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Common Admixtures to the Concrete Mix and What They Do

Admixtures are additions to the mix used to achieve certain goals.

Here are the main admixtures and what they aim to achieve.

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Accelerating admixture-accelerators are added to concrete to reduce setting time of the concrete and to accelerate early strength. The amount of reduction in setting time varies depending on the amount of accelerator used (see your ready mix supplier and describe your application). Calcium chloride is a low cost accelerator, but specifications often call for a nonchloride accelerator to prevent corrosion of reinforcing steel.

Retarding admixtures-Are often used in hot weather conditions to delay setting time. They are also used to delay set of more difficult jobs or for special finishing operations like exposing aggregate. Many retarders also act as a water reducer.

Fly Ash- Is a by product of coal burning plants. Fly ash can replace 15%-30% of the cement in the mix. Cement and fly ash together in the same mix make up the *total cementitious material*.

- Fly ash improves workability
- Fly ash is easier to finish
- Fly ash reduces the heat generated by the concrete
- Fly ash costs ¼ to ½ the amount of the cement it replaces

Air Entraining Admixtures- must be used whenever concrete is exposed to freezing and thawing, and to deicing salts. Air entraining agents entrains microscopic air bubbles in the concrete: when the hardened concrete freezes, the frozen water inside the concrete expands into these air bubbles instead of damaging the concrete.

- Air entrainment improves concrete workability
- Air entrainment improves durability
- Air entrainment produces a more workable mix

Water reducing admixtures-reduces the amount of water needed in the concrete mix. The water cement ratio will be lower and the strength will be greater. Most low range water reducers reduce the water needed in the mix by 5%-10%. High range water reducers reduce the mix water needed by 12% to 30% but are very expensive



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