

## CASE HISTORY:

### Chemical Storage tanks coated with 2-component acrylic/epoxy

In the fall of 1989, a tank farm at the Rohm and Haas Philadelphia plant was painted using a two-component waterborne acrylic/epoxy system. These systems are prepared by mixing an acrylic latex with an emulsifiable epoxy resin, and cure through the reaction of the epoxy groups with carboxyl functionality on the acrylic resin. The tank farm prior to painting is shown below. The surface was prepared with a marginal commercial blast to SSPC SP-6, and paints were applied with a roller. The bodies of the chemical storage tanks were painted with a primer and topcoat based on the waterborne acrylic/epoxy system. The ends of the tanks were painted direct-to-metal with the topcoat. One tank was painted with

a mixed system. The body of that tank was painted with a traditional solventborne epoxy/polyamide primer. The solventborne primer was then topcoated on half of the tank with a solventborne epoxy/polyamide topcoat, and on the other half with the waterborne acrylic/epoxy topcoat. The ends of this tank were painted with only the solventborne topcoat. The tanks were inspected in August of 2001, and after 12 years of service are still in good condition. Note that the tank ends, where no primer was used, and only 2 coats of the topcoat were applied direct to the metal, still look good. The only rusting on the tank ends is where signs, which had originally been glued on, had been pulled off and damaged the coating.

#### DETAILS OF PROJECT SURFACE PREPARATION:

Commercial sandblasting to SSPC SP-6.

#### PRIMER:

2-component waterborne acrylic / epoxy based on waterborne acrylic resin on sides. Tank ends were painted direct to metal with the topcoat paints. One tank primed with a commercial 2-component solventborne epoxy.

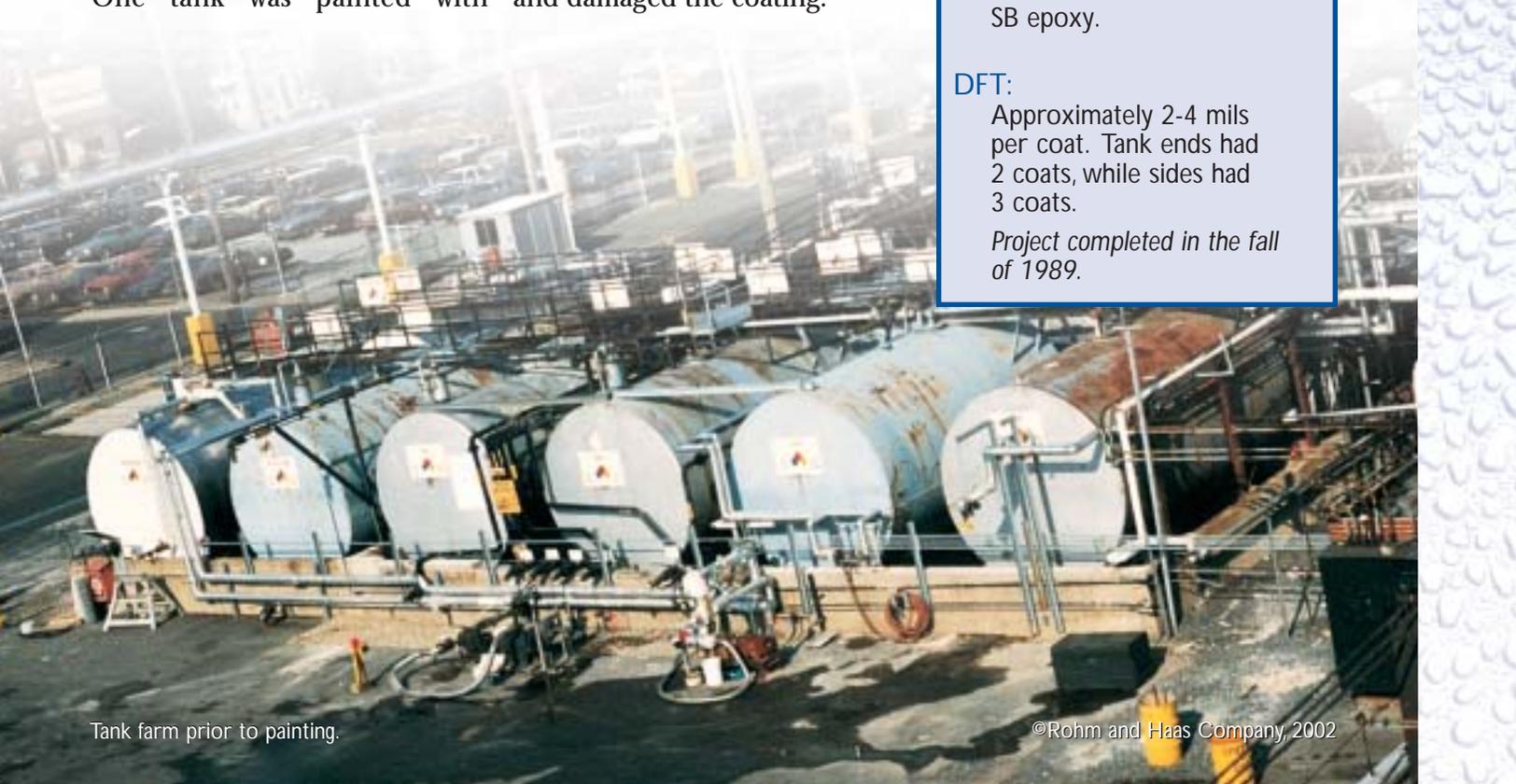
#### TOPCOAT:

2-component WB acrylic/epoxy based on waterborne acrylic resin. Tank primed with SB epoxy also topcoated on half of tank with a commercial SB epoxy.

#### DFT:

Approximately 2-4 mils per coat. Tank ends had 2 coats, while sides had 3 coats.

*Project completed in the fall of 1989.*



# SURFACE PREPARATION & COATING APPLICATION



Blasting of tanks to SSPC SP-6.



Tank farm after being painted in 1989.



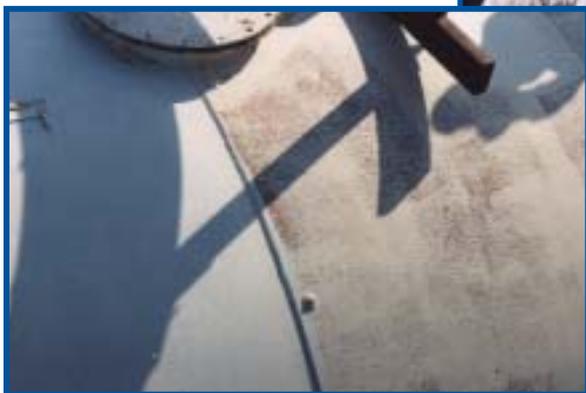
Typical tank painted with an all WB system after 12 years exposure.

## PROJECT ASSESSMENT:

Although the WB acrylic/epoxy is performing well against corrosion, at this point all of the coatings are chalking. The acrylic/epoxy system did, however, initially show greater resistance to chalking than the solventborne epoxy/polyamide. After only 17 months exposure, the areas topcoated with the solventborne system were chalking heavily, while the waterborne acrylic system was fine. This result is not unexpected, because the waterborne paint requires less epoxy and is based on a high molecular weight, durable acrylic latex. Florida panel exposures in the demanding black box test have

shown that the waterborne two-component acrylic/epoxy system has gloss retention much superior to a solventborne epoxy/polyamide. The tank that was painted with the WB acrylic/epoxy on one half and

the SB epoxy on the other half is shown below after 12 years. It can be seen that the WB acrylic/epoxy coating is providing better corrosion resistance, most likely due to its better durability.



Top of tank with both WB and SB systems. WB acrylic/epoxy on left and SB epoxy polyamide topcoat on right. Both are over a SB primer.



Tank farm after 12 years service.