

# Product Technology Overview

## Protective Technologies

Zinc, Zinc Alloys, Chromates, Passivates  
And Post Treatments

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## Preface

**COVENTYA Surface Preparation** products are used by plating facilities & surface finishers around the world to provide the optimal adhesion/performance of our subsequent metal finishing processes. COVENTYA Functional, Protective, and Decorative technologies can be further enhanced by utilizing our complete line of cleaners and activators. All are designed to maximize the performance of the plating over a variety of substrates, including ferrous, non-ferrous, light metals, non-conductors, plastics and ceramics. Your local COVENTYA representative can review the specific application and recommend the appropriate **PICKLANE** activation and **PRESOL/PRELIQ** cleaner(s). Preparing the surface properly will help to minimize rejects and maximize applicator profitability.

## Zinc and Zinc Alloy Plating Processes

### Alkaline Zinc:

- ❑ **PRIMION 240:** A versatile, high performance alkaline non-cyanide zinc plating processes. It is the ideal choice for situations where a high degree of overall deposit brightness is needed, and where parts exhibit a significant amount of extremely low current density areas. **PRIMION 240** can be used for both rack and barrel electroplating applications. This unique addition agent system has been formulated with versatility in mind, and affords excellent performance over a very wide range of bath compositions, including both sodium hydroxide (caustic soda) and potassium hydroxide (caustic potash) based electrolytes.

#### Economic Advantages:

- Very Stable, Economical Brightener System
- Highly Efficient in Rack and Barrel Applications
- Outstanding Metal Distribution
- Predictable Replenishment Schedule



- ❑ **PRIMION 250:** A high performance alkaline non-cyanide zinc plating processes. Like its predecessor, PRIMION 240, **PRIMION 250** deposits exhibit excellent deposit thickness distribution and LCD brightness with improved MCD and HCD brightness. The **PRIMION 250** process utilizes Purifier 3, a non-toxic, carcinogen free additive that minimizes the effects of metallic impurities.

- ❑ **PRIMION CONTOUR Plus:** A single component, highly efficient, full bright alkaline non-cyanide zinc plating process, recommended for rack plating installations that demand high efficiency and outstanding high:low thickness distribution. The **PRIMION Contour Plus** process is easy to operate and is especially effective in applications that require operating at higher current densities to reduce plating times. For the applicator, this translates to increased throughput and reduced operating costs.

### Acid Zinc:

- ❑ **ZetaPlus Merit:** An extremely high performance process for chloride zinc plating specifically formulated for installations that utilize mixed potassium/ammonium chloride or all ammonium chloride electrolytes. The process offers exceptionally bright, very fine-grained deposits over very low to high current density ranges. The process utilizes a new and innovative surfactant technology that exhibits excellent emulsifying capabilities and offers assistance in building thickness and brightness in the low current density areas. This is accomplished while exhibiting a burn free deposit, even at the high cathode current density range.

#### Economic Advantages:

- Innovative Surfactant Technology Provides Exceptional Emulsification Properties.
  - Improved Utilization of Key Brightener Components Reduces the Demand for Addition Agent.
  - HPLC Tracks all Ingredients – Eliminating Unnecessary Additions and Reducing Costs.
- ❑ **ZetaPlus Insignia “E”:** An extremely high performance chloride zinc plating addition agent system, which utilizes innovative surfactant technology that exhibits excellent emulsifying capabilities. The process is very economical to use and requires very little in-plant control.

### Tin/Zinc Alloy:

- ❑ **XENITH Medallion:** An advanced technology for depositing bright 75% by weight tin and 25% by weight zinc alloy coatings from a neutral electrolyte. Properly treated deposits from the **XENITH Medallion** process can provide up to 1,000 hours of salt spray corrosion protection to red rust.

### Zinc/Cobalt Alloy:

- ❑ **XENITH Paragon:** Our primary process for depositing zinc/cobalt alloy coatings from an alkaline electrolyte. Depending upon operating parameters, a typical deposit contains an average of 0.2-0.8% by weight cobalt, making it perfect for automotive applications.
- ❑ **XENITH Pinnacle:** A process for depositing zinc/cobalt alloys from an acid chloride electrolyte. Deposits meet all automotive specifications and typically contain an average of 0.2-0.9% by weight cobalt. They are exceptionally bright and ductile at all normal operating current densities. In many cases, existing chloride zinc plating solutions can be converted to the process without any loss of production.

### Zinc/Iron Alloy:

- ❑ **PERFORMA 260:** Our latest development for depositing zinc/iron alloy coatings from an alkaline electrolyte. The technology is ideally suited for both barrel and rack plating applications. This unique addition agent system offers exceptionally high performance, yet is easy to use in production. Depending upon the deposit thickness and the specific chromate/passivate finish that is applied, **PERFORMA 260** process deposits can provide 600 to 1,000 hours of corrosion protection to red rust (ASTM B-177). Deposits from the **PERFORMA 260** process typically contain 0.4-0.8% by weight iron, are extremely fine grained, very low stressed, and burn free, even at unusually high current densities. Deposits are also uniformly bright, and accept both hexavalent chromate and trivalent passivate films.

### Zinc/Nickel Alloy:

- ❑ **PERFORMA 285 (12-15%):** The **PERFORMA 285** process is an extremely reliable, production proven technology for depositing 12-15% wt nickel, zinc/nickel alloy coatings from an alkaline electrolyte. The addition agent system offers exceptionally high performance, is easy to use in production and provides exceptional corrosion protection, even after thermal shock at 120° C (250° F) for 24 hours. Deposits are uniformly bright and readily accept trivalent passivates (clear, black) as well as hexavalent chromate conversion coatings (clear, yellow or black). The **PERFORMA 285** process is suitable for either rack or barrel plating installations and will provide maximum performance and the highest cathode efficiency when it is used in conjunction with COVENTYA's patented membrane anode system.

#### PERFORMA 285 Patented PMS/3S Anode Technology:

- Prevents the oxidation of organics at the anode.
- Prevents the creation of cyanides.
- Significantly reduces carbonate build-up.
- Allows for the maintenance of maximum bath performance efficiency (>80%).



- ❑ **PERFORMA 287 (5-7%):** A reliable technology for depositing zinc/nickel alloy coatings from an alkaline electrolyte. Depending upon the choice of chromate or passivate finish, **PERFORMA 287** process deposits can provide up to 1,000 hours of corrosion protection to red rust.
- ❑ **PERFORMA 290 (8-12%):** A reliable technology for the deposition of a high-nickel, zinc/nickel alloy for rack and barrel applications from an acid chloride electrolyte. The process produces bright deposits, similar to acid zinc, but containing approximately 90% zinc and 10% nickel. Because the electrolyte is chloride based, the process exhibits a very high cathode plating efficiency that can exceed 90%. The deposit protects steel substrates by a sacrificial manner similar to conventional acid zinc. The presence of the nickel in the deposit tends to substantially increase the corrosion resistance in most environments.

## Trivalent Passivate Technologies

### Clear/Blue:

- ❑ **LANTHANE 315:** A specially formulated liquid concentrate, based exclusively on trivalent chromium compounds that produces a uniform, clear “thick film” passivate on alkaline zinc electroplated deposits. Used in conjunction with a **FINIGARD** organo-mineral topcoat, parts processed with **LANTHANE 315** will provide superior white corrosion protection when tested according to ASTM B117.
- ❑ **LANTHANE 316:** A specially formulated liquid concentrate, based exclusively on trivalent chromium compounds, that produces a clear/iridescent, thick film passivation layer on zinc deposits. **LANTHANE 316** is revolutionary for of its ability to form a thick film passivate layer at low operating temperatures. **LANTHANE 316** was designed for use in either rack or barrel installations and can be used in conjunction with a **FINIGARD** topcoat. **LANTHANE 316** can also be used as a direct passivation of zinc die cast.

#### Economic Advantages:

- Lower Energy Consumption at 25°C (77°F) Operating Temperature Vs. 60°C (140°F)
  - Lower Drag-Out (80% less Cr<sup>+3</sup> in the Operating Solution Vs. Traditional Thick Film Passivates)
  - Lower Zinc Dissolution (Operating at 25°C (77°F) Reduces by 50% )
- ❑ **LANTHANE TR-175 Passivate:** A unique and highly protective post-plating treatment system for zinc and zinc alloy deposits, except those deposited via mechanical methods. It is based on trivalent chrome compounds that are used in combination with nano-particle technology. It exhibits at least two unique operating features: (1) the film formed possesses **self-healing** characteristics which add measurably to the corrosion protection it provides; and (2) the operating solution can be easily waste treated because the operating bath does not contain compounds that chelate or complex metals.



- ❑ **LANTHANE BLUE 126:** A single part, specially formulated liquid concentrate, based exclusively on trivalent chromium compounds, that produces a pronounced **BLUE** cast on all electroplated zinc deposits. **LANTHANE BLUE 126** provides exceptional corrosion protection (96-120 hrs + to WR) and was designed for use in either rack or barrel installations. **LANTHANE BLUE 126** can be used in conjunction with all **FINIGARD** topcoats.

- ❑ **LANTHANE TR-175 (LF) Passivate:** A “low foam” version of **LANTHANE TR-175 Passivate**. Recommended for rack installations utilizing air agitation.
- ❑ **LANTHANE TR-175 MR Passivate:** A low foam, more concentrated version of **LANTHANE TR-175 Passivate**. Recommended for installations that require the highest corrosion protection.
- ❑ **LANTHANE TR-173 Passivate:** A specially formulated process, based exclusively on trivalent chromium compounds that produces a uniform bright film with a slight yellow/green pearlescence on any type of electro-deposited zinc and zinc alloy surface. The film formed provides up to 360 hours corrosion resistance to white rust
- ❑ **FINIDIP 128:** A specially formulated liquid concentrate, based exclusively on trivalent chromium compounds, that produces a uniform clear/blue film on high alloy (12-15%) Zn/Ni electroplated deposits. Used in conjunction with a **FINIGARD** organo-mineral topcoat, parts processed with **FINIDIP 128** will provide superior white corrosion protection when tested according to ASTM B117.
- ❑ **LANTHANE 5P043SR:** A specially formulated liquid concentrate, based exclusively on trivalent chromium compounds that produces a clear/yellow film on low alloy (5-7%) Zn/Ni electroplated deposits. Parts processed with **LANTHANE 5P043SR** will provide up to 360 hours to white corrosion when tested according to ASTM B117.
- ❑ **LANTHANE Stellar Passivate:** A high polishing, single dip, blue bright trivalent passivate for zinc and zinc alloy deposits. The **LANTHANE Stellar Passivate** provides equal to or greater corrosion protection than conventional hexavalent blue bright chromates.
- ❑ **LANTHANE TC-SA:** This single additive trivalent chrome concentrate produces a distinct blue cast and provides excellent corrosion protection on all types of zinc plated surfaces.
- ❑ **FINIDIP 124:** A specially formulated process, based exclusively on trivalent chromium compounds. When applied to a Coventya zinc deposit, **FINIDIP 124** forms a uniform, bright film with a pronounced blue cast. The resultant film can provide up to 120 hours of corrosion resistance to white rust.
- ❑ **LANTHANE 613.3:** A Cr<sup>+6</sup> free process specially developed to enhance the corrosion protection and impart improved adhesion of subsequent paint layers on aluminum substrates. When applied to an aluminum surface, **LANTHANE 613.3** produces a thin, blue/iridescent Cr<sup>+3</sup> passivate film.

### **Black:**

- ❑ **FINIDIP 726:** A specially formulated liquid concentrate, based exclusively on trivalent chromium compounds, that produces a uniform black film on Zn/Fe and Zn/Fe/Co electroplated deposits. Used in conjunction with a **FINIGARD** organo-mineral topcoat or **POSTDIP** post treatment, parts processed with **FINIDIP 726** will provide up to 240 hours to white corrosion when tested according to ASTM B117. For best results, it should be applied to a **PERFORMA** Zn/Fe and Zn/Fe/Co deposit containing 0.4% - 0.8% Fe.



- ❑ **FINIDIP 728:** A specially formulated liquid concentrate, based exclusively on trivalent chromium compounds, that produces a uniform black film on Zn/Ni barrel electroplated deposits. Used in conjunction with a **FINIGARD** organo-mineral topcoat or **POSTDIP** post treatment, parts processed with **FINIDIP 728** will provide superior white corrosion protection when tested according to ASTM B117. For best results, it should be applied to a **PERFORMA 285** Zn/Ni deposit containing 12-15% Nickel.
- ❑ **LANTHANE TR-185AB:** A specially formulated liquid concentrate, based exclusively on trivalent chromium compounds, that produces a uniform black film on **cyanide zinc electroplated** deposits. Used in conjunction with **POSTDIP FT-190**, a trivalent chromium post treatment, **LANTHANE TR-185AB** will provide >120 120 hours to white corrosion when tested according to ASTM B117.
- ❑ **LANTHANE TR-185FG:** A specially formulated liquid concentrate, based exclusively on trivalent chromium compounds, that produces a uniform black film on **chloride zinc electroplated** deposits. Used in conjunction with **POSTDIP FT-190**, a trivalent chromium post treatment, **LANTHANE TR-185FG** will provide > 120 hours to white corrosion when tested according to ASTM B117.
- ❑ **LANTHANE TR-185JK:** A specially formulated liquid concentrate, based exclusively on trivalent chromium compounds, that produces a uniform black film on **barrel alkaline non-cyanide zinc electroplated** deposits. Used in conjunction with **POSTDIP FT-190B**, a trivalent chromium post treatment, **LANTHANE TR-185JK** will provide >120 hours to white corrosion when tested according to ASTM B117.
- ❑ **LANTHANE TR-184JK:** a specially formulated liquid concentrate,
- ❑ based exclusively on trivalent chromium compounds, that
- ❑ produces a uniform black film on **rack alkaline non-cyanide zinc electroplated deposits**. Used in conjunction with a **POSTDIP** trivalent chromium post treatment, **LANTHANE TR-184JK** will provide greater than 120 hours to white corrosion when tested according to ASTM B117.
- ❑ **LANTHANE TR-186AB:** A specially formulated liquid concentrate, based exclusively on trivalent chromium compounds, that produces a uniform black/green film on barrel processed acid chloride zinc electroplated deposits. Used in conjunction with **POSTDIP FT-190B**, **LANTHANE TR-186AB** will provide > 168 hours to white corrosion when tested according to ASTM B117.



### Yellow:

- ❑ **LANTHANE Yellow 335:** A specially formulated process, based exclusively on trivalent chromium compounds. When applied to a **Coventya** zinc process deposit, **LANTHANE Yellow 335** forms a uniform, bright yellow film comparable to a traditional hexavalent yellow. The resultant film can provide up to 120 hours of corrosion resistance to white rust.
  - **Dye-free and UV stable.**
  - **Provides superior corrosion resistance (up to 120 hours to WR without a topcoat).**



- ❑ **LANTHANE Yellow Dye:** A specially formulated liquid concentrate that was designed for use with **LANTHANE** clear trivalent passivates to produce intense, uniform yellow films. **LANTHANE Yellow Dye** was designed for use in either rack or barrel installations and can be used in conjunction with all **FINIGARD** topcoats. For best NSST results, **LANTHANE Yellow Dye** should be used with **LANTHANE 316** and applied to a Coventya cyanide, alkaline non-cyanide or acid zinc process deposit.

## Hexavalent Chromates

### Clear:

- ❑ **TASDIP BL-3L:** A specially blended mixture of inorganic salts which, when dissolved in tap water, yields a solution that produces an excellent chromate conversion coating on electro-deposited zinc surfaces. The film formed has a clear to slight blue cast. **TASDIP BL-3** chromate both brightens and passivates the zinc surface, thus protecting it from finger-staining, discoloration, and corrosion. Parts properly processed through a **TASDIP BL-3** chromate solution will normally provide 24-48 hours of salt spray protection before the appearance of white corrosion products. The degree of salt spray protection to red rust is primarily a function of the thickness of the zinc electro-deposit.

### Yellow:

- ❑ **TASDIP IR-12L:** A concentrated liquid material which, when diluted with tap water, will produce a highly polished iridescent chromate film on cadmium and zinc plated surfaces, as well as zinc die castings. Depending upon the concentration of **TASDIP IR-12L** Chromate, the color of the film will range from light yellow to dark brown. The corrosion protection of the **TASDIP IR-12L** Chromate film is excellent, typically providing 96-120 hours of salt spray protection before the appearance of white corrosion products.



### **Black:**

- ❑ **TASDIP JETBLACK:** A two-part process for producing a glossy, black film on all types of electrodeposited zinc plate, zinc die-castings, and galvanized parts. The **TASDIP JETBLACK** chromate system utilizes two liquid concentrates, **TASDIP JETBLACK PART A** and **TASDIP JETBLACK PART B**, which are simply diluted with deionized water to produce the operating solution. The film produced is ideal as a paint base, or, due to its high gloss appearance, is satisfactory by itself as a final finish. Properly processed parts will typically provide 48-96 hours of salt spray protection before the appearance of white corrosion products.

### **Olive Drab:**

- ❑ **TASDIP OD-2:** A dip process that produces a heavy, olive drab film on electroplated zinc or cadmium surfaces. **TASDIP OD** process utilizes two liquid concentrates, **TASDIP OD-2R** and **TASDIP OD-2C**. These materials are simply diluted with tap water to make up the operating solution. The films produced utilizing **TASDIP OD-2** chromate are a glossy olive drab color, yet offer the maximum corrosion protection that can be achieved, usually 240-300 hours of salt spray protection before the appearance of white corrosion products. This meets all government specifications applicable to olive drab chromate films. The degree of protection to the appearance of red rust is largely a function of the thickness of the electro-deposit on the plated work. **TASDIP OD-2** chromate films are especially well suited for applications where parts are subsequently painted.
  
- ❑ **TASDIP OD-3:** A liquid concentrate that can be diluted with tap water to produce a solution that will apply a dark, olive drab film on electroplated zinc surfaces. The film produced utilizing **TASDIP OD-3** chromate is a glossy, dark, olive drab color that offers the maximum corrosion protection that can be achieved utilizing conventional chromate technology. **TASDIP OD-3** chromate solutions will usually afford 240-300 hours of salt spray protection before the appearance of white corrosion products. This meets all government specifications applicable to olive drab chromate films. The degree of protection to the appearance of red rust is largely a function of the thickness of the electro-deposit on the plated work. **TASDIP OD-3** chromate films are especially well-suited for applications where parts are painted after they are plated

## **Topcoats and Post Treatments**

- ❑ **PROTEX WG:** A mildly alkaline liquid product used in the final hot water rinse tank to produce a solution that will impart a moderate degree of added corrosion protection to chromate/passivated zinc parts. The solution containing **PROTEX WG** concentrate will *leach-back* yellow chromate conversion coatings to clear while applying a transparent coating that provides superior corrosion protection to conventional blue-bright and yellow chromate/passivate films.

- ❑ **FINIGARD 200A:** A specially formulated liquid concentrate, used to impart increased corrosion protection to parts processed in **FINIDIP** or **LANTHANE** conversion coatings. Developed to meet the rigorous demands of the automotive industry, **FINIGARD 200 A** is designed to protect zinc and zinc alloy finishes against corrosion in a variety of environments. Parts processed in **FINIGARD 200 A** have less a tendency to “blush” when subjected to Neutral Salt Spray Testing.
- ❑ **FINIGARD 460:** A specially formulated organo-mineral liquid concentrate, used to impart increased corrosion protection to zinc and zinc-alloy electroplated surfaces. Developed to meet the demands of the automotive industry, it is designed to protect zinc and zinc alloy finishes against corrosion in a variety of environments, including, but not limited to, the hostile conditions found in engine compartments and on automotive exteriors. Depending upon the type of electroplating and chromate/passivate being utilized, **FINIGARD 460** can provide corrosion protection of up to 480 hours to the formation of white rust when salt sprayed according to ASTM B117.
- ❑ **FINIGARD 111:** A specially formulated organo-mineral liquid concentrate, used to impart increased corrosion protection and friction modification (0.11 +/- 0.03) to zinc and zinc-alloy electroplated surfaces. Developed to meet the demands of the automotive industry, it is designed to protect zinc and zinc alloy finishes against corrosion in a variety of environments, including, but not limited to, the hostile conditions found in engine compartments and on automotive exteriors. The process is suitable for bulk electroplating applications and can be used in conjunction with hexavalent chromates or trivalent passivates.
- ❑ **FINIGARD 105:** A specially formulated organo-mineral liquid concentrate, used to impart increased corrosion protection and friction modification (0.15 +/- 0.03) to zinc and zinc-alloy electroplated surfaces. Developed to meet the demands of the automotive industry, it is designed to protect zinc and zinc alloy finishes against corrosion in a variety of environments, including, but not limited to, the hostile conditions found in engine compartments and on automotive exteriors. The process is suitable for bulk electroplating applications and can be used in conjunction with hexavalent chromates or trivalent passivates.
- ❑ **FINIGARD 113:** A specially formulated organo-mineral liquid concentrate, used to impart increased corrosion protection and friction modification (0.13 +/-) to Zn/Ni electroplated surfaces. **FINIGARD 113** was specifically designed to meet the requirements defined within General Motors GMW4700.
- ❑ **FINIGARD 113G:** A specially formulated organo-mineral liquid concentrate, used to impart increased corrosion protection and friction modification (0.13 +/-) to Zn electroplated surfaces. **FINIGARD 113G** was specifically designed to meet the requirements defined within General Motors GMW3044



## WaterCare

Beyond the role of just a specialty chemicals supplier, **COVENTYA** is proud to join our customers in a strategic partnership where implementing our **WaterCare** expertise not only fulfills requirements providing effective process chemistry but also supports the satisfaction of helping our customers meet environmental demands.

Under the **OMEGA Line**, our portfolio of products can be utilized to sustain full compliance with local environmental requirements. Talk to us to discuss how our coagulants, cationic polymers, metal precipitants, flocculants and antifoaming agents can support you downstream from our Protective, Decorative, Functional, Plating on Plastics and Preparation Technologies.