



Crystal Admix HD – Dosing and Considerations

Application Instruction 2011

Concrete Mix Dosages

Crystal Admix HD reduces water, increases strength, reduces cracking and self-heals concrete cracks in the future. While dosing Crystal Admix HD is not very complicated by itself, dosing is subject to variation subject to different additional components such as other admixtures, GGBFS, or high pozzolanic cements.

Please keep in mind it is ALWAYS recommended to conduct a batch test first when modifying any concrete mix.

1) General Dosing Overview for Basic Concrete

- a. Review concrete mix design. Make sure to note w/c ratio and concrete content. If other admixtures are used, or GGBFS are used refer to the appropriate section.
- b. Reduce water by approximately 15% in the mix design.
- c. Apply 2.5 kg of Crystal Admix HD per cubic meter and allow 10 minutes to mix.
- d. Check slump and correct if slump is to low
- e. Pour concrete insuring it is properly placed and vibrated
- f. Allow approximately 75 to 100% increase in the setting time of an equal mix without Crystal Admix HD
- g. Wet cure

2) General Dosing Overview for GGBFS mixed concrete

- a. Review concrete mix design. Make sure to note w/c ratio and concrete content and GGBFS. If other admixtures are used and refer to the appropriate section.
- b. Reduce water by approximately 15% in the mix design.
- c. Calculate the GGBFS content and reduce the dosage of Crystal Admix HD accordingly if necessary to the following:
 - i. 0 to 15% GGBFS content - do not reduce dosage rate in Crystal Admix HD but expect slightly increased setting time.
 - ii. 16% or 35% GGBFS content - reduce dosage to 2 kg per cubic meter with possible delays in setting time.
 - iii. 36% or higher GGBFS content – reduce dosage to 2 kg per m³ but expect increased setting time delays.
- d. Check slump and correct if slump is to low
- e. Pour concrete insuring it is properly placed and vibrated
- f. Subject to mix design, slag content and Crystal Admix HD in the mix setting time could be more than 100% of an equal mix without Crystal Admix HD
- g. Wet cure



3) General Dosing Overview for PCE super plasticized concrete

- a. Review concrete mix design. Make sure to note w/c ratio and concrete content. If other admixtures are used, or GGBFS are used refer to the appropriate section.
- b. Note the w/c ratio of the concrete:
 - i. If the concrete mix design has a low water cement ratio (less than 0.45) and uses a PCE superplasticizer then we recommend using our Crystal Admix HDp.
 - ii. If concrete has a higher than 0.45 w/c ratio add Crystal Admix HD and then add PCE until desired slump is achieved. Often Crystal Admix HD will achieve the required slump without additional PCE superplasticizer.
- c. Note if the concrete also has a lignosulphonate or other type of retarder. These should be removed or reduced as Crystal Admix HD will extend the set time.
- d. Reduce water by approximately 15% in the mix design.
- e. Apply 2.5 kg of Crystal Admix HD per cubic meter and allow 10 minutes to mix.
- f. Check slump and correct if slump is to low
- g. Pour concrete insuring it is properly placed and vibrated
- h. Allow approximately 75 to 100% increase in the setting time of an equal mix without Crystal Admix HD
- i. Wet cure

4) General Dosing Overview for concrete with high Pozzolan contents

- a. Review concrete mix design. Make sure to note w/c ratio and concrete content. If other admixtures are used, or GGBFS are used refer to the appropriate section.
- b. It is often difficult to get information from cement companies regarding the addition of high pozzolan contents in the cement however a simple setting time test on basic concrete will demonstrate pozzolan content easily enough.
- c. Reduce water by approximately 15% in the mix design.
- d. Apply 2.5 kg of Crystal Admix HD per cubic meter and allow 10 minutes to mix.
- e. Check slump and correct if slump is to low
- f. Pour concrete insuring it is properly placed and vibrated
- g. Subject to pozzolan content in the cement and mix design, Crystal Admix HD in the mix setting time could be more than 100% of an equal mix without Crystal Admix HD, if setting time is more than 125% of equal concrete without Crystal Admix HD then reduce the dosage to 2 kg.
- h. Wet cure



Important Notes:

- It is usually recommended to **REDUCE** or **ELIMINATE** all set retarders in the design mix to avoid excessive retardation as in most mixes Crystal Admix HD will increase the setting time.
- If possible **CHANGE OR ELIMINATE** lignosulphonate plasticizers and retarders as they may have adverse air entrainment and excessive retardation problems.
- Reduce water/cement ratio by up to 15% of the original design without Aviseal (eg. Design w/c = 0.5; with Crystal Admix HD w/c = 0.42 - 0.43)
- Do not be alarmed with a lower 7-day strengths on some specialized mixes where set retardation is increased dramatically such as very high GGBFS mixes. These types of mixes usually have their 1-day strength pushed forward further in time (starts 24 hrs later) due to the retardation effect.

Documenting mix designs, water reduction, slump, setting times, etc:

It is very important for the long-term ease of use within specific markets to document the effects of Crystal Admix HD in various mix designs. This will assist in making correct and accurate decisions when adding Crystal Admix HD to different concrete mixes over time.