

All-Solids Epoxy Flooring Stands Up To Solvents

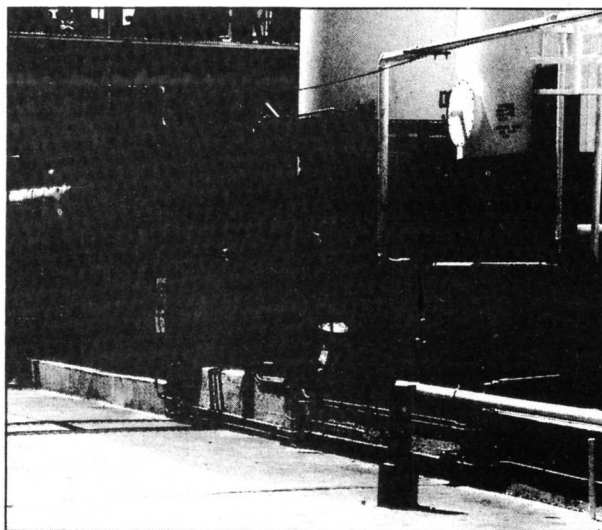
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CWM Resource Recovery, as the name implies, operates a solvent recovery plant that uses outside tank storage farms. Methylene chloride, MEK, acetone and trichloroethylene are among the many chemicals that are handled on the site. Although outdoor surfaces were not corroded or abraded severely, the West Carrollton, Ohio, subsidiary of Chem Waste Management, Inc., wanted a new protective floor coating that could contain potential spills, and meet Federal tank farm regulations on secondary containment. The most recent regulations require "gap-free" containment.

Engineers defined their needs clearly at the beginning of the project. The floor had to stand up to mechanical abuse, have non-skid properties, and contain solvents up to 24 hours without softening. Expansion joints had to withstand chemical attack. Surfaces would be exposed to a temperate midwestern climate. Absolute bonding was required, even with the presence of water close to the surface.

CWM Resource Recovery maintained strict guidelines on the application of the flooring system, including the following rules:

- ensure that no sparking occurs during surface preparation and laying of the flooring compound;
- the floor would have to be ready for full operating conditions within 24 hours;
- all metal legs, beams and tank bases had to be sealed to prevent chemicals from penetrating under the floor;



(Above) All-solids epoxy flooring was applied 1/4" thick on light traffic areas, 3/4" thick in heavy truck traffic areas. Walls and metal structural parts were protected with the same compound applied in three coats. Protected surfaces are in good condition after three years of service at the solvent-recovery plant. (At left) Flooring must withstand and contain, if necessary, a variety of solvents and other chemicals. Methylene chloride, MEK, acetone and trichloroethylene are among chemicals handled at the site

- all existing cracks had to be sealed to prevent future propagation through the new coating;
- all walls required coating protection;
- an off-loading ramp, handling traffic as heavy as 80,000-lb tanker trucks, needed extra coating protection; and
- there would be no stoppage of plant operations during surface preparation and application of the flooring.

CWM Resource Recovery evaluated more than a dozen flooring materials, with the question in mind, "How well does the flooring compound resist methylene chloride?" The final selection was a 100%-solids epoxy coating that passed preliminary tests for withstanding methylene chloride for a 24-hour period. Many of the other candidates dissolved overnight. To further document the performance of the epoxy coating, engineers installed test patches in the plant. The test patches allowed CWM Resource Recovery and the supplier of the coating to set other requirements, and make the full-scale project run smoothly.

Work crews started by isolating certain sections of the plant, and completed the resurfacing project mostly on weekends. As expected, newly resurfaced areas were ready for operation after overnight cure. The three-part, all-solids epoxy flooring was applied 1/4" thick on horizontal surfaces with light vehicular traffic. The same compound was applied in three coats for walls, metal legs and beams. The parking ramp area, which would bear the 80,000-lb truck traffic, was given a 3/4" thick surface. All existing cracks were filled with a liquidized version of the epoxy coating, and then enmeshed in fiberglass strips. All expansion joints were raised 4" off the floor by a custom curb design. To assure the best adherence possible, even under damp conditions, work crews made sure to use mechanical shotblasting and a penetrating epoxy sealer.

The all-solids epoxy flooring system was completed in November 1987. Thus far, it is crack-free, and has only needed minor patching jobs. Minor spills have virtually no effect on the floor. ■

Super Guard™ epoxy flooring, coating and grouting system—International Coatings Inc., 2925 Lucy Lane, Franklin Park, IL 60131.