

## WATER QUALITY STANDARDS PUT THE SQUEEZE ON SOLVENT-BASED LININGS

Under the U.S. Environmental Protection Agency (EPA) National Primary Drinking Water Regulations (NPDWR), enforceable standards limit the levels of specific chemicals found in drinking water due to potential health considerations. These limits, known as a Maximum Contaminant Level (MCL), are the highest allowable concentration of a chemical in drinking water supplied by municipal water systems. Enforcement of drinking water standards is provided by state regulatory agencies, which have the authority to set even more stringent guidelines than the limits set by the EPA.

One of the chemicals commonly used as a solvent for epoxy coatings that have been certified for use on the interior of potable water tanks is xylene. All air dried organic solvent coatings entrap a considerable amount of solvent in their "cured films". This entrapped solvent leaches out of the coating slowly over a long period of time. The EPA has set the MCL for xylene in drinking water at 10 parts per million (ppm) or 10,000 parts per billion (ppb). Drinking water containing more xylene than its MCL level is considered unsafe for human consumption by the EPA.

The states of New York and Rhode Island have implemented more stringent standards for the content of organic solvents in drinking water. The state of New York has set .005 ppm (5 ppb) as the MCL for a single xylene in drinking water and a limit of .01 ppm (10 ppb) for combined xylenes - ortho, meta and para. The state of Rhode Island does not allow any organic solvent extractables in drinking water. "Since most water tank linings contain solvents, such as xylene, to assist in application properties, specifying engineers are turning to 100 percent solids coatings to meet these tighter restrictions," according to Doug Hansen, director of sales, Water Tank Market for Tnemec.

In the Village of Owego, New York, an advanced generation, 100 percent solids epoxy coating from Tnemec was specified for a 500,000-gallon ground storage tank that needed relining. "As a 100 percent solids product, which is certified by NSF International in accordance with NSF/ANSI Standard 61 "Drinking Water System Components - Health Effects", Series FC22 Epoxoline fit the bill," Tnemec coating consultant Joseph Saleeby acknowledged. "In addition to its 100 percent solids, it has the ability to achieve the necessary dry film thickness (DFT) in one coat, which is an advantage over traditional coating systems that require two or three applications."

The tank's interior surface was prepared in accordance with SSPC-SP10/NACE 2 Near White Metal Blast with a minimum angular anchor profile of 3.0 mils for immersion service. "The ideal situation with this coating is to have the entire tank interior blast cleaned before the application of Series FC22," Saleeby noted. "With these high solids products, once you start mixing the two different components, you want to be able to start and finish spraying in one continuous application."

A WIWA plural component spray system was used to apply a single coat of Series FC22 at 20 to 30 mils DFT. During application, a dehumidification system was used to provide adequate ventilation. Series FC22 has the capability of curing down to 35 degrees F with return to service within 48 hours. Return to service is possible within 24 hours when the temperature is 75 degrees F.

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Series FC22 has been used in dozens of tanks in New York over the past couple of years with great success in meeting the extractable level requirement. "It's important that everyone stay ahead of the curve when it comes to using these 100 percent solids coatings so they'll be comfortable using these products once the use of low-VOC coatings becomes mandatory," Saleeby added.

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