CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS

This research was conducted to study the effect of superplasticizer (SP) on the properties of fresh and hardened concrete.

The properties investigated were workability (slump), and compressive strength. From the results of this research it can be concluded that:

- The significant effect of superplasticizer on the properties of fresh concrete occurred in all ratios of this additive when adding to concrete mixes.
- It is observed that slumps of mixes containing ratios of SP with reduction of water content varied between 90 mm to 190 mm, i.e., much higher than that of the ordinary reference mix (slump = 40 mm) and nearly more than double that of mixes containing SP with reduction of water and cement (slumps reached up to 85 mm). However, very high dosages of SP tend to impair the cohesiveness of concrete.
- It is noticed that all ratios of SP added to concrete mixes increased the compressive strengths much more than that of normal concrete mix.
- It is found that 0.4L of SP with (water and cement) reduction resulted in the best compressive strength, whereas 0.8L of SP with (water) reduction resulted in the highest compressive strength of concrete mixes.
- It is observed that the values of absorption showed no steady state of changes with respected to the used ratios of SP or w/c contents.

5.2 RECOMMENDATIONS

1- From this research and the results obtained, it can be recommended that:

- The ratios of (0.4L and 0.8L per 50 kg of cement) super plasticizer with reduction of (w/c) should be used in concrete mixes for structural purposes, since they increased workability and compressive strength of concrete.
- It is preferable to use the ratio of 1.5L per 50 kg of cement superplasticizer in case of a large reduction of w/c (up to 30% reduction).
- Superplasticizer ratios should not be increased beyond 1.5L per 50kg cement, for this increase may lead to opposite results.

2 -There are several areas in concrete technology, as related to admixtures, that need to be investigated in the future, such areas include, but are not limited to, the following:

- Studying the possibility of reducing cement content with addition of superplasticizers and mineral additives such as local pozzolanic materials or silica dust or fly ash.
- Conducting further studies in this field for improving workability and compressive strength of concrete of different grades using other additives.