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Dewatering Water Based Adhesive Residuals

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Objective

Facility managers at this manufacturing plant were searching for alternatives to dewater the water based adhesives collected from washing barrels and cleanup at the plant. They sought a new process to dewater and haul the solids to a landfill rather than pay for hauling and processing the liquid residuals off site. A sample of the residuals was sent to the WaterSolve LLC lab and evaluated. Based on the test results a pilot study was advised and performed at the plant in July of 2008.

Geotube® Container Sizing

Geotube® containers are manufactured from high strength polypropylene fabric and designed to allow effluent water to escape through the pores of the fabric while retaining the chemically-conditioned solids. The Geotube® estimator indicated a 25 cu yd roll-off GT500D Geotube® container would process six months to a year of the residuals. This container fits in a dumpster and can easily be

hauled to a landfill when the dewatering is complete.

Conditioning Chemical

A representative sample of the water based adhesive residual was collected and sent to WaterSolve's laboratory for testing. Dewatering polymers were evaluated based on water release rate, water clarity, and flocculent appearance. In addition, dosing rate(s) were determined during bench-top dewatering experiments and recommendations provided to the facility during this phase of the program. A dual polymer treatment of the facilities coagulant AL28 followed by WaterSolve's flocculent Solve 9244 was recommended to dewater this residual in the Geotube® container. A 100-mL sample was chemically treated with the dual polymers and poured through a Geotube filter during a RDT (Rapid Dewatering Test). 95-ml of filtrate was collected in 60 minutes and the dry weight solids elevated from 1.05 % in the sample to 25.4% in the cake collected by the filter during the same time period. Based

on the success of this trial a larger GDT (Geotube Dewatering Trial) was performed. 16 gallons of the water based adhesive were treated with the dual polymers and poured into the GDT (mini-Geotube®). A filtrate sample was collected and sent to a lab for analysis. Cake samples taken from inside the GDT were 22.1% and 30.7% dry wt solids at 5 days and 12 days respectively. The filtrate sample results were acceptable to move forward with the study.

The Result

WaterSolve LLC was contracted by the facility to perform a pilot study with a 25 cu yd GT500D roll off Geotube® container.

Location: *Michigan*

Products: *TenCate™ Geotube® Containers
Solve 9244 Polymer*

Equipment: *WSLP-2400 Polymer Make-down Unit*

A 22.5' circumference by 22' long Geotube® was placed in a dumpster provided by the facility. A two inch hose was plumbed from a 300 gallon mixing tank to the tube. A jar test was performed to measure the doses needed to treat the tank of residuals. Based on the jar test, calculations were made and the proper amount of AL28 (coagulant) was poured into the mixing tank

and stirred. This was followed by the proper amount of Solve 9244 (flocculent). After gentle stirring, the mixing tank was raised above the dumpster and the valve was opened to fill the Geotube® container with the chemically treated residual. The filtrate was captured and stored in the facility to dilute the water based adhesives when necessary. The facility managers were very

pleased with the results. They have now installed a larger holding tank and treat 2000 gallon batches at a time. They have plumbed a pipeline from inside the facility to the dumpster located outside the facility. A recent trip to the landfill only cost \$360.00 to discard the Geotube® and its contents. They are thrilled with the cost savings from this new technology.



The water based adhesive residuals are chemically treated and poured into the GDT to collect filtrate for lab analysis and measure the dry-down rate of the cake inside the tube.



The chemically treated residuals showing great flocculation and water separation.



The Geotube® container filled to capacity and dewatering with tiny sprayers exiting the tube.