

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions:

In this study the Acacia tortilis Gum was used as local additive to investigate its effect on fresh and hardened concrete through the measure of workability for fresh concrete and compressive strength for hardened concrete in 7 & 28 days. Based on the results it can be concluded that:

1. The Gum Arabic, like many organic materials soluble in water can adversely affect the cement hydration and formation of cement per cubic structure.
2. Increased value of slump with increased amounts of Acacia tortilis up to 1.0 % which give high workability.
3. Acacia tortilis Gum powder could be used as an alternative superplasticizer in concrete mixes since it produce workable concrete without decrease compressive strength at ratio of 1.0%.
4. Effect of Acacia tortilis began runny and cleared in the sample with a ratio of (0.25% Acacia tortilis), shown that the cohesion between the components of the mixture is very little, caused in the separation of the constituent particles of the mixture (Segregation).
5. A ratio of (0.5% Acacia tortilis) had turned out to be the ratio, which give good workability and high compressive strength.

6. In the sample with a ratio of (1.0% Acacia tortilis) thus leading them very little resistance with high workability.
7. Compressive strength of concrete at the age of 7 days increased with increasing amounts of Acacia tortilis to the ratio of 0.5% Acacia tortilis which gave 20.2 MPa, then decreased for more than 0.5% additive
8. Compressive strength of concrete at the age of 28 days varies as follows:
 - a. With no additive the value of compressive strength was 26.2MPa.
 - b. The ratio of 0.25% Acacia tortilis additive gave strength of 23.1 MPa and that means effect of Acacia tortilis on compressive strength been negative but increased workability.
 - c. When amounts of gum were increased to the ratio of 0.5% Acacia tortilis the strength obtained is 26.4 MPa greater than 25MPa (specified strength at 28days) and that means effect of Acacia tortilis in compressive strength the same as that with no additive but increased workability. Ratio more than 0.5% resulted in a decrease in compressive strength.

6.2 Recommendations:

Based on the study performed in this research, two types of recommendations are made:

A. Recommendations resulting from study:

1. Try more samples with more different quantity of Acacia tortilis Gum additive.
2. Use other additives with the Acacia tortilis Gum to upgrade other properties for increased workability without reduction in strength a ratio of 0.5%.
3. Use other additive to replace the Acacia tortilis Gum.

B. Recommendations for future work:

1. An optimization study in this field is needed to determine the optimum quantity of Acacia tortilis Gum additive.
2. Raise the efficiency of laboratories and provide them with all the necessary equipment to test concrete materials, to be able to adjust the quality and thus achieve the desired goals.
3. Concrete testing equipment and their constituent materials are limited in Sudan, and availability meets to conduct a limited part of the tests, which made quality control processes are limited and inadequate.