Development of Plain cement Mortar mixed with Tamrind Kernel Powder

S. Venkatraman, K. Kiruthiga, B.Kaviya

Abstract: ***Mortar is a significant glue used to tie building squares, for example, stones, squares, and solid square work units together, fill and seal the sporadic holes among them, and from time to time join flawless shades or models in workmanship dividers. In its broadest sense mortar wires pitch, dull top, and delicate mud or soil, for example, utilized between mud blocks The sort and degree of the fix mortar is coordinated by a mortar examination. There are a couple of sorts of bond mortars and included substance. The tamarind tree produces unit like common item, which contain a consumable crush that is used in cooking styles the world over. Various livelihoods of the crush join standard medicine and metal clean. The wood can be used for carpentry, and tamarind seed oil can be isolated from the seeds. Because of the tamarind's various uses, advancement has spread far and wide in tropical and subtropical zones. The magnificent gelling cum bond properties of the decorticated seed powder can incite a couple of uses in sustenance and pharmaceutical ventures which are evident by the amount of research papers similarly as patent applications. This article thusly bases on the possible results of using the seed in a couple of sustenance and non-sustenance endeavors with explicit reference to physical and structuring properties, hydration direct, rheological properties, valuable and healthy qualities, and the planning of the tamarind seed for progressively broad applications.***

Keywords *: Cement mortar, Tamarind Kernel powder, Hydrocolloids, Additive*

I. INTRODUCTION

The most outstanding clasp since the mid twentieth century is Portland concrete anyway the old folio lime mortar is so far used in some new improvement. Lime and gypsum as mortar of Paris are used particularly in the fix and re pointing of structures and structures since it is huge the fix materials resemble the main materials. [8],[10] ,[12] Tamarind seed is an underutilized side-effect of the tamarind mash industry. Just a little bit of the seed, as tamarind part powder (TKP), is utilized as a measuring material in the material, paper, and jute businesses. Despite the fact that numerous utilizations of this seed are conceivable, there have been not really some other uses for it including utilizing it as an added substance in sustenance details. [2],[4],[6]The astounding gelling cum cement qualities of the decorticated seed powder can prompt a few applications in nourishment and pharmaceutical ventures which are obvious by the quantity of research papers just as patent applications. [19],[21],[23

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II. TEST PROCEDURE

A. Workability Test On Fresh Pc Mortar

Droop test was used to choose the helpfulness of fresh PC Mortar. Hang test was finished by Seems to be: 1199 – 1959. The gadget used for doing hang test were hang cone and pressing bar. Within surface of the structure was totally cleaned and associated with a light layer of oil. The structure was determined to a smooth, level, unyielding and non-porous surface. The structure was then filled in four layers with normally mixed mortar, each generally to one-fourth of the stature of the shape. Each layer was stuffed on various occasions by the balanced completion of the pressing bar (strokes are scattered similarly over the cross region). After the top layer was rodded, the mortar was hit off the level with a trowel The refinement in level between the height of the structure and that of the most amazing motivation behind the subsided mortar was evaluated. This refinement in height in mm was taken as the hang of the mortar. [25],[27],[29]

B. Tests On Hardened Cement Mortar

For every one of the Trials I to VI, the solid shape examples were casted, restored and tried to decide the compressive quality at the age of 7, 14 and 28 days

C. Compressive Strength Test on Cubes

The Cement Mortar was poured in the shape and pressed fittingly so as to not have any voids. Following 24 hours these models were ousted from the molds and the test models were put in water for reestablishing. The top surface of these models was made even and smooth. This was done by putting solid paste and spreading effectively on whole area of model. These models were attempted by Universal Testing Machine following 7 days, 14 days and 28 days diminishing. Weight was associated a tiny bit at a time at the rate of 140 kg/cm2 each minute till the models failed. For all of the primers I to VI, the square models were reestablished properly and attempted to choose the compressive quality at the age of 7, 14 and 28 days and the specific results are given in Table 4.5. [26],[28],[30]

COMPRESSIVE STRENGTH OF CEMENT MORTAR CUBES AT 7, 14 AND 28 DAYS

Trials	Percentage of Tamarind Kernel Powder added	Curing period in days	Mean compressive strength of Cube specimens in N/mm^2
I.	0%	7	6.43
	0%	14	6.94
	0%	28	10.94

Trials	Percentage of Tamarind Kernel Powder added	Curing period in days	Mean compressive strength of Cube specimens in N/mm^2
II.	0.5%	7	6.97
	0.5%	14	7.32
	0.5%	28	11.85

Trials	Percentage of Tamarind Kernel Powder added	Curing period in days	Mean compressive strength of Cube specimens in N/mm^2
III.	0.75%	7	8.52
	0.75%	14	9.07
	0.75%	28	12.95

Trials	Percentage of Tamarind Kernel Powder added	Curing period in days	Mean compressive strength of Cube specimens in N/mm^2
IV.	1%	7	9.06
	1%	14	9.97
	1%	28	13.59

Trials	Percentage of Tamarind Kernel Powder added	Curing period in days	Mean compressive strength of Cube specimens in N/mm^2
V.	1.5%	7	10.97
	1.5%	14	13.07
	1.5%	28	15.34

Trials	Percentage of Tamarind Kernel Powder added	Curing period in days	Mean compressive strength of Cube specimens in N/mm^2
VI.	2%	7	9.98
	2%	14	10.80
	2%	28	13.86

III. CONCLUSION

In this project, an experimental study has been conducted to addition of Tamarind Kernel Powder at 0%, 0.5%, 0.75%, 1%, 1.5% and 2% respectively to study the increase in the strength of Cement Mortar. The compressive strength was found to increase at 1.5% addition of Tamarind Kernel Powder to the Cement Mortar, when compared with 0% Cement Mortar. The compressive strength was found to gradually decrease at 2% addition of Tamarind Kernel Powder to the Cement Mortar. Therefore, we conclude that the addition of Tamarind Kernel Powder to the Cement Mortar shall be up to 1.5% in Cement Mortar and not more than that is suitable for construction works. Moreover, it reduces the construction cost as cement content is reduced and it also reduces the environmental pollution. Hence, using Tamarind Kernel Powder as addition to the Cement Mortar is concluded to be advantageous and beneficial to the construction industry. [8],[10] ,[12]

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