



EnviroServe Chemicals, Inc.

***EnviroKote™ Zirconium Technology
Advanced Paint Pretreatment Products***



Significantly Reduces Energy Cost
Eliminates Phosphate from Effluent Stream
Increases Corrosion Resistance
Shorter Contact Time
No Regulated Heavy Metals
Environmentally Friendly

Formulated for Performance

EnviroServe Chemicals: Expertly qualified to be your single source industrial chemical supplier!

ZIRCONIUM PRETREATMENT Conversion Coating Products

EnviroServe Chemicals' Zirconium products are inorganic conversion coating products for 4 to 7-stage spray washers prior to subsequent paint finishing processes. They are preceded by either a moderate pH cleaner followed by one rinse stage or an alkaline cleaner followed by two rinse stages. These products deposit a microcrystalline inorganic conversion coating. They operate at ~2 % concentration at ambient temperature. Both products perform best at pH ranges of 4.0 – 4.7 for steel / multi-metal substrates and 3.5 – 4.0 for aluminum substrates.



ZIRCONIUM PRETREATMENT Cleaner/Conversion Coating Combination Products

EnviroServe's cleaner / conversion coating combination products are designed for 3 to 5 stage spray washers prior to subsequent paint finishing processes. They are designed to be effective at ~2-4 % concentration at temperatures of ambient to 100°F on light to moderate soil levels. These products clean multi-metal substrates while depositing a microcrystalline inorganic conversion coating.

These cleaner/conversion coating combinations products are packed with cleaning packages that are designed to clean anything from light shop soils to heavy duty greases and manufacturing oils.

These products perform best at pH ranges of 4.0 – 4.7 for steel / multi-metal substrates and 3.5 – 4.0 for aluminum substrates.



ZIRCONIUM PRETREATMENT Designed for Manual Spray Systems

Our **EnviroKote™** series of manual spray products are the newest technological advance spray wand chemicals on the market today. These Zirconium based chemistries develop a “true” conversion coating on Ferrous and non-Ferrous substrates. They also provide extreme corrosion protection when compared to traditional Iron Phosphate(s) as well as lower operating temperatures (80-100F). Zirconium also excels extremely well in powder/wet paint adhesion and contains no regulated heavy metals. These new coatings will not increase phosphate levels in the effluent from the spray wand process.

All of these **EnviroKote™** products are tested and field proven to deliver exceptional results, and in most cases enhance corrosion resistance and paint adhesion durability over conventional iron phosphate systems. These new coatings contain NO regulated heavy metals and significantly reduce phosphate from the spray wand process. These products can be used with no heat, and in light soil processes, they can be use **rinse free**.

These products all contain cleaning packages designed to help with the removal of soils prior to painting.



ADVANTAGES OF ZIRCONIUM CONVERSION COATINGS

Formulated to replace traditional iron phosphate products, these products require no or very little heat to deposit an inorganic conversion coating. Conventional iron phosphate products, on the other hand, can require temperatures of 130-160°F. Another benefit of this new technology is usage; a maximum of about 2% by volume, for the stand-alone coater, is needed in the bath compared to approximately 2-4% by volume with conventional iron phosphates.

These types of coatings provide a microcrystalline surface in the nanometer (10⁻⁹m) range and require a short contact time of 15 to 30 seconds. Conventional iron phosphate coatings are usually in the micrometer (10⁻⁶m) range and require at least 45 to 60 seconds contact time. The “nanocrystals” formed increase the surface area of the substrate thus enhancing paint adhesion, corrosion protection and consequently, salt-spray results. These inorganic conversion coatings do not require a non-chrome post treatment seal to achieve high performance adhesion, under film corrosion and salt-spray resistance.

Our **EnviroKote™** Zirconium Conversion Coatings also contain no regulated heavy metals and eliminate phosphate from the process bath. Sludge is also reduced to a minimum while waste treatment costs and other effluent issues are greatly diminished. Reduced sludge formation results in considerably lower maintenance costs since fewer bath dumps are needed and the incidence of plugged nozzles and other problems are reduced. Rinse water consumption is also reduced because of the lower amount of total dissolved solids present in these new coating baths. Lower total dissolved solids means less rinse water overflow is needed to maintain proper rinse integrity.



Salt-Spray Performance

The corrosion resistance performance of these inorganic conversion coatings is compared below to conventional iron phosphate coatings (organic accelerator) with TGIC polyester and hybrid powder paint systems on cold-rolled steel and aluminum substrates.

Paint system	Substrate	Inorganic conversion coating 2% conc., 80 °F bath, 30 seconds contact time	Conventional iron phosphate conversion coating 4% conc., 140 °F bath, 60 seconds contact time	Hours of neutral salt- spray exposure (ASTM B-117)
TGIC Polyester	Cold Rolled Steel	0.5 mm creepage from scribe	1.8 mm creepage from scribe	504
TGIC Polyester	Aluminum	0.2 mm creepage from scribe	1.0 mm creepage from scribe	1008
Hybrid	Cold Rolled Steel	2.0 mm creepage from scribe	4.3 mm creepage from scribe	504
Hybrid	Aluminum	0.4 mm creepage from scribe	2.2 mm creepage from scribe	1008

Test panels were prepared and tested according to ASTM B-117 and evaluated according to ASTM D-1654 Method 2. Ratings were taken of the average creepage failure from the scribe mark after a predetermined number of hours of exposure.

As the table indicates, the inorganic conversion coatings outperformed conventional iron phosphate coatings in under film corrosion resistance.



Customer Support Lab

Our R&D laboratory is very well equipped and staffed with highly qualified chemists and engineers to carry out research and product development, equipment design and to perform customer required testing as needed. Our R&D lab is ISO 9001:2000 certified for design requirements and is an integral part of our customer support activities. Below is a partial list of the equipment and testing available for our customer's benefits!

Quality Assurance Lab

As part of our company being ISO 9001:2000 certified, all raw materials and finished products must meet our stringent quality specifications. Every batch of product we make is traceable to its raw materials. All reagents used are certified to the applicable NIST standards and each test we perform complies with the applicable ASTM methods or the generally accepted analytical chemistry methods.

R & D, Customer Support, and Quality Assurance Equipment & Testing Capabilities

In-house 7 Stage Pilot Spray Washer Agitated Immersion Washers Powder Paint Booth Industrial Cure Oven Liquid Paint System Salt Spray Cabinets Humidity Chamber Ultrasonic Baths Vibratory Finishing Electronic and Analytical Balances pH and Conductivity Meters Viscometer Flash Point Apparatus (closed cup)	Scanning Electron and Atomic Force Micrography <i>(at NCSU and Duke University)</i> Conversion Coating Weights Paint Adhesion Testing & Measuring Dry Film Thickness Impact & Flexibility Tests Film Hardness Test Cross-Hatch Adhesion Testing Total Dissolved Solids Dispersion & Emulsification Tests Total and Active Acid or Alkalinity Tests Water Treatment Chemical Tests Customer Reagent Supply and Titration Kits
--	--

Find out how **EnviroServe Chemicals** can improve your processes and provide a better solution for your needs.

- Call us at (910) 892-1791
- Visit us at www.enviroservechemicals.com
- E-mail us at sales@enviroserveinc.com



EnviroServe Chemicals, Inc

An ISO 9001 : 2008 Certified Company

603 South Wilson Ave., Dunn, NC 28334

Phone: (910) 892-1791 Fax: (910) 892-5765

www.enviroservechemicals.com