

ADVANCED POLYMER COATINGS

case study

Seven-Year Rail Tank Car Inspection Shows Only 0.044% Coating Loss with ChemLINE®

For more than 40 years, Southern Ionics Incorporated (SII) has built a reputation as a trusted chemical manufacturer and delivery partner. With a transportation fleet that includes bulk tank trucks and rail cars, SII supplies products used across a wide range of applications, including wastewater treatment, air pollution control, refinery and petrochemical catalysts, and pigments.

Historically, many of SII's lined trailers and rail tank cars relied on conventional rubber linings for corrosion and chemical protection. Over time, however, the company began looking for an alternative as maintenance and repair costs continued to rise.

Rubber linings can be effective in certain services, but they are often labor-intensive to inspect, repair, and replace, especially when failures occur in active fleet operations.

SII's interest in the ChemLINE® coating system began after learning more about its field performance and long-term durability during an industry trade fair in New Orleans. Studies highlighting successful applications and extended service life helped position ChemLINE® as a potential solution for reducing lining-related maintenance challenges while supporting reliable chemical transport across SII's fleet.



The story of Southern Ionics' ChemLINE® Application

SII was no stranger to the benefits of the ChemLINE® coating system, having lined part of their OTR trailer fleet back in 2009. According to Sam White, Transportation and Plant Manager of SII's West Point, Mississippi location, "We were introduced to the ChemLINE® coating system probably 12 or 13 years ago when we were having issues lining FRP trailers.

We normally haul Sodium Bisulfite in the trucks, but those are stainless steel, so no problems there, but we had some rubber-lined trailers giving us issues in some of our specialty products, Zirconium, Oxychloride, and Aluminum Chloride. I had heard about the ChemLINE® coating system and decided to give it a try, and it worked really, really well in the service."

Based on the success of the ChemLINE® coating system in the FRP trailers, Southern Ionics decided to take a chance with two of their rail tank cars after many years of service with rubber linings. "Southern Ionics is one of those companies that isn't afraid to try something new," White added.

"I used to do trucks, rail, barges, ships, everything, and then Khristy (Todd), our Manager of Corporate Services, took the rail car part over several years ago. So, we were discussing it, and I mentioned trying ChemLINE® in a couple of the rail tank cars due to how it performed in the trailers."

Switching to ChemLINE®

Khristy shared, "Well, we had been doing well with rubber linings. But then, the last few years, we were spending a fortune on liner maintenance, which is particularly expensive at $40,000 per car."

"**It seems like every time I send a car to the shop, it'd be another $5,000 to $7,000 to patch it. We were spending a fortune, and the cost just keeps going up.**" Satisfied with the past success of the ChemLINE® lined FRP trailers, SII reached out to the Advanced Polymer Coatings (APC) home office and submitted for a Lab Review.

After receiving positive test results in Sodium Bisulfite service, SII then decided to send the two rail tank cars to get relined with ChemLINE® 784/32.

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Sam White
Transportation & Plant Manager, SII

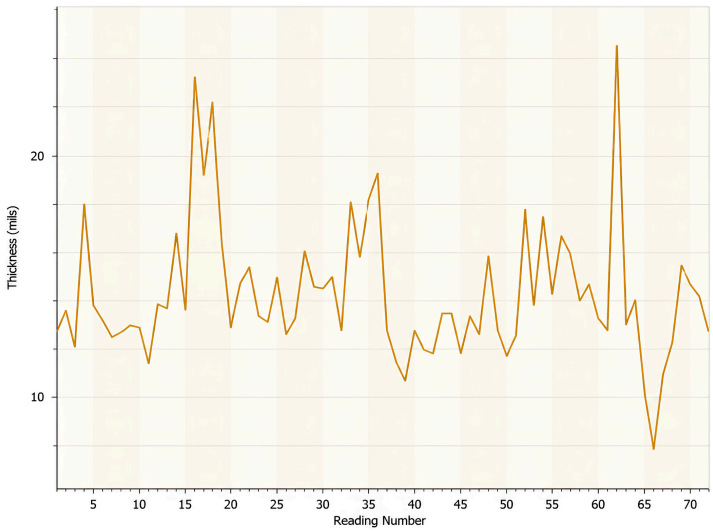


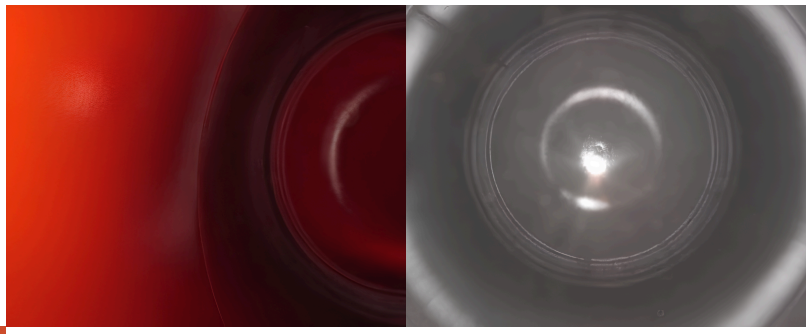
Initial Application

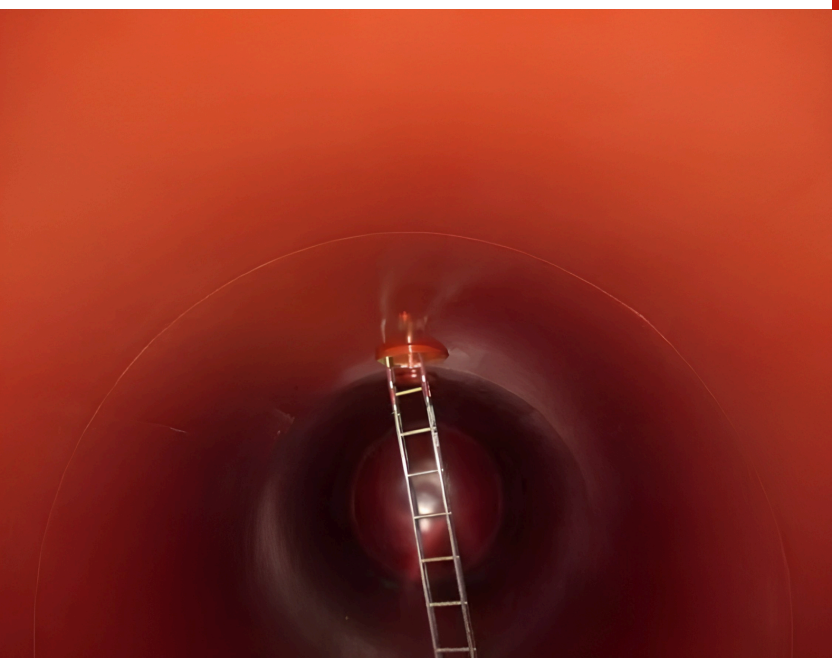
The application was completed in June 2015 at Tank Linings of Paris in Paris, Tennessee. As part of the project, the existing rubber linings were removed from two rail tank cars and replaced with the ChemLINE® 784/32 coating system. A grey base coat was applied first, followed by a red topcoat to complete the lining system.

After application, the tanks were force hot-air cured at a low temperature of 250°F. Within a few days, both rail tank cars were returned to service, allowing the customer to move quickly from lining replacement back to active fleet operation.

APC's technical team was present throughout the application process to provide oversight and support. Following the application, APC performed the first post-application inspection to verify coating condition and document dry film thickness readings. APC Technical Service Manager Joe Fortman recorded the DFT measurements shown in the chart to the right, providing an initial benchmark for evaluating the lining system's long-term performance in service.



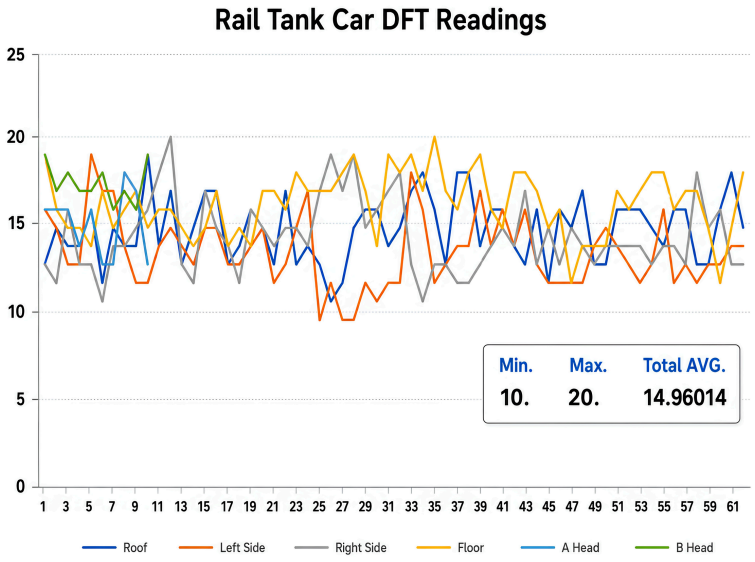




Second Inspection

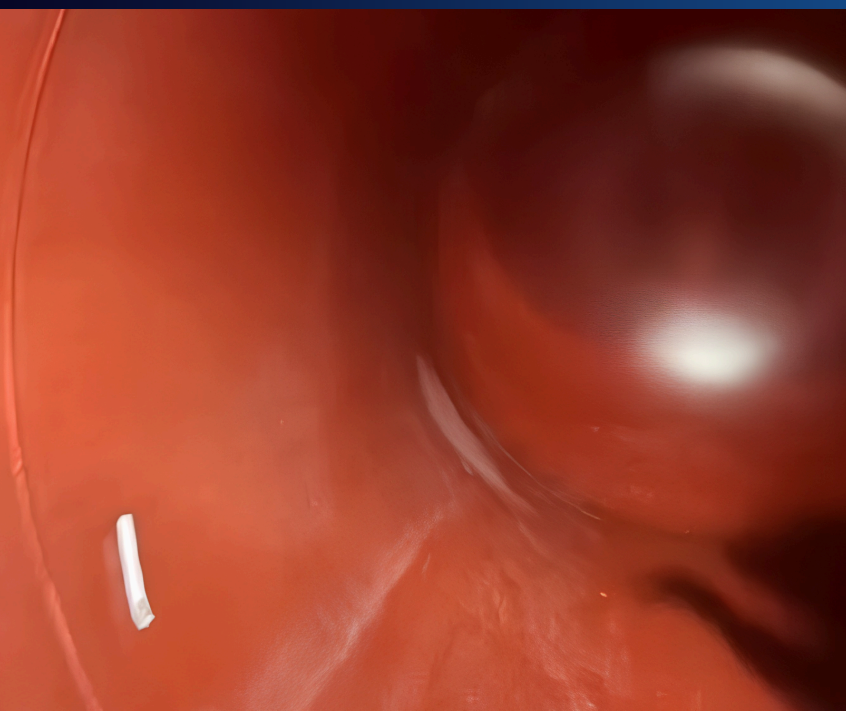
In August 2018, the same two rail tank cars were brought in for a field inspection, with APC inspectors again onsite to evaluate the condition of the lining. The inspection showed only minimal corrosion around the manway area, which was not unexpected.

The barrel sections of the tank cars, however, remained in excellent condition. The ChemLINE® coating continued to show strong surface integrity and retained a significant amount of gloss, as shown in the image to the left. These observations provided an early indication that the lining was continuing to perform well several years after application.



0.044%

The APC Inspector took DFT readings of the coating, which boasted an outstanding 0.044% coating loss over the seven years the cars had been utilized in the Sodium Bisulfite service.



Most Recent Inspection

The most recent fifield inspection took place in March 2022, and the findings reported by APC inspector Fortman were astounding. The barrel of the tank car showed excellent condition, only containing two spots of concern attributed to mechanical damage and both spots were easily repaired with ChemLINE® repair kits.

The manway showed areas of corrosion around a newly noticed weld seam, which further inspection revealed the top half of the manway was cut and replaced with a stainless-steel piece somewhere along the way after the 2018 inspection. The repairs made in 2018 held firm, indicating proper surface preparation, application, and hot cure of the repair coating.

The Results

Based on the recordings, APC's technical team feels extremely confident reporting that SII can expect to see 12+ years of successful service out of these two rail tank cars lined with the ChemLINE® coating system, providing the corrosion protection that Southern Ionics needs.

Impressed by the results of the recordings, Khristy further noted, **“We’re moving ALL our fleet to ChemLINE®”.** I've actually got four headed to Ville Platte now. As more come due, we will take the rubber out and have them re-lined with ChemLINE®."

Southern Ionics does most of its ChemLINE® lining work at UTLX’s Ville Platte, Louisiana facility. UTLX has successfully re-lined and continues to line tank cars on behalf of Southern Ionics.

Contact your Advanced Polymer Coatings representative for more information on ChemLINE® coatings for your transportation needs.