

Wine and Spirit Tanks

ChemLINE®
CASE STUDY



A major California wine and spirits producer had problems with corrosion issues in its stainless steel and carbon process and storage tanks. The cargo lining had to be able to handle several difficult conditions.

- ▶ The lining had to resist the 6% to 98% alcohol contained in the spirit products (193 proof ethanol) stored in the tanks.
- ▶ The lining had to be suitable for food grade cargoes.
- ▶ The lining could not impart any taste or odor to the cargoes.
- ▶ According to the owner “they had tested many linings to date” and all had failed within 30 days.
- ▶ The tanks to be lined were both stainless steel and carbon steel.
- ▶ Many tanks were insulated, which meant that high temperature curing of a lining was not possible, due to potential damage to the insulation. A maximum curing temperature of 150°F was preferred.
- ▶ The coating had to be low VOC and compliant with California clean air standards.

The company’s engineering department turned to Advanced Polymer Coatings to come up with a polymer lining solution for this challenging application. Working with their engineering department and testing laboratory, a plan was initiated with very innovative ideas to provide a long term solution for the tanks.



The process began with extensive testing by the wine producer of the ChemLine® material for any taste or odors that might be imparted to the cargo. After many months of testing in a variety of spirits, wines and beverages, the ChemLine® materials were found to impart no taste or odors to any beverage. According to the company, this was the first lining to pass this rigorous testing schedule.

Additional in-house and third party testing showed that the coating would be suitable as a lining for all of the company’s products.

In June, 2010 the contractor Sierra Spray Foam, Modesto, CA commenced the coating of the first of four carbon steel tanks. Sierra Spray foam furnished workers that had previously performed quality work at the plant and who were experienced and knowledgeable in the surface preparation and application of high performance industrial coatings.

Prior to abrasive blasting, all surfaces to be coated were pressure washed, cleaned and rinsed to remove any surface contaminants.

Sierra Spray Foam utilized an efficient center stage swing scaffolding to access all areas of the tank during surface preparation, application and inspection procedures, minimizing potential contact with and damage to the new lining.



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After cleaning, the surface was abrasively blasted to SSPC-SP5 (NACE #1, SA3) white metal finish with 3 mil profile. The substrate was then inspected and tested to assure compliance with the specifications.

The tank was cleaned and primed in a fashion that did not compromise the abrasive blast.

Relative humidity and temperatures were monitored and controlled during the surface preparation, coatings application and final cure by the use of external moisture control and heating units supplied and operated by Hotwork. RH during surface preparation was < 50% or lower and <65% during coatings applications. Substrate temperature was within the range 10° to 40°C and 5° F of the dew point.

Sierra Spray Foam applied the first spray coat of ChemLine®



784-32 (gray) to the roof and walls and at 6-8 mils (150-200) microns wet film thickness in accordance to the specification.

Sierra Spray Foam allowed the (gray) prime coat to cure to the B Stage and then applied a red stripe coat of ChemLine® to all welds and seams of the tank. This was allowed to cure to B Stage.

A second full coat of ChemLine® 784/32 (Red) at a wet film thickness of 7-8 mils was applied to achieve 6-7 DFT top coat.

After the complete ChemLine® 784/32 coating system was applied, a 100°F dry air was blown into the tank to promote material to release solvent and to be ready for soak post cure.

Cure Schedule

Indirect forced air heating was used using propane. These tanks were not insulated. The final cure temperature used was 200°F for six (6) hours. Thermocouples and chart recorders were used by the heating subcontractor Hotwork, to assure uniform heat of the entire tank. For future insulated tank work, the final curing schedule will be 150°F for 24 hours.

The customer will receive long term service life for the tank lining. The lining will not impart any taste or odor to the cargo and the tank substrate will be protected from corrosion and chemical attack.

