

AVOIDING CORROSION IN HOT WEATHER

Engineers and contractors in the Southern Hemisphere are facing a busy construction season, given the unseasonably high temperatures over much of South Africa. One concern is accelerated concrete setting time – which goes even faster with the wrong corrosion inhibitor. Anyone seeking to fight corrosion and extend the service life of reinforced concrete structures should look no further than Cortec®’s MCI® admixtures.

THE IMPORTANCE OF CORROSION-INHIBITING ADMIXTURES

Reinforced concrete structures like bridges, parking ramps or high-rises built near the ocean or in regions where winter temperatures drop below freezing have higher risks of corrosion caused by salty sea air or de-icing salts. When these chlorides enter concrete cracks or pores, they accelerate corrosion, forcing rebar to expand and put pressure on the overlying concrete until it cracks, spalls and eventually requires structural repair. Anti-corrosion additives for concrete fight this process from day one, delaying the need for repairs and promoting infrastructure durability.

HOT WEATHER CHALLENGES OF CALCIUM NITRITE ADMIXTURES

While calcium nitrite (CNI) is a common corrosion-inhibiting concrete admixture, one

challenge is that it accelerates set time, making concrete stiff and finishing difficult in hot summer temperatures and tropical zones. This rapid set acceleration can create “cold joints”, or weak points in the concrete which can lead to future structural problems.

In contrast, MCI®-2005 and MCI®-2005 NS add corrosion protection to the concrete mix without accelerating set time. MCI®-2005 has natural set-retarding properties and is a USDA-certified biobased product. MCI®-2005 NS offers “normal set” properties which allow contractors to treat the concrete mix according to normal procedures on a hot day. Both MCI® admixtures are certified to meet NSF Standard 61 for use in potable water structures and can be used at a much smaller dose than CNI, since MCI® works independently of expected chloride content.

An excellent example of MCI®-2005 NS in action comes from a post-tension (PT) parking ramp project in North America, where the contractor was facing a heat index of 38°C as early as 9.30am. The general superintendent was very concerned about continuing the project during the daytime due to a recent bad experience with CNI. However, his MCI® regional sales manager reassured him

that they did not have to wait until evening if they followed their normal procedures for a 38°C day. Accordingly, the contractor added his desired set retarder, plasticiser and supplementary cementitious material and went ahead with the pour. The crew immediately noticed that placement and consolidation was easier than with CNI. They also had more bleed water and great finishing results. The superintendent said it was his best PT mix ever and several local ready-mixers included MCI®-2005 NS in parking garage bids the following week after learning of how well it worked.

If you live in a climate that needs corrosion protection during summer, choose an MCI® admixture that fights corrosion and is easy to work with. ■

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