



The Latest News on Surface Engineering from Anoplate Corporation

Zynik II: Zinc-Nickel Ready to Take Off!

By offering outstanding thermal and corrosion resistance as well as being a more environmentally-friendly alternative to cadmium, zinc-nickel is increasingly being used in applications such as aircraft landing gear, railway switching gear and electrical connector shells. It provides sacrificial protection of steel and aluminum and it is harder, thus more durable, than softer zinc or cadmium.

Without using a supplemental hexavalent chromate, Anoplate's Zynik II plated parts can be expected to withstand 250 hours to white rust and 1,000 hours to red rust (and then some!) in conventional ASTM B117 accelerated corrosion salt spray tests. Coupled with the low hydrogen embrittling characteristics of this particular zinc-nickel chemistry, Zynik

II is starting to gain momentum from some anticipated markets as well as some unexpected ones.

What is it about zinc-nickel and in particular Zynik II that makes it so unique? First of all, when one starts considering zinc-nickel deposits, there are a whole host of offerings. Much like electroless nickel-phosphorus alloy plating which sprung to prominence in the 1970's, different formulations and the resulting deposit compositions result in varying physical properties. Acid zinc-nickel formulations result in brighter, more leveled deposits which tend to be more decorative and visually aesthetic. This makes them more appealing as a clear coating or can be easily blackened. The drawback of a bright, leveled deposit is that when it comes to hydrogen embrittlement,

Continued on Page 3

In this Issue:

COVER

Zynik II: Zinc-Nickel Ready to Take Off!

PAGE 2

Anoplate Recognized As "Top Shop"

STEM - Science, Technology, Engineering, Mathematics

Page 4

Anoplate Technicians... Driven by Quality

The Visual Factory



Training Supervisor Brian Arnold processing on the new line

50

YEARS

ANOPLATE

WORLD-CLASS
SURFACE ENGINEERING

Spring 2015

Anoplate Recognized As “Top Shop”

The editors of *Products Finishing* (PF) magazine recently surveyed hundreds of plating and finishing shops across North America in its inaugural benchmarking survey. *Products Finishing* knows a thing or two about this industry having covered it since 1938. The survey, more than 40 questions, focused on four categories:

- **Current Finishing Technology:** They looked at which shops have the most up-to-date equipment and technology to make them efficient and consistent in their operations.
- **Finishing Practices and Performances:** PF examined shops that exhibited substantial “best practices” in areas such as testing, quality control, environmental stewardship and shop management.
- **Business Strategies and Performances:** The survey looked at shops that have unique and profitable operation plans and business strategies that attract and keep customers.
- **Training and Human Resources:** Recognizing that plating lines don’t run themselves, PF looked at how shops hire and train employees, as well as how those employees are compensated and recognized for outstanding contributions.



In the end, Anoplate was proud to be named one the “Top Shops”. Top Shops separated themselves for higher customer retention rates, far lower rejections, exceptional training opportunities, and in the end, not surprisingly, business growth. For the first time in years the report gives Anoplate’s management a comparison with not only the average shops but more importantly how it stacks up against the best in our industry.

“Anoplate has established itself as one of the best finishing operations in the industry,” said Tim Pennington, editor of *Products Finishing* magazine. “The criteria we used was very stringent, and only the finishing shops that excelled in all four areas made the list. Anoplate is in rare air when it comes to finishing operations.”

From the first days on the job, all 187 employees are focused on foundational corporate tenets: that customer needs are paramount, investments in employees fosters business growth, minimizing escapes and delivering on time-to-promise. These represent the yardstick that we measure performance against and form the basis of where our annual corporate and individual goals stem from.

This recognition serves as a testament to the wisdom that Anoplate’s founder, Milt Stevenson, Sr., instilled in this generation’s management: “Take care of your employees and they’ll take care of the customer and the bottom line will take care of itself.”



STEM Science, Technology, Engineering, Mathematics

By partnering with local schools and businesses in Central New York, Anoplate is taking steps to foster tomorrow’s scientists, engineers and technicians. We have been working with the Syracuse City, Cato-Meridian, Phoenix, East Syracuse-Minoa and Marcellus schools to introduce their students to the Metal Finishing Industry and provide a hands on demonstration which allows them to see the plating process in action.



Application Engineer Brian Pickering (L) answering student questions.

In October 2014 Anoplate participated in the National Manufacturing Career Day event that was spearheaded by the Manufacturers Association of Central New York (MACNY). The event was a great success and was attended by over 300 students. We gave a live metal finishing demonstration that captured the attention of the students and stimulated great questions around future opportunities in science field. In addition, Anoplate is part of the CNY Technology Sector **2** which is a group of businesses focused on initiatives with local STEM students.

...continued from Page 1

they are less forgiving and more susceptible to failure due to embrittlement. Furthermore, upon crimping – as many tubular parts for the automobile industry or electrical connector shells require – these deposits can crack, compromising their corrosion resistance. Alkaline deposits of zinc-nickel with lower nickel contents can be made to be brighter with lower stressed deposits which permit mechanical deformation without cracking. Having lower nickel content, these deposits do not offer the corrosion, abrasion and embrittlement resistance that deposits with 12-16% nickel like Zynik II do. Truth be told, however, it's certainly not the prettiest of coatings. It's a flat, matte appearance with a typical blue-grey coloration. If it's pretty you desire, remember we've warned you!

When Anoplate began considering entering the zinc-nickel market 3 years ago, we spoke to 4 chemical suppliers, interviewed a host of plating shops then

offering zinc-nickel and reviewed dozens of specifications on the coating. The result of this investigation led us to select Dipsol's IZ C17+ process. This supplier's chemistry and technology was similarly selected by leading aerospace manufacturers including the US Air



Force, Bell Helicopter and Boeing as well as landing gear manufacturers Goodrich and Heroux-Devtek. From a modest 85-gallon prototype initial installation, Anoplate was able to develop the process control finesse and analytical acumen needed when early in 2014 when Anoplate installed a dedicated, 16 tank line which can accommodate parts up to 72 inches long, 28 inches wide, and 43 inches in depth and weighing up to 1 ton.

Anoplate's Engineering Staff have presented the benefits of zinc-nickel to audiences as far as Texas and as near as Liverpool, NY, including a couple of aerospace divisions of United Technologies (UTC). Anoplate's Nadcap Scope of Approvals has been broadened to include zinc-nickel plating, primarily AMS 2417, as well as several corporate specifications. Anoplate has received zinc-nickel plating approval and / or processed work from Bell Helicopter, United Technologies Aerospace and Lockheed Martin.

The unique benefits of Zynik II haven't gone unnoticed by other applications other than aerospace. A number of bearing manufacturers who have relied on cadmium for decades are switching to zinc-nickel due to its

synergistic combination of corrosion resistance and ability to stave off hydrogen embrittlement on high strength steel commonly used for bearings. We're also pursuing applications where the rigors of corrosion push zinc, cadmium and other zinc alloys beyond their limits. Whether it's the chemical processing industry, oil and petroleum applications or the underside of railcars, Anoplate's Zynik II offers a surface engineering solution ready to take off!

Zynik II Key Features

- 12-16% by weight nickel (balance zinc)
- Even Ni percent composition distribution
- Resists hydrogen embrittlement
- RoHS compliant, Hex-free trivalent chromate
- Low-stress, fine grained
- Harder (more durable) than zinc or cadmium
- In excess of 500 hours salt spray resistance

Zynik II Line Features

- Hoist Capability up to 1 Ton
- In-line ability to plate:
 - Alloy Steel
 - Hardened Steel
 - Stainless Steel
- Off-line adjacent ability to plate:
 - Tungsten
 - Aluminum
 - Copper/ Brass
- From: Small bearings for Rack Plating
To: Large landing gear shafts
- Tank capability 28"W x 72"L x 43"D

Specification

Spec Title

AMS 2417	Electro-deposited Coatings for Zinc-Nickel
BPS 4554, Bell Helicopter	Corrosion Protective Zinc Alloy Plating
PN13.22-01, UTC Aerospace	Plating, Alkaline Low Hydrogen Embrittlement Zinc-Nickel

Anoplate Technicians... Driven by Quality

Each of us at Anoplate ensures that your products meet the industry's highest quality standards before they leave our factory. Two of our professionals who are committed to this are:

Bradford Dearstine has been at Anoplate for 3 years, first as a Tank Technician and for the last year as a Quality Technician. His responsibilities include testing for salt spray, solderability, porosity and coating weights.

Matt Tucker recently finished his first year with the company and oversees calibrations of micrometers, ovens, tank controllers, as well as conducting abrasion panel testing.

Anoplate Adds New Humidity and Salt Spray Cabinets: CCT by Q-LAB

Features:

- Increased volume over old cabinets - nearly 2 times the previous capacity.
- Equipped with digital and audible alarms.
- Auto-programming capability to shut off at the end of any test period.
- When connected to a CPU, data and/or alarm transition can be exported through eMail.
- Vapor generator or bubble tower can achieve required RH values of 95% - 100% RH. This serves as a backup should one option shut down.



Bradford Dearstine (L) and
Matt Tucker with the CCT
Humidity Cabinet

Visit Anoplate's Booth at: eastec

May 12-14, 2015 | Eastern States Exposition | West Springfield, MA

Upper Midwest Design-2-Part Show

June 10 & 11, 2015 | Minneapolis Convention Center | Minneapolis, MN

The Visual Factory

As a part of Anoplate's continuous improvement process, we have begun creating production flow visuals. These displays give both our floor personnel and managers the instant intelligence needed to optimize the flow of orders from department to department and shift to shift. These displays have helped improve our focus on shipping the highest quality parts to our customers in the timeliest manner possible by allowing us to monitor orders in real-time, ensure that production schedules are being kept, and quickly redeploy resources as needed. We are continuing to develop this technology and hope to see even more improvements over the coming year.



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