the necessary amount of water and again mix the combination with estimated amount of water. Keep the shape on a G.I sheet evenly and apply oil for internal side of the mould. Check screws and nuts of the form in appropriate position. Fill concrete into the shape in layer around 50mm deep. If compaction is finished by hand, pack the

concrete with the standard bar, strokes being consistently disseminated over the cross-part of the form.

The figure 1 shows the concrete prepared with asbestos dust.

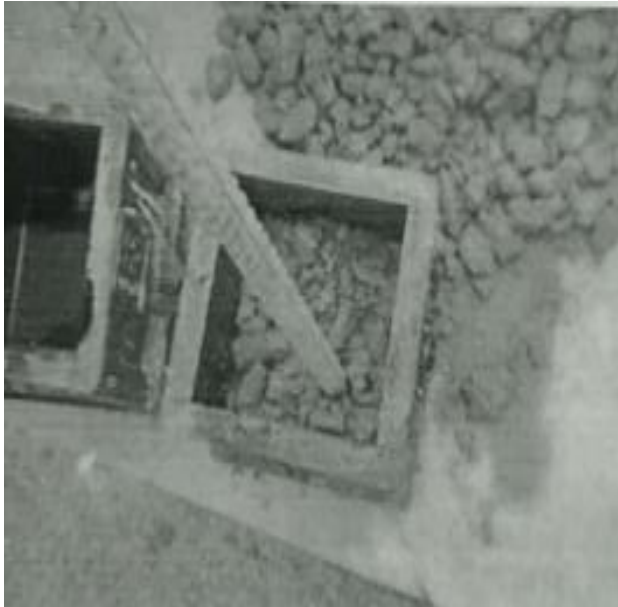


Figure 1: Concrete prepared with asbestos dust.

For 150mm, number of strokes ought not be under 35 % per layer. If compaction is finished by vibration, at that point each layer by methods for appropriate vibrating hammer or vibrator or vibrating table. Level the top surface of form and finish the ID stamps on cubes. Repeat a similar methodology for casting the other cubes. And the cubes are restored for 7 and 28 days. And the test outcomes is contrasted and the arrangements.

3 .Conclusion

In the event of replacement of fine aggregate, 15% asbestos cement sheet

powder waste content can be taken as the ideal dose for flexural strength and it's giving high strength. Asbestos cement sheet squander aggregate concrete might be an option to the conventional concrete. Waste material is used in viable way so by utilizing asbestos cement sheet waste, one can diminish the powerful expense of the concrete and it is likewise useful for the environmental point of view. Conclusion dependent on the trial study are as follows: Asbestos squander will be utilized as an incomplete replacement of sand in concrete. In 7 days relieving, the compressive strength of (5% - 10%-15% replacement) gave strength. 14 days restoring solid shape (5%, 10% and 15 separately) increment than the compressive strength of 7 days relieved ordinary concrete and surprisingly in 28 days curing, the compressive strength of (5% - 10 %-15% replacement) invigorated more when compare with 7 days and 14 days relieved traditional cube. We thus propose to utilize those mix of replacement (i.e 5%, 10%, 15%) in concrete attempts to build the strength and to bring down the expense towards buying sand.

We propose increase in Asbestos squander replacement rates while embracing in concrete works. Machineries are yet to be found for pounding the Asbestos squander into the standard size of fine aggregate (i.e sand).

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