

ACROLINE™ Dual Wall Anchored Thermoplastic Liner Gives 40-year-old Neutralization Basin Second Life

**INDUSTRY**

Pharmaceutical

**LOCATION**

Northeastern US

**COMPLETION**

Summer 2024

**OPERATION**Waste Chemical
Neutralization Tank**PRODUCTS**[ACROLINE™ Systems](#)

Challenge: Existing brick-lined in-ground sump requires dual containment with leak detection system

Solution: ACROLINE™ Systems dual containment lining installation inside brick-lined sump

Sewers are underground, because, simply put, water runs downhill. Gravity efficiently conveys wastewater from higher to lower elevations. But when the wastewater is corrosive or toxic, a leaky underground sewer structure places people, structures, and the environment in danger.

Extra engineering controls—dual containment and leak detection systems—can effectively mitigate that risk. For new construction, these controls can more easily be incorporated into the design. Retrofitting them into existing structures is trickier. But in 2024, ACROLINE™ Concrete Protection Liner System made retrofit possible for one large Northeastern US pharmaceutical chemical processor.

To meet new standards for chemical containment in below-grade structures, the pharmaceutical company needed to upgrade a 40-year-old acid resistant brick lined neutralization basin with secondary containment and leak detection capability. The first step was to assess the tank's condition. Acid-proofing material supplier, ErgonArmor inspected the tank's acid-resistant brick lining and determined it was in good to very good condition, despite its age.

To achieve dual containment, ErgonArmor recommended adding a dual wall ACROLINE™ System liner inside the 18-foot x 18-foot x 12-foot deep tank. Plastek Werks of Cleveland, Georgia, fabricated the dual wall liner out of 5mm thick polypropylene. Standpipes were tied into the gap between the primary and secondary layers to enable leak detection monitoring.

A 4-inch-thick layer of reinforced concrete filled the gap between the new plastic and old brick liner and anchored the plastic liner in place. Though this concrete “overpour” reduced the neutralization tank's capacity, it remained sufficient for purpose. Leaving the acid-resistant brick lining in place yielded added benefits, saving valuable time and avoiding associated demo and disposal costs.



1. Project begins with corner dual wall sheet fitting - Note the existing red brick lining in background that was left in place.



2. Custom fitted concrete wall forms installed - The concrete overpour cavity can be seen on the right edge of the picture.

By leaving the brick liner in place, the neutralization tank could be upgraded with only 5 weeks of downtime. This construction window allowed time to remove and replace the concrete tank roof, install and weld the ACROLINE™ System concrete protection liner sheets, place and cure the concrete between the plastic and brick liners, and test the function of the leak detection system. To the client's satisfaction, the project was completed on time and within budget.

Three factors contributed to the speed, quality, and functionality of this secondary containment retrofit and leak monitoring capability:

1. Acid-resistant brick and membrane linings provide long-term corrosion protection in neutralization basins with demanding pH and temperature swings.
2. ACROLINE™ Concrete Protection Liner System features 39 integrally molded, v-shaped anchors per square foot to lock it into the concrete backfill.
3. Using thermoplastic welders certified to strict American Welding Society (AWS) standards reduces risk of defective welds.

After 1 year of operation, the dual wall neutralization tank, with its integral leak detection system, had exceeded the client's performance expectations.



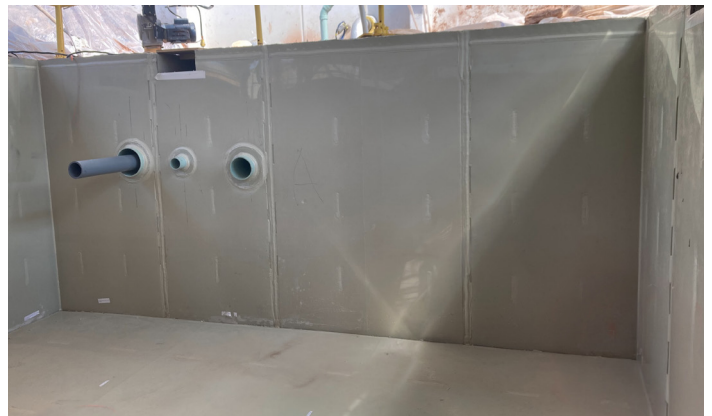
3. Additional forms are placed - Note the cavity between the ACROLINE liner attached to the concrete formwork and original masonry wall, visible behind the ladder at right.



4. Floor preparation - Floor frames and wire mesh are installed with metal anchors to ensure proper grout anchoring and thickness.



5. Floor installation - The installation of the floor proceeds after the walls have been installed. Special techniques are required to ensure the floor is properly fitted and grouted to achieve full contact.



6. Wall and floor before stand-pipes are installed - Finishing welds are performed and tested to eliminate any potential leaks.



7. Conductive copper tape strips are added - Electrically conductive tape placed on top of the secondary liner before the primary liner is welded into place enable nondestructive holiday testing of the field welds.



8. Work nears completion - Standpipes collect any liquid that leaks into the space between the primary and secondary liners.