

UFS Corporation

330 North 400 East
Valparaiso, IN 46383-9704 USA
PH: 219-464-2027 FAX: 219-464-8646
www.ufsc.com
email: service@ufsc.com

Service Reference

Topic: High ED Paint Bath pH (Cathodic ED paint)

Please read all the instructions listed below carefully to familiarize yourself with the project before attempting to perform any of the work or unpacking any further.

Required Materials

- Titration Equipment
- Titration Solutions

Required Tools

- None

It is not unusual for the pH of the E-coat bath with new Membrane Electrode (ME) Cells to operate on the high side. This is not all bad as neutralizer (i.e. acid) can be added to adjust the e-coat bath.

The e-coat system loses acid in one of four ways: 1) UF permeate purge; 2) dragout of rinse water from the post rinses; 3) some acid in the e-coat film; 4) the ME system. Generally, the first three losses are fixed for each production rate and product mix. Acid is always being added whenever replenishment paint is added to the bath.

In order to achieve a better balance (i.e. add less acid to maintain a more stable ED bath pH), the following actions are possible (listed in order):

- If you are using precious metal anodes, then it may be possible to return some of the anolyte back directly into the E-coat bath, or order to reduce the net removal rate of neutralizer from the E-coat bath. On the other hand if you are using 316L anodes, then this is not even possible since the dissolution by-products of the 316L anodes would be going into the bath, which can increase the dissolved iron ppm and may cause orange peel type paint defects. Talk to your E-coat paint supplier about returning a small amount of anolyte (only -if you use a precious metal anode). UFS would like to participate in this decision making process so please involve us.
- Use several Neutral Membrane Cells (with precious metal anodes). These Cells overflow directly back into the paint bath without the use of a recirculation loop. (Note Neutral membranes do not function properly with all ED paints. In some cases a bench top test will have to be conducted to confirm suitability with your ED paint type by UFS before they could be used).
- If PTAN membrane is being used along with precious metal anodes, then it is possible to use PTAR membrane on some of the ME Cells. PTAR membrane has a higher permeation rate with respect to water and so will lose more anolyte into the bath than would PTAN membrane. Please discuss this with your E-coat paint supplier and UFS.

- Increase conductivity of electrolyte. (This has a rather small impact, much like a fine adjustment on a DC rectifier voltage adjuster.)
- Use bare anodes (last resort). While this is the lowest cost method, it also leads to creation of dirt bits in paint bath because the ED paint bath comes into contact with the surface of the bare anode, which can have a pH (near its surface) of 3, or less.

The purpose of the remainder of this bulletin is to investigate the actual rate of diffusion of neutralizer (i.e. acid) from the ME Cells (i.e. anolyte system) back into the E-coat bath.

1. Take an in-depth look at input and output to the e-coat bath. The time period for the evaluation should be at least one week and maybe as long as one month.
2. Use the attached form to take readings for five consecutive off shifts. It is necessary to measure the acid concentration and report the figures in MEQ acid/liter.

For more information see the original manual that came with the equipment or call UFSc at the phone number shown above.

Electrocoat System Acid Balance Data Sheet

System Data:	
System Name:	
Date:	By:
Tank Volume:	Avg. Current (amps)
Production rate (jph)	Job Area (sf)

Paint Data:		
Film Build (mil)		Deposition Efficiency (coul/gm)
Resin: (meq)	Density (lb./gal)	Solids (NV%)
Paste (meq)	Density (lb./gal)	Solids (NV%)

Bath Acid Balance								
Period (day/time) begin/end	Operating Hours	Acid Content (MEQ acid) at beginning	NV%	Acid Content (MEQ acid) at ending	NV%	Resin (gal) added	Paste (gal) added	Direct acid added*

* ___ gal. of ___% _____ acid
 Permeate to Drain in period _____ gal of _____ gmole/liter.