ZPEX COATING

EXTREME ENVIRONMENT
CORROSION CONTROL COATING

KIMRAY INC.®

INTRODUCTION

Z-PEX Extreme Environment Coating is the first metal coating system designed specifically for the extreme conditions of today's petroleum industry. Z-PEX is the only coating system that provides both base-metal corrosion resistance and surface abrasion resistance.

SPECIFICATIONS

Dry Film Thickness (Controllable +/- 0.1 Mils)	0.8 - 2.8 Mils
Max Operating Temp	500˚ F
Pencil Hardness	6H
Coefficient of Friction	.016 to .08
Tabor Abrasion (1000 Cycles)	7.3 mg lost
Tensile Strength	3,000 - 4,000 PSI
Salt Spray (ASTM B117)	4000 Hrs Minimum
H20 (10,000 PSI, 200˚ F)	No Effect
Abrasion Resistance (D4060)	16,200
Direct Impact	100 lbs.
Indirect Impact	120 lbs.
Gloss	45-55
Color	Dark Grey
Cross-Hatch Adhesion	5B
Gravelometer	6 Minimum

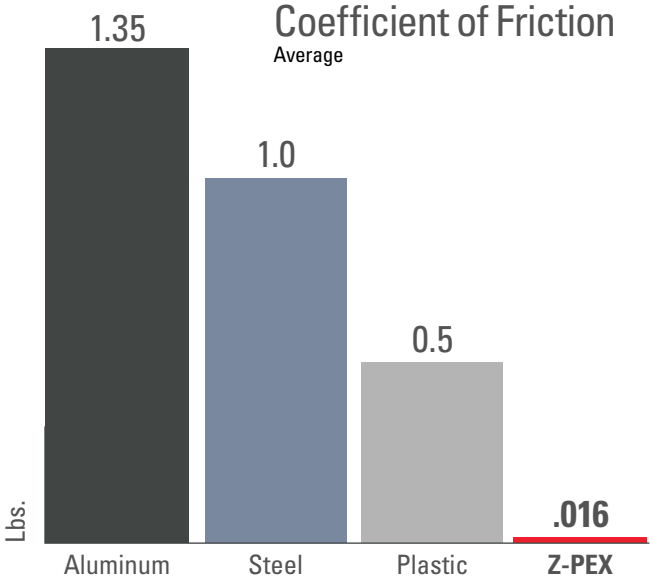
HOW IT WORKS

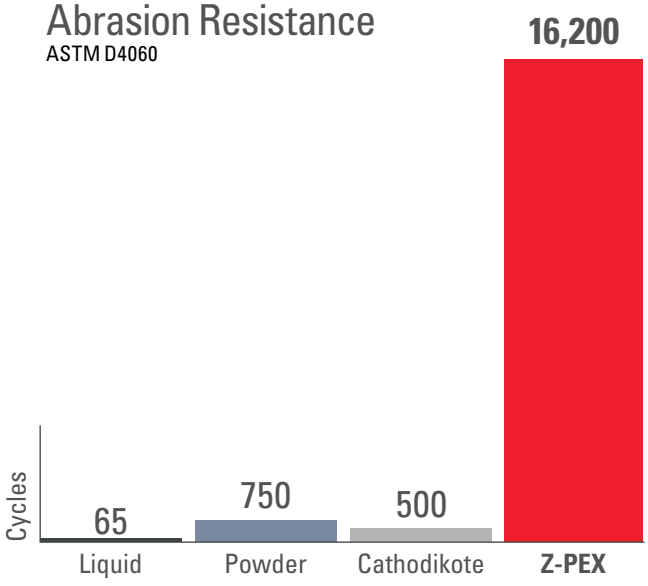
The ZPEX coating system consists of an electro-deposited epoxy primer (ecoat), cross linked with a fluoropolymer topcoat. The ecoat primer, or Cathodikote (our brand of Ecoat), is applied when the part is completely submerged in a series of 12 tanks with multiple stages for cleaning, rinsing, pre-treatment, and Ecoat. The Ecoat is an electro-deposited epoxy, which is very thin and very chemical resistant, with second to none adhesion to the substrate.

The second part of the process is the fluoropolymer topcoat. This coat is selectively spray applied to the fluid/potential corrosion areas of the components. The end result is very even and thin, very chemical resistant and slick coating that can be applied to threads, balls, seats, and any other low tolerance areas of equipment within valves, pumps, and manifolds.

KEY FEATURES

- Chemical Corrosion Resistance. Z-PEX is unaffected by diverse hydrocarbons, H2S, HCL, Saltwater and Carbonic Acids.
- Abrasion Resistance. By incorporating a flouroplymer layer over the electrodeposited epoxy base coat, Z-Pex lowers the Coefficient of Friction dramatically, decreasing the likelihood of abrasion as well as the energy required to move process fluids.
- Coating Creep Prevention. While other coatings struggle to contain the spread of corrosion once the part has been damaged, because Z-PEX bonds electromagnetically to the valve and electrons line up seamlessly, rust and corrosion are minimized and any scoring sustained is contained at the location.





RESISTANCE

Z-PEX is resistant to the following chemicals:

Acetone	Fructose	Ozone
Acetic Acid	Gasoline	Perchloric Acid
Acetates (ALL)	Glucose	Phenol 85%
Amines (ALL)	Glycol	Phosgene
Ammonia	Glycol Ether	Phenolphthalein
Ammonium Hydroxide	H2CO3	Phosphoric Acid
Amino Acids	Hydrochloric Acid	Potassium Chloride
Benzene	Hydrofluoric Acid	Potassium Hydroxide
Borax	Hydrogen Peroxide 5%	Propyl Alcohol
Boric Acid	Hydrogen Sulfide	Propylene Glycol
Butyl Alcohol	Hydrazine	Salicylic Acid
Butyl Cellosolve	Hydroxylamine	Salt Water
Butyric Acid	Iodine	Sodium Bisulfite
Calcium Chloride	Isobutyl Alcohol	Sodium Chloride
Calcium Hypochlorite	Isopropyl Alcohol	Sodium Hypochlorite 5%
Carbon Tetrachloride	Kerosene	Sodium Hydroxide <10%
Cetyl Alcohol	Lactic Acid	Sodium Sulfate
Chlorides (ALL)	Lauryl Acid	Stearic Acid
Chlorine Gas	Magnesium	Sucrose
Chromic Acid (NR)	Maleic Acid	Sulfuric Acid 25-28%
Citric Acid	Menthol	Sulfates (ALL)
Creosol	Methanol	Sulfides (ALL)
Diesel Fuel	Methylene Chloride	Sulfites (ALL)
Diethanolamine	Methyl Ethyl Ketone	Starch
Ethyl Acetate	Methyl Isobutyl Ketone	Toluene
Ethyl Alcohol	Mustard Gas	Triethanolamine
Ethyl Ether	Naphthol	Xylene

Z-PEX TESTING

3000 hr. ASTM B117 Salt Spray-Scribed

Material Loss, coating "creepback" and blistering

MULTI-COMPONENT COATING SYSTEM

FLUOROPOLYMER LAYER

Protective Fluoropolymer Layer

- Fluoropolymer topcoat is permanently cross-linked to the CathodiKote.
- Vastly improves abrasion resistance.
- Reduces coefficient of friction.
- Thin-film coating applicable to threads, sealing surfaces and other tight-tolerance areas.

CATHODIKOTE

Electrodeposited Polyepoxide

- Ninth Generation Cathodic Epoxy Electrocoat.
- Designed for maximum corrosion resistance and adhesion.
- Immersion processed, applied via Electrodeposition.
- CathodiKote is HAPs free, with low VOC's
- Tin-Free Chemistry. Bismuth Catalyzed.
- CathodiKote is a closed-loop process with 99% Transfer Efficiently.

PRETREATMENT

Zirconium Oxide

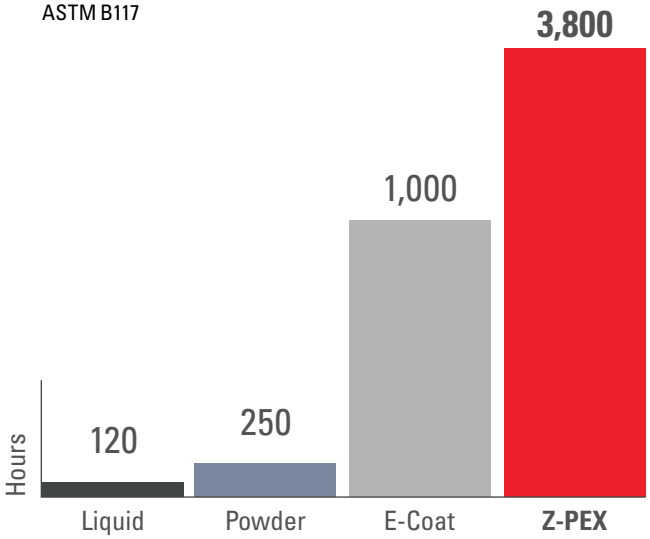
- Premium Zirconium Oxide pretreatment provides a nano-tech chemical conversion coating to increase corrosion resistance and improve adhesion.
- Advanced Zirconium oxide pretreatment eliminates chromates, Phosphates and heavy metals from facility waste stream

Substrate

2.0 - 2.8 Mil.

Salt-Spray Resistance

ASTM B117



Z-PEX TESTING

11 Month Treater Valve Diaphragm Plate Comparison

Competitor Coating

Thread failure, threaded nipple completely corroded away, and discoloration.

ZPEX

No corrosion at threads, threaded nipple intact with no corrosion and no discoloration.

Two separate Kimray treater valve diaphragm plates were installed at the same time, one with competitor coated internals and one with Z-PEX coated internals. Both ran for 11 months in the same salt water disposal well and were removed at the same time.

SYNOPSIS

- Z-PEX replaces Stainless Steel in most applications
- Less than 1/3rd of the cost of Stainless Steel
- Lower energy usage on fluid handling systems
- Lasts 7X longer than Stainless Steel
- Higher Chemical Resistance than Stainless
- Reduced downtime from premature failure
- Heat Resistant up to 500˚

/KimrayInc

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