

WATERBORNE ACRYLIC RESINS FOR PROTECTIVE COATINGS

CASE HISTORY:

Sulfuric Acid Storage Tank

Located between the Delaware River and Frankford Creek, the Rohm and Haas chemical plant in Philadelphia has used waterborne acrylic coatings for many years in order to protect its steel structures from corrosion. The water treatment facility at the plant has several tanks which were painted in the 1980's with coatings based on waterborne acrylic resins. At the height of its use, the water treatment station recycled 3 million gallons of process water by addition of acid and calcium hydroxide. During the summer of 1984, the waste acid storage tank at the facility was coated with a 3-coat waterborne acrylic system. At the time of repainting, the acid storage tank was heavily pitted in spots. The paint contractor specified sandblasting down to

bare metal, and to avoid damage of nearby gear equipment, the tank had to be moved to an open area near the Delaware River on the other side of the plant. A waterborne latex primer was applied to the blasted tank and allowed to dry until the next morning. Although a mist rolled in from the river that night and enshrouded the tank, it did not damage the primer coat. The primer coat was followed by two coats of a waterborne acrylic topcoat on the following day, with a total dry film thickness of 6 to 8 mils. After drying, the tank was moved back into its cradle. Some slight damage to the new finish was caused by chains used in the moving, but was repaired by roller coating, and the tank was placed back into service.

DETAILS OF PROJECT

SURFACE PREPARATION:

Sandblasting to clean metal.

PRIMER:

Red waterborne acrylic primer.

TOPCOAT:

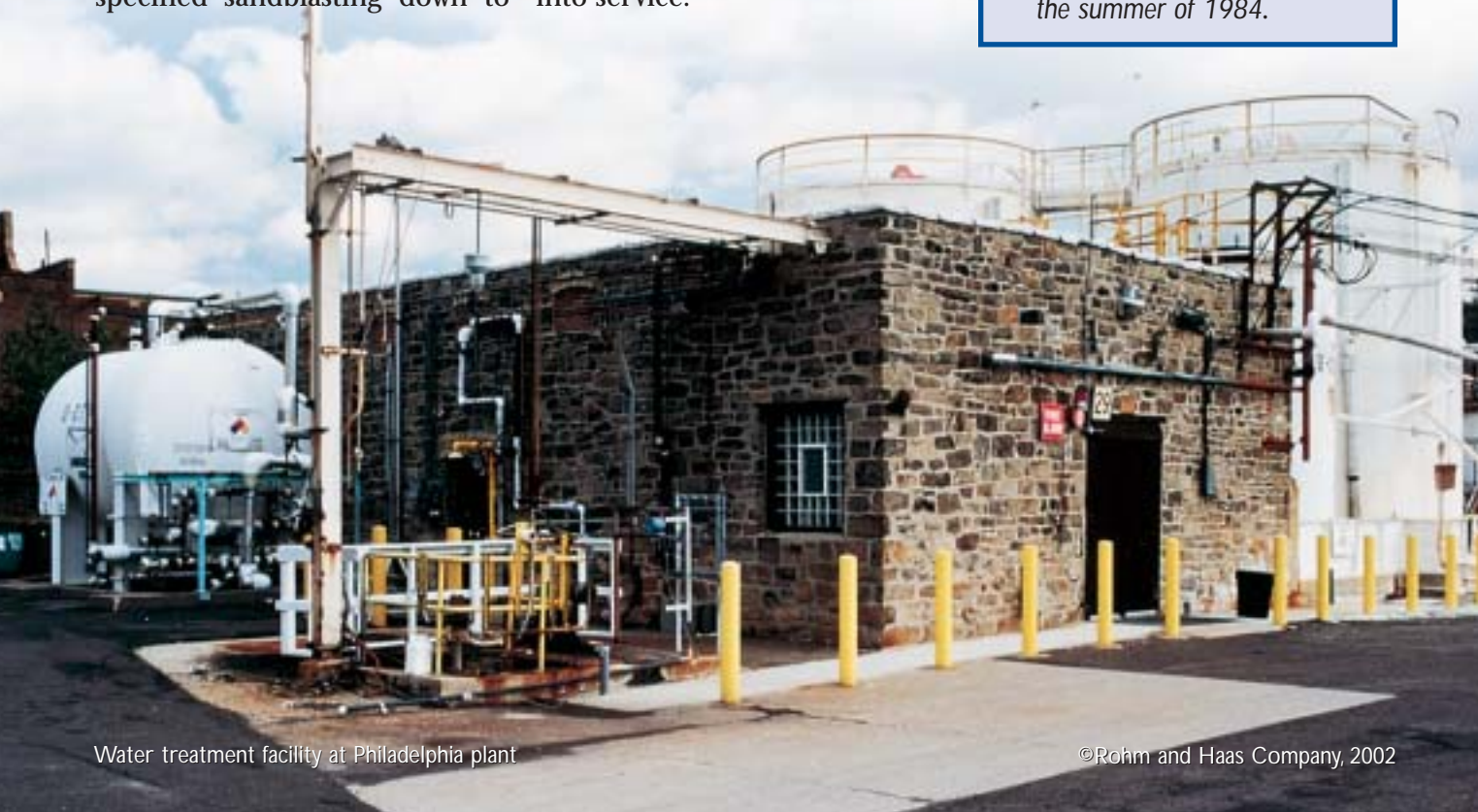
2 coats of semi-gloss WB acrylic topcoat

All paints based on waterborne acrylic resin. Primer contains anti-corrosive pigments.

DFT:

2-3 mils per coat; total DFT = 6 – 8 mils.

Surface prep and painting completed in 2 days during the summer of 1984.



SURFACE PREPARATION & COATING APPLICATION



Tank after primer application.



Tank after topcoat application.

PROJECT ASSESSMENT:

A recent examination of the tank after 17 years shows no signs of corrosion, except for one small spot of rust staining at one of the weld seams. Although the topcoat has chalked after 17 years, the waterborne acrylic coating is performing exceptionally well and is still protecting the tank from corrosion.



Small rust spots along weld seam on tank bottom – August 2001.

Tank after 17 years – August 2001.