***Admixtures for Concrete***

***Definition***

Admixtures are those ingredients in concrete other than Portland cement, water,

and aggregates that are added to the mixture immediately before or during

mixing.

*The major reasons for using admixtures are:*

1. To reduce the cost of concrete construction.

2. To achieve certain properties in concrete.

3. To maintain the quality of concrete during the stages of mixing, transporting,

placing, and curing in adverse weather conditions.

4. To overcome certain emergencies during concreting operations.

The effectiveness of an admixture depends upon several factors

1- Type,

2- Brand,

3- Amount of cementing materials;

4- Water content;

5- Aggregate shape,

6- gradation,

7- Proportions;

8- Mixing time;

9- Slump;

10-temperature of the concrete

*There are two general groupings of admixtures' namely :*

*1- Chemical admixtures. 2- Mineral admixtures.*

*1- Chemical Admixtures*

*Definition*

They are water soluble compounds added primarily to control setting and early

hardening of fresh concrete or to reduce the water requirements.

the chemical admixtures include:

1. Air entraining admixtures.

2. Water reducing admixtures.

3. Retarding admixtures.

4. Specialty admixtures

1-1 Air-Entraining Admixtures.

Air-entraining admixtures are used to purposely introduce and stabilize

microscopic air bubbles in concrete (air bubbles predominately between

0.25—1 mm diameter).

*Air entrainment will affect directly the following three properties of*

*Concrete :*

1. – Increased resistance to freezing and thawing.

2. – Improvement in workability.

3. – Reduction in strength.