

Fight corrosion in concrete potable water structures with MCI

What can be done when corrosion protection is needed in a reinforced concrete structure that holds drinking water or is located in an environmentally sensitive waterway? Due to the possibility of harmful chemicals leaching into water, contractors are limited on which products they can apply to concrete elements in contact with potable water. Cortec Corporation offers a variety of Migrating Corrosion Inhibitor (MCI) products that are certified to meet ANSI/NSF Standard 61 for use in drinking water system components.

HOW MIGRATING CORROSION INHIBITORS WORK

MCIs can be admixed into new concrete and repair mortar or topically applied to existing concrete as a surface applied corrosion inhibitor (SACI). MCI molecules migrate through concrete pores and are attracted to metal surfaces, such as rebar, where they form a molecular protective layer considered to be ambiodic, or mixed, meaning it inhibits corrosion reactions at both the anode and cathode of a potential corrosion cell.

MCI ADMIXTURES FOR DRINKING WATER COMPONENTS

MCI admixtures are sometimes desired for extra protection in potable water reservoirs, prefab pipe segments for transporting seawater to desalination plants, brine holding tanks, and seawalls in sensitive areas where there are leachate concerns. MCI admixtures certified to meet NSF Standard 61 for use in

drinking water system components include MCI-2005, a liquid corrosion inhibiting admixture. MCI-2005 is a US Department of Agriculture (USDA)-certified biobased product that can be mixed into new concrete on the jobsite or at the batching plant. It retards set time, making it an alternative to calcium nitrite on extremely warm days. Additionally, MCI-2005 NS is also certified, which is a normal set version of MCI-2005 that does not accelerate or retard set time. Finally, certified MCI-2006 NS is a powder MCI admixture that does not accelerate or retard set time. It is often used in repairs.

MCI SACIS FOR DRINKING WATER COMPONENTS

MCI SACIs are typically sprayed onto existing concrete and migrate deeper over time. They can be a great option when application errors in the construction of potable water holding tanks have left a thinner concrete cover than intended and additional corrosion protection is needed. They can also be used for periodic maintenance on structures, such as concrete water towers, that were not initially specified with MCI admixtures but where there is a corrosion concern. These SACIs are among those certified to meet NSF Standard 61 for use in drinking water system components. Firstly, the MCI-2020 is a water-based, highly concentrated dose of MCIs. Secondly, MCI-2018 is MCIs combined with a 100% silane-based water repellent — a waterproofing membrane should be used when the component will be under hydrostatic pressure.



MCI (Image: Cortec Corporation)

EXTEND SERVICE LIFE OF CONCRETE POTABLE WATER STRUCTURES

Corrosion in reinforced concrete structures leads to costly repairs, interrupting the intended use of the structure and potentially reducing its service life. Specifying an MCI admixture in new drinking water system components at risk for corrosion or periodically applying a maintenance dose of MCI SACIs to existing tanks and structures can be a way to slow down the natural deterioration processes of corrosion in drinking water system components where higher safety standards exist. [WWW](#)