ErgonArmor™ | PROJECT PROFILE

High-Density Polyethylene Liners Protect Concrete and Contain Process Effluent at Kodak

LOCATION
Rochester, New York

COMPLETION
1999

OPERATION
Photochemicals and film manufacturing

PRODUCTS
ACROLINE™ Systems

Challenge: Need to protect richwater storage tank and provide a barrier between wastewater and the environment

Solution: ACROLINE Systems anchored thermoplastic liner

In 1999, the Kodak plant in Rochester, NY, initiated design of a new "richwater" storage tank. "Richwater" is a process effluent containing silver, which is both valuable and a regulated heavy metal. To retain as much silver as possible for reuse in the plant and to provide a barrier between the wastewater and the environment, Kodak required an effective containment lining, resistant to both the process chemistry and thermal service conditions.

The above ground concrete tank was designed with two, equally sized chambers separated by a full-height wall. Each chamber was 31 x 25 feet wide and 12 feet tall. They shared a 3 foot long side. The floor of each chamber sloped toward a 3 x 3 x 6 inch deep sump that drained via gravity through a pipe penetration in the outside wall. Cants were designed in the vertical tank corners to facilitate periodic removal of sediment. The tanks were covered with precast concrete roof panels.

Kodak chose ErgonArmor's ACROLINE Systems anchored thermoplastic liner in 5mm thick high-density polyethylene (HDPE) for the floor and walls. For the roof, a 3 mm liner was selected. This sophisticated cast-in liner system, supplied by ErgonArmor met all of Kodak's needs for containment and chemical and thermal resistance.

The liner installation was completed in the fall of 1999. During Kodak's annual tank inspection in 2002, the Kodak Non-Metallic Materials Specialist, confirmed the liner's integrity. "I wouldn't hesitate to use this system again," said the specialist after the 2002 inspection, "We've been happy with the liner performance."

The ACROLINE Liner is a semi-finished thermoplastic sheet product. The liner sheets are welded or fused to form a continuous barrier to protect and seal concrete surfaces. The liner sheets are smooth on one side and have 39 discrete anchors per square foot on the other side. The anchors are cast into the surface of the concrete to mechanically lock in the liner.

The design of the ACROLINE Systems' anchoring system is truly unique and is one of the key elements of the system's capability in a wide range of applications. The integrity of the anchoring system maintains the mechanical bond between the liner and concrete when the liner is exposed to negative hydrostatic pressure or thermal variation. Lesser liners may pull out of the concrete or separate from their anchors causing gross deformation of the liner.

ACROLINE Systems anchors are integrally formed with the liner sheet, giving them consistent, reliable strength at the anchor sheet interface. Each anchor is V-shaped and reinforced with a horizontal tie to prevent the anchors from collapsing and being pulled out of the concrete. To further enhance the liner's resistance to temperature fluctuations, the rows of anchors are diagonally offset to more effectively transfer thermal stress to the concrete, preventing excessive liner deformation.

Integral, V-shaped anchor with horizontal tie

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