



EnviroServe Chemicals, Inc.

***Low Temperature / Low Phosphate
Conversion Coating Products for the
Paint Pretreatment Industry***



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

We know what it takes:

Products, Service, Support, and Equipment

AMBIENT TEMPERATURE/LOW PHOSPHATE Conversion Coating Products

EnviroKote 3390 NP and **EnviroKote 3391 NP** 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.



LOW TEMPERATURE/LOW PHOSPHATE Cleaner/Conversion Coating Product

EnviroKote 3395 NP is a cleaner / conversion coating product for 3 to 5-stage spray washers prior to subsequent paint finishing processes. It is designed to be effective at ~2-4 % concentration at temperatures of ambient to 100 °F on light to moderate soil levels. It cleans multi-metal substrates while depositing a microcrystalline inorganic conversion coating.

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



LOW TEMPERATURE CLEANERS Designed especially to work with our inorganic conversion coating systems

Multi-Metal Phosphate-Free Alkaline Cleaner **EnviroClean 3416 LT**
Phosphate-Free Alkaline Cleaner **EnviroClean 3415 LT**

These cleaners are very effective in multi-stage spray washers at significantly lower temperatures than those typically found in most paint pretreatment washers. These cleaners operate efficiently at temperatures of 90 to 120°F depending on the soil type and level. Conventional alkaline cleaners in the market today operate at 140 to 160°F. These products are an excellent choice when two rinse stages are available prior to applying our inorganic conversion coating products, **EnviroKote 3390 NP** or **EnviroKote 3391 NP**.

Multi-Metal Low-Phosphate Mild Cleaner **EnviroClean 3410 LT**
Low-Phosphate Alkaline Cleaner **EnviroClean 3411 LT**

These products are highly effective on light to moderate soils and are recommended where only one rinse stage is available prior to the conversion coating. They are designed to operate at temperatures of 90 to 120°F depending on the soil type and level in comparison to conventional alkaline cleaners operating at 140 to 160°F.



ADVANTAGES OF INORGANIC 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 type of coatings provide a microcrystalline surface in the nanometer (10^{-9} m) range and require a short contact time of 15 to 30 seconds. Conventional iron phosphate coatings are usually in the micrometer (10^{-6} m) 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.

These new technology coatings contain no regulated heavy metals and they significantly reduce 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 minimized 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.

A truly environmentally friendly conversion coating.



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.

AUXILIARY / COMPLIMENTARY PRODUCTS

pH adjuster up	<i>EnviroAdjust 2375</i>
pH adjuster up	<i>EnviroAdjust 2378</i>
pH adjuster down	<i>EnviroAdjust 3245 NP</i>
Cleaner booster additive	<i>EnviroAdd 3354</i>
Cleaner booster additive	<i>EnviroAdd 3355</i>
Cleaner booster additive	<i>EnviroAdd 2252 B</i>
Wetting agent additive	<i>EnviroAdd 2244</i>

For further information, recommendations and other regulatory information please refer to the individual Product Data and Material Safety Data Sheets and/or contact ***EnviroServe Chemicals***.

EQUIPMENT

EnviroServe Chemicals can supply a wide range of manually and automatically controlled metering equipment to ensure effective control of your pretreatment operating parameters. Consult your ***EnviroServe Chemicals*** representative for more details.

Find out how ***EnviroServe Chemicals*** can improve your pretreatment processes, reduce your energy costs and provide a better solution for your conversion coating needs:

- Call us at 910-892-1791
 - Visit us at www.enviroservechemicals.com
 - E-mail us at <mailto:sales@enviroserveinc.com>
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**We Are Your Single Source Service-Oriented
Industrial Chemical Supplier for the Metal Industry.**

EnviroServe Chemicals, Inc

An ISO 9001 : 2000 Certified Company

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