

EXPERIMENTAL INVESTIGATION OF PARTIAL REPLACEMENT ON COARSE AGGREGATE BY USING KADAPPA STONE

Mrs.N.Shifu jahan,M.E.,Mrs.P.Vaishna,M.E.,

Mrs.N.shifu jahan ,M.E, Assitant professor, Anna university, tamil nadu,india

ABSTRACT

Coarse aggregate is an important constitutes of concrete which are obtained naturally. Here, I can replace new material with the coarse aggregate by using kadappa stone. Kadappa stones were partial replaced as coarse aggregates in 10%,20%,30% respectively and tested for 7 and 28 days. Fresh and hardened concrete properties are evaluated by compressive strength test ,split tensile test and flexural test with a fixed water cement ratio 0.45.and also .The test results were compared with the conventional concrete properties .M20 grade concrete is used.

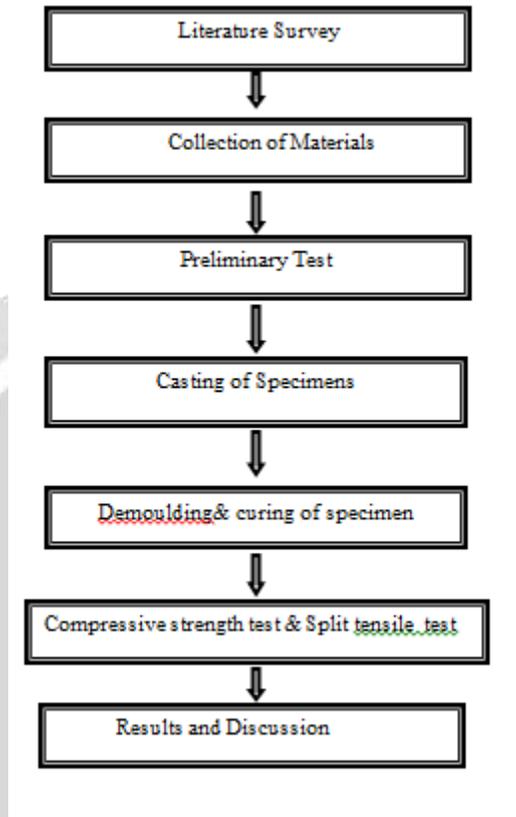
KEYWORD :kadappa stone, compressive strength test, split tensile test, flexural strength test, slump cone test

1. INTRODUCTIONS

In recent years, there is a growing interest for using waste Kadappa stone in Quarry. This interest has been aggravated by the large amount of waste Kadappa stones were available from constructed residue materials. In such Kadappa could be consumed in concrete. The use of Kadappa stones as Fine aggregate in concrete has been attempted recently. Using suchKadappa stone as a construction material is among the most strictly choice because of potentially reducing the cost of Kadappa stone & concrete production. This including reduced bond strength between the aggregate & cement paste. The interlocking shear strength between the aggregate & the cement paste is less with Kadappa than with natural aggregate. The effect of using waste Kadappa stone on the mechanical properties of concrete has been investigated by many other researches. This results indicated that the waste Kadappa stones aggregate generally increases the strength. This reaction can lead to expansion and cracking of concrete recently, an experimental work as been studies by (AL – Rubaie 2007) to evaluate the properties of concrete mixes containing waste Kadappa stone as partial replacement upto 30% by volume of Coarse Aggregate (blue metal). The results indicate that the concrete mixes containing waste Kadappa stone show slightly reduction in compressive compared with reference mixes. In this experimental study, the effect of using locally available waste Kadappa stones as Coarse aggregate on the mechanical properties of concrete were investigated.

1.1 METHODOLOGY

1.1. Flowchart



2. PHYSICAL TEST

SL.NO	MATERIAL USED	SPECIFIC GRAVITY TEST
1.	Kadappa stone	2.72
2.	Coarse aggregate	2.70
3.	Fine aggregate	2.6
4.	Cement	3.15

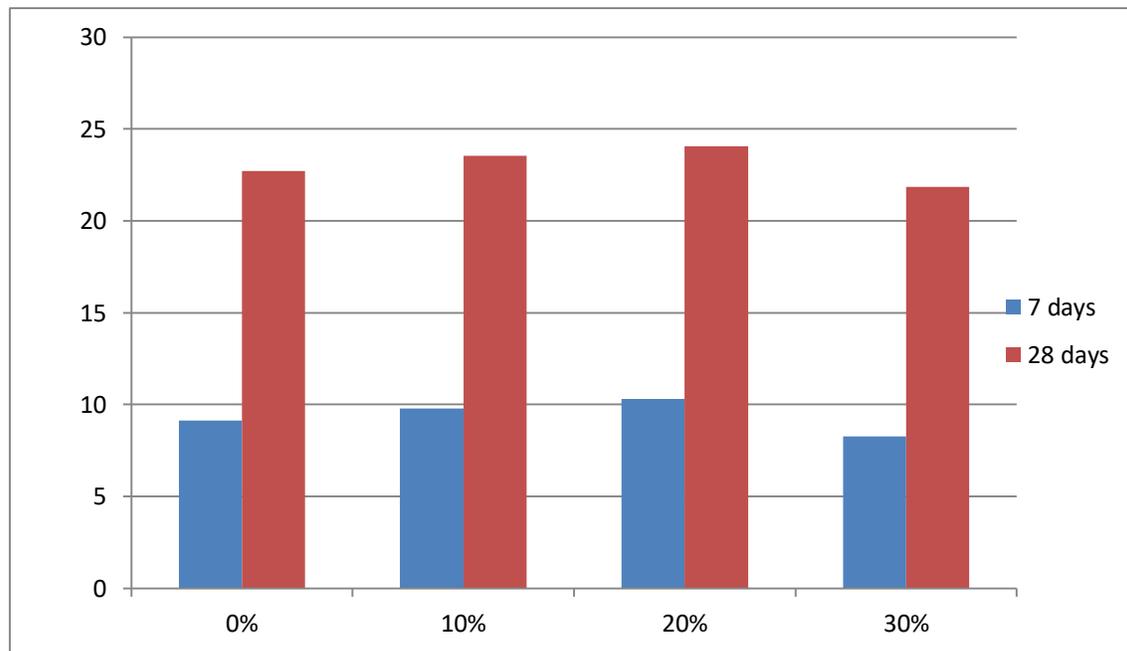
3. EXPERIMENTAL AND TESTING

- Compressive strength test
- Split tensile test
- Flexural test

3.1 COMPRESSIVE STRENGTH ON CUBE TEST

There are four proportions used in the mixing of concrete. Compressive test is carried out on specimen cubical in shape. The cube specimen is of size 150mm *150mm*150mm is used.

3.1.1 Graphical Representation: Comparison b/w 7 days & 28 days curing Process in Compressive Strength test

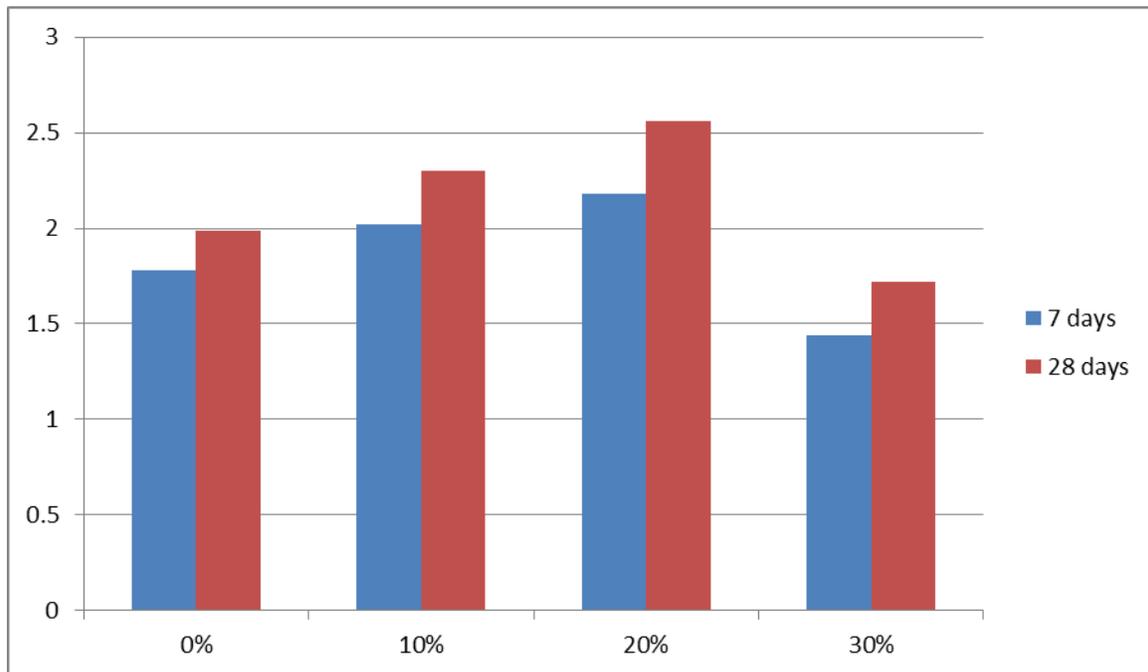


The above graph represents the increase of compressive strength in 20% of adding Kadappa stone with the concrete during 28 days curing process.

3.2 SPLIT TENSILE TEST

There are four proportions used in the mixing of concrete. Split tensile is carried out on specimen cylindrical in shape. The cylindrical specimen is of size 150mm *300mm is used.

Graphical Representation : Comparison b/w 7 days & 28 days curing PROCESS IN SPLIT TENSILE STRENGTH TEST



The above graph represents the increase of Split tension in 20% of adding Kadappa stone with the concrete during 28 days curing process.

3.3 FLEXURAL STRENGTH TEST

Similarly it is found that the flexural strength is also in the phase of increasing till 40% replacement of coarse aggregate with waste Shabath stone. The maximum strength has been achieved at 30% replacement whose flexural strength is 4.15% greater than that of the conventional concrete.

4. CONCLUSIONS.

The compressive strength of concrete by partial replacement of concrete by waste kadappa stone as coarse aggregate and more compressive strength than that conventional concrete. M_{20} mix which consists of 20%, replacement of coarse aggregate by kadappa stone which is 4% greater than than the conventional concrete. This indicates the kadappa stone have much more effect in the compressive strength and this will increase more strength while using kadappa stone. The Split tension strength of concrete by partial replacement of concrete by waste kadappa stone as coarse aggregate and more Split tension strength than that conventional concrete. M_{20} mix which consists of 20%, replacement of coarse aggregate by kadappa stone which is 4% greater than than the conventional concrete. This indicates the kadappa stone have much more effect in the Split tension strength and this will increase more strength while using kadappa stone.

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