

Zinc Metal Build-Up and the Effect of Anode Area in Acid Chloride Zinc Plating Baths ...

Myth vs. Truth

By Jeff Grodecki, Technical Support Manager, Columbia Chemical Corp.

The Myth

Over the years, many acid chloride zinc platers have been misinformed by suppliers or have otherwise assumed that zinc metal can be raised or lowered through manipulation of the zinc anode area. This technique is definitely true for alkaline cyanide-free zinc plating, since zinc metal in the alkaline plating bath can be raised by adding zinc anodes or lowered by pulling zinc anodes/substituting for steel; however it may have created misinformation for acid chloride zinc plating. Low or inadequate anode area will actually cause the zinc metal to climb in acid chloride zinc baths.

Due to the fragile world economy and increased commodity costs now seen throughout the industry, some acid chloride zinc plating companies are trying to reduce their usage of zinc metal by cutting the overall anode area in the plating tank - but with less than positive results. In fact, doing so will likely make matters worse, resulting in extra expense and aggravation.

The Truth

Zinc metal in the acid chloride zinc plating process is introduced into solution through electrolysis. Electrical current passes through the anode, through the conductive plating solution and completes the circuit at the cathode. During electrolysis, oxidation occurs at the anode and reduction occurs at the cathode. It is the oxidation at the anode that becomes an issue when trying to reduce the overall surface area of the zinc anode. Adequate surface area is needed to allow for even current distribution throughout the entire anode.

When zinc metal climbs in an acid chloride zinc plating solution, quality of the finished work can suffer. Elevated zinc metal concentration will increase cathode efficiency. An increase in cathode efficiency will greatly decrease covering and throwing power, causing excessive zinc thickness in the high current density areas while producing thin and dull zinc plate in the lows. High zinc metal can also cause over-plating in the high current density area, resulting in chipping and flaking of the zinc deposit.

To compensate for the higher operating concentration of zinc metal, platers must ... [read more](#)

Copyright © 2009 Columbia Chemical Corporation. All rights reserved.

In this issue

Zinc Metal Build-Up and the Effect of Anode Area in Acid Chloride Zinc Plating Baths...Myth vs. Truth

What's In The R&D Pipeline? Two Exciting New Products!

Look for Jeff Grodecki as Featured "Expert" at metalfinishing.com

Directors from Metal Coat, Brazil, Visit Columbia Chemical and Lustrous Metal Coatings

Meet the Zinc Plating Experts: Bob Loukinas

Contact us

Columbia Chemical Corporation
1000 Western Dr.
Brunswick, OH 44212
330-225-3200

info@columbiachemical.com
www.columbiachemical.com

Technical Sales Representatives Wanted

Illinois/Wisconsin • Texas West Coast • St. Louis Mississippi/Alabama

Columbia Chemical is seeking Technical Sales Representatives to sell and service our products for the regions noted above.

Ideal candidates will reside within the territory and have a minimum of 3 to 5 years of technical exp. & must be familiar with metal finishing, zinc plating, products and processes.

Bachelor's degree in science or business preferred.

Email résumé to:

careers@columbiachemical.com



CHEMICAL
The Zinc Plating Experts

For complete details visit:
www.columbiachemical.com/career.htm

R & D Pipeline

What's In the R&D Pipeline? Two Exciting New Products!

SPECTRA MATE®

SpectraMATE® CFT 150 is in the final phase of field testing and will be released shortly. The "CFT" in the product name stands for **C**obalt **E**ree **T**echnology. SpectraMATE CFT 150 is a thick film, iridescent trivalent conversion coating for zinc which contains no cobalt! Cobalt is on the European Union's "hit list" of metals which will soon be regulated, and is suspected of causing the trivalent chrome in conversion coatings to convert back to hexavalent chrome under certain conditions.

TRIVECTA UNIBLACK

Trivecta® Uniblack 300, our improved, single-component trivalent black passivate for zinc is scheduled for release in early 2010. This is the product that platers around the world have been asking for! It is easy to use, really black and shiny, and gives good hours of corrosion resistance. And... it works on acid zinc as well as on alkaline zinc. Other trivalent blacks require complicated balancing of multiple additives and do not work on acid zinc deposits.

Technical News

Look for Jeff Grodecki as Featured "Expert" at metalfinishing.com

Jeff Grodecki, Technical Support Manager for Columbia Chemical Corporation, is currently a featured "expert" at Metal Finishing Magazine's website column, *Ask The Experts*. His academic credentials include Bachelor's degrees in Chemistry and Biology from Tri-State University. Jeff works closely with the sales team and customers, both distributors and end-users, addressing issues involving zinc plating and its related processes. His eleven years in the industry have taken him to customers' shops around the world including China, South Africa, Brazil, Indonesia, Vietnam, Spain, Thailand and Italy. He has extensive experience in a range of finishing applications including the automotive, appliance and electronic metal surface finishing markets.



Jeff Grodecki,
Technical Support Manager

Jeff looks forward to answering your questions on zinc and zinc alloy plating processes. Visit www.metalfinishing.com for more information.

Directors from Metal Coat, Brazil, Visit Columbia Chemical and Lustrous Metal Coatings



Pictured (from left): Tom Alderson, Cassio Jose Pinto, Brett Larick, and Sergio de Camargo Andrade Filho.

Directors from Metal Coat Produtos Quimicos, Ltda., the exclusive representative of Columbia Chemical products in Brazil, recently visited the company's world headquarters. After a plant tour and review of the entire Columbia product line, Sergio de Camargo Andrade Filho and Cassio Jose Pinto discussed the needs of Brazil's zinc plating market and shared the successful results of field tests using Columbia's soon-to-be-released technology for black trivalent passivation on zinc nickel deposits.

The Metal Coat executives also had the opportunity to visit Lustrous Metal Coatings to see the application of Columbia Chemical's DuraLIFE technology. Tom Vonortas, Executive Vice President for Lustrous Metal Coatings, provided a tour of the Canton, OH facility.

Jeff Grodecki, Technical Support Manager for Columbia Chemical, was also present on the tour and comments, "This was a fantastic opportunity for Metal Coat to see the DuraLIFE technology at work in a trivalent chromate solution. Lustrous Metal Coatings processes a high volume of headrest brackets for the automotive industry. These headrests are fabricated from steel tubing and have significant surface area that will remain "unplated", which can allow for iron contamination to build at an accelerated rate. Sergio and Cassio were able to discuss with Tom how the performance of the DuraLIFE technology greatly reduced the overall cost associated with processing tubes by reducing the buildup of iron and therefore greatly extending the life of a high performance trivalent chromate solution."

Meet the Zinc Plating Experts

Bob Loukinas

Our Newest Technical Sales Representative

Columbia Chemical Corp. has hired Bob Loukinas as Technical Sales Representative. Loukinas joins Columbia Chemical with more than 25 years of experience in the plating industry and will focus on business development in the Kentucky, Southern Ohio and Southern Indiana region.

Prior to joining Columbia, Loukinas worked at a large metal finishing shop as plant manager. He brings extensive experience with many kinds of finishes, including zinc and zinc alloy plating. A graduate of Cincinnati State, Loukinas holds a Bachelor's degree in Business.



Bob Loukinas,
Technical Sales Representative

Tom Alderson, Sales Manager Americas, comments, "Bob brings years of hands-on experience in all aspects of plating, from waste treatment, to problem solving, to chemical usage. He used many of our products over the years. This experience gives him an excellent understanding from a plating shop's perspective, of how our products and processes work as well as the performance and value they offer."

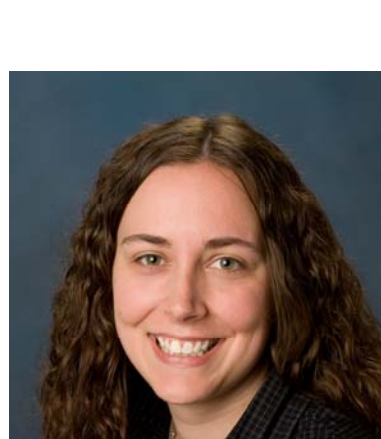
Bob Loukinas can be contacted at 330/225-3200 Ext. 152 or by email at bob.loukinas@columbiachemical.com.

"Columbians" in Transition



Retirement party, Pat Martis (front center).

So long to Pat Martis, our longtime employee and friend. After twenty-one years of service, Pat recently retired from her position here as accounting manager. Pat also functioned as trustee for the company's ESOP/Employee Stock Ownership Plan. (Employees currently own 30% of Columbia Chemical.) Pat was instrumental in setting up the employee ownership program back in 2004 and made sure that it was run properly and efficiently.



Mariann Dance,
Accounting Manager

Pat has passed the torch onto Mariann Dance. Mariann has assumed the roles of controller and ESOP trustee. These are big boots to fill, but Mariann is certainly up to the task. She has worked at Columbia Chemical under Pat for the past four years, and has recently completed her MBA and is finishing up requirements to become a certified public accountant.

Back to [NEWSLETTERS](#) page