

# All-Star Chemical

## Acid Zinc Plating

*Merit Process – Mixed Chloride*



# Global Partnership

ASC, Coventya & Jasco

**All-Star Chemical** is Distributor for **Coventya**

**Coventya & Jasco** of Japan form strategic partnership to help meet surface finishing demands of global automotive industry.

Dr. Masaaki Yamamuro, **Jasco** – “We strategically chose **Coventya & ASC** as our US partner because, like **Jasco**, they have a passion for zinc plating”

*3 Companies at your Service*



# All Star Chemical



- Established in 1983
- Technical Sales Agent (Distributor) for Coventya Inc.
- Local (on-site) Technical Service & Support
- Full Service Supplier of Metal Finishing Chemistries
- Knowledge of Automotive OEM and Tier supplier requirements
- Extensive Experience with, and Knowledge of, Coventya & Jasco Zinc and Trivalent Technologies
- Long List of Satisfied Customers



- Number One in Corrosion Protection in Europe, Growing in USA
- Manufacture a Complete Line of Metal Finishing Chemistry
- Excellent Relationships with OEM and Tier Automotive Suppliers
- Locations in Europe, N. America, S. America and Asia
- Research & Development Centers Worldwide
- ISO 16949 Certified



- Number One in Corrosion Protection in Japan
- Excellent Relationships with Automotive OEM and Tier Suppliers
- Specialists in Zinc, Zinc-Alloy and trivalent passivate technology
- Global Leader in Zinc and Trivalent Passivate Patents
- Thirty-five Dedicated Research and Development Chemists
- HQ in Tokyo, offices in Nagoya, Osaka, Chigasaki & Kita-Kanto
- Superior Passivate Technologies (TR-175, TR-185, TR-184 etc.)
- Technology Sharing Partnership with Coventya for >20 years

# Coventya Lab - Capabilities



State of the Art Analytical Instrumentation  
Dedicated to Customer Service

# Coventya Lab - Capabilities



Unique Analytical Abilities using HPLC  
Techniques

# Coventya Lab - Capabilities



A Variety of Instrumentation is Available  
for Customer Support Functions



# SERVICE

In addition to **ASC** routine visits for line audits & on-site assistance, **Coventya Inc.** lab provides **NEXT DAY** turnaround for bath analysis. We equip **applicators** with sample vials to be sent via UPS to **Coventya**. Within 24 hours, complete analysis results & recommendations will be returned.

**Unparalleled in our industry!**

The lab at **Coventya** boasts capabilities & equipment that are second to none. The following represents a short list of some of these abilities.

- High Pressure Liquid Chromatography (HPLC)
- Fourier Transform Infrared Spectroscopy (FTIR)
- Scanning Electron Microscopy (SEM)
- X-ray Fluorescence (XRF)
- Polarographic and Rotating Disk Electrode (RDE)
- Atomic Absorption (AA)



**SERVICE**

**TECHNOLOGY**

**EXPERIENCE**

## **Zinc Plating & Automotive Quality Systems Experience**

We are well aware that the quality of product our customers produce reflects our capability as a chemical supplier.

We assist our applicator customers with the installation of automated systems to control the solutions and the additives that we provide. We work side by side with applicator partners fine tuning chemical feed rates, process control parameters, and so on.

We work with our Zn & Zn alloy plating & trivalent passivate applicators, monitoring quality controls, assisting with automotive customer audits, creating **Control Plans, Failure Modes & Effects Analysis (FMEA), Process Flow Charts**, etc.



# Global Automotive Specifications

- General Motors (GMW3044, GMW4700)
- Toyota (TSH-6524G-C)
- Nissan (NES M 4040)
- Honda (HES D2003-99)
- Delphi (DX551200, DX551300)
- Ford (WSS-M21P46-A1)
- Volvo (VCS 5737, 19)
- Volkswagon (TL 217)





# Merit Process



## High Performance Chloride Zinc

Mixed - Ammonium & Potassium Chloride Process

# Merit Process – Smaller Micels

**Our Acid Zinc Process is based on technology utilizing smaller Micels of key brightener ingredients...**

Older Emulsification Technology



Merit Technology



# What are Micels?



**Organic molecular structures (in brighteners)  
containing the ingredients that brighten parts**

**Smaller Micels improve contact with cathode surface**

**Improved contact between Micels & cathode surface  
makes brightening ingredients more efficient**

# **Smaller Micels Improve Performance**

Smaller Micels migrate to cathode (parts) more readily

Result: More efficient use of brightener ingredients

Improved utilization reduces amount of Additive required to achieve deposit brightness

**Less Additive = Lower Running Cost**

# Merit Process vs. Older Technologies

## Stable Emulsion of Additives:

Less Oil-out

Improved Temperature Tolerance

Improved Passivate Receptivity

Clearer Brighter Deposits – Less Haze

Less Decomposition Products

Improved Tolerance to Iron Contamination

Extreme High Current Density Burn Free Range

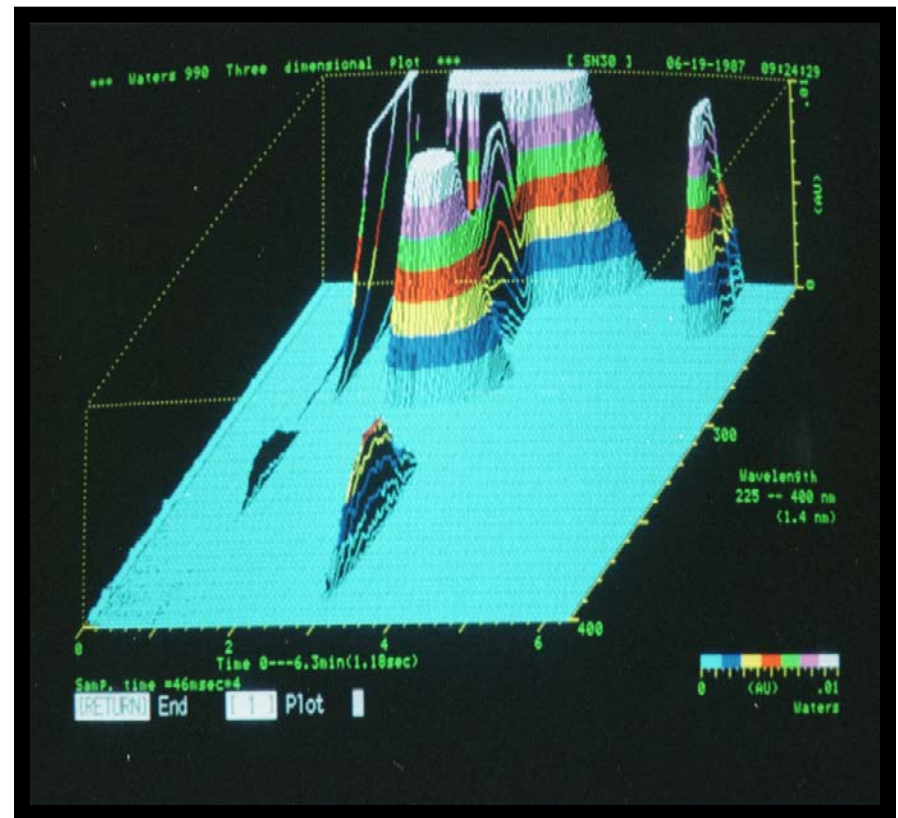
## Reduced Running Cost



# Unique HPLC Capability for Acid Zinc

Coventya utilizes unique HPLC analytical methods to precisely track concentrations of key ingredients in Merit additives.

This reduces operating costs by eliminating unnecessary replenishment additions.



# Unique HPLC Capability for Acid Zinc

HPLC is also used proactively to track organic contamination for our customers.

This reduces operating costs by eliminating unnecessary proactive treatments.



# Acid Zinc Plating

## *Electrolyte Comparison*

### Mixed Chloride vs. All Potassium



# Mixed Chloride Benefits

- Improved Performance
- Cost Reduction
- Increased Production



# Improved Performance

## Mixed Electrolyte Provides a Wider Operating Window

- Improved HCD Burn Free Range
- Improved LCD Throwing Power



# Cost Reduction

## Mixed Electrolyte Offers a Lower Operating Cost

- Operates at Lower Zinc Metal
- Additive Cost per Gallon is Lower
- Elimination of Boric Acid



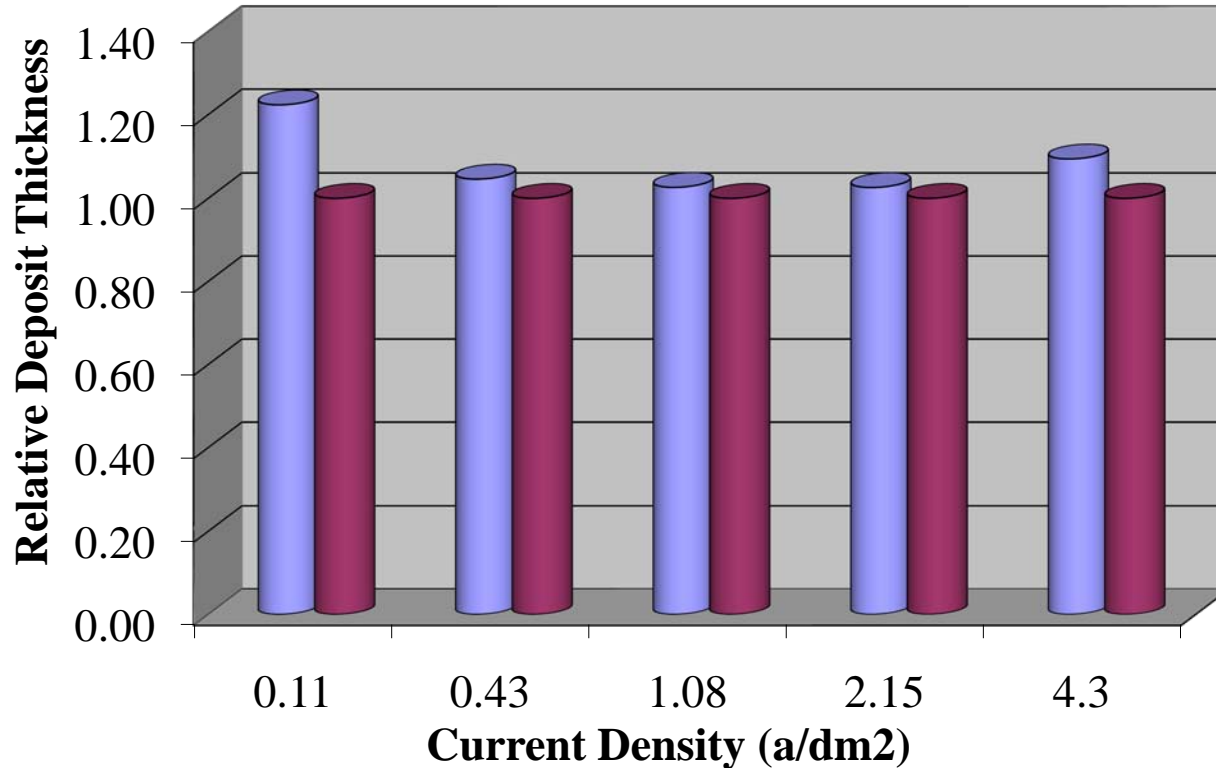
# Increased Production

- Higher Current Density Plating without HCD Burn
- Increased LCD Plating Thickness
- Increased Plating Speed
- Eliminate LCD Dullness & HCD Burning



# Acid Zinc Electrolyte Comparison – Hull Cell Study

Mixed Chloride vs. All Potassium





# Key Points of Study

**Merit** Plates Faster than All Potassium Counterpart,  
**Insignia** - at all Current Densities.

Largest Improvement in LCD Areas

(22% increase at 0.11 a/dm<sup>2</sup>)

HCD Burn More Significant on All Potassium  
3 amp, 5 minute Hull Cell Panel



# Mixed Chloride vs. All Potassium

Mixed Chloride Electrolyte Offers Significant Advantages Versus All Potassium.

These Advantages are Even More Pronounced When Plating Parts With Extreme LCD & HCD Areas Like Brake Calipers.



# Why Choose ASC?

- **Low Running Cost Alternative**
- **Service & Technical Support**
- **Three Companies at your Service**
- **Full Service Chemical Supplier**
- **Global Automotive Approvals**
- **Service, Technology & Experience!**

