

## Rust Preventives

### Water Displacing, Solvent-Based Formulations

**E-Tec 501, 503, 504, 505, 505+ and 507** are formulated to produce very rapid water displacement and to leave thin, transparent, corrosion resistant films for ferrous and non-ferrous metals. They will not gum under high humidity and high temperature conditions and are harmless to plastics, rubber, paints and contain no silicone. They are used at 100% by volume.

**E-Tec 504, 505 and 505+** have been found to absorb up to 5% by weight sodium hydroxide and will still offer the same properties. They are specifically formulated for hot black oxide lines because they are extremely stable water displacing oils when you drag large quantities of sodium hydroxide from a hot black oxide tank. The result is a longer lasting oil than other water displacing oils.

They can be applied to wet or dry metal parts for protection while in process or storage. Excellent protection for unfinished dies, jigs, tools, machine surfaces, office machines, firearms, fasteners, automotive and marine equipment. **E-Tec 501** penetrate and loosen rusty "frozen" parts. The non-conductive **E-Tec 505** film dries and lubricates electrical systems, equipment, contacts, switches, and motors without interfering with their proper operation.

The **E-Tecs** are used to seal and enhance the depth of black of **EPI's Insta-Blak, B/OX, and Ultra-Blak** black chemical conversion metal finishes.

<u>Properties</u>	<u>E-Tec 501</u>	<u>E-Tec 503</u>	<u>E-Tec 504</u>	<u>E-Tec 505</u>	<u>E-Tec 505+ E-Tec 507</u>
Film characteristic	slightly oily	very slightly oily	dry to the touch	dry, soft, non-tacky	dry, soft, non-tacky
Humidity test ASTM-D-1748	35 days	35 days	35 days	25 days	35 days
Salt spray test ASTM-B117	110-130 hrs.	70-90 hrs.	50 hrs.	18 hrs.	96 hrs.
Corrosion test Mil-C-23411	Pass	Pass	Pass	Pass	Pass
Water displacement Mil-C-16173-D, Grade 3	Pass	Pass	Pass	Pass	Pass
Stain test Mil-C-22235-A	Pass	Pass	Pass	Pass	Pass
Approximate coverage, sq.ft./gallon	2,200	2,000	3,000	3,400	3,400
Approximate film thickness-dip	0.19 mil	0.12 mil	0.05 mil	0.03 mil	0.10 mil
Flash point T.O.C.	126°F	126°F	125°F	120°F	130°F
Weight per gallon	6.72	6.61	6.59	6.47	6.48

## Water-Emulsifiable Oil Formulations

### **E-Tec 510, E-Tec 512 and E-Tec 515**

Rust preventive oil concentrates formulated with emulsifiers enabling them to be diluted with water to form a 5% to 20% oil-in-water emulsion. The characteristics of the deposited corrosion inhibiting films can be varied from oily (20% by volume), slightly oily (10% by volume), to “dry-to-the-touch” non-tacky films at 5% by volume. Film thickness, dry time and coverage vary with the concentration in water. The corrosion resistance of the films will also vary with the concentrations. Typically, a 5% concentration of **E-Tec 510** will produce approximately 24 hours resistance to salt spray, a 5% solution of **E-Tec 515** produces approximately 50 hours salt spray resistance and 96 to 150 hours resistance is obtained with 20% solutions. The **E-Tec 515** is formulated to give a higher degree of corrosion resistance than the more economical **E-Tec 510**.

**E-Tec 510** and **E-Tec 515** are recommended for “dry-to-the-touch” finish requirements on zinc and manganese phosphated steel surfaces specified for many military and automotive applications as well as on bare metal surfaces and as a sealant for **EPI**'s black oxide and black chemical conversion metal finishes.

**E-Tec 512** is a rust preventative formulated with emulsifiers and waxes and used at full strength or diluted with up to 50% by volume with water at 70<sup>0</sup> F to 130<sup>0</sup> F.

**E-Tec 512** is a rust preventive that provides an extremely thin, waxy, dry-to-the-touch superior salt spray corrosion resistant film and provides up to 150 hours salt spray on hot black oxide \* (see note on salt spraying).

**E-Tec 512** provides excellent lubricity and anti-wear characteristics as conducted with Falex tests.

**\*Salt Spray Note:** Tests conducted on **E-Tec 512** were conducted on 1” x 4” Q-Panels, cold roll steel, SAE 1010, low carbon, Rockwell hardness B70-B85, blackened in **Ultra-Blak 400** and **Insta-Blak 333**. The base substrate (alloy), process conditions, post cure of film and salt spray chambers will all have an effect on corrosion resistance. **EPI** recommends testing on Q-Panels or parts before proceeding with the process.

### Resin Solution

**E-Tec 520** clear acrylic lacquer. Mildly alkaline water based solution used to deposit a corrosion inhibiting hard, clear, glossy dry finish. It is used on all bare metal surfaces and all types of conversion coatings, black oxide, antique/oxidized and phosphate finishes.

Thickness:            Approximately 0.09 mil  
Coverage:            Approximately 2900 sq. ft. /gallon

## **Wax Emulsions**

**E-Tec 521** gloss wax emulsion used to deposit a semi-hard, clear, dry wax finish as added protection over bare metal, black oxide, conversion coatings and phosphate finishes. Finish has some lubricating characteristics.

Thickness: Approximately 0.2 mil  
Coverage: Approximately 2000 sq. ft./gallon

**E-Tec 522** satin wax emulsion used to deposit a clear, hard dry finish and added protection on bare metal, black oxide, conversion coatings and phosphate finishes. The finish can be buffed to a greater luster. Makes an excellent dry film lubricant for phosphated steel.

Thickness: Approximately 0.2 mil  
Coverage: Approximately 2400 sq. ft./gallon

## **Temporary Rust Inhibitor for Steel**

**E-Tec 527** is a mild, water based composition formulated to provide temporary rust protection for steel surfaces when stored indoors. It leaves a dry, invisible film which will not affect subsequent operations. Excellent for protecting steel surfaces while in process of manufacture. It does provide some mild cleaning action and can be used in tumbling or burnishing operations to prevent rapid oxidation of steel surfaces.

**E-Tec 527-B** same as **E-Tec 527** but also provides temporary corrosion protection for brass and aluminum surfaces.

**E-Tec 527-C** is a mild water based borate containing compound formulated to provide temporary rust protection for steel surfaces when stored indoors. It leaves a dry, invisible film, which will not affect subsequent operations.

**E-Tec 527-C** does not contain nitrite, phosphate or diethanol amine.

**E-Tec 527-C** is used at 1-2% by volume diluted in water and temperatures from 65°F to 180°F. Elevated temperatures facilitate drying. The higher the concentration the greater the protection. At 2% by volume, **E-Tec 527-C** will pass the ASTM-D4627-86 cast iron chip test.

## **Rinse Water Additive**

**E-Tec 528** is a mild, liquid based chemical composition formulated to help in the elimination of staining, streaking, water spotting and tarnishing of plated metal surfaces following water rinsing.

### **Copper and Brass Surface Conditioner/Corrosion Inhibitor**

**E-Tec 529** is a liquid concentrate which is diluted with water and used to produce chemically bonded non-molecular barrier film on copper, brass and bronze surfaces. It provides temporary protection against corrosive attack by Hydrogen Sulfide, Sulfur Dioxide, Carbon Dioxide, salt solutions and moisture. It inhibits corrosive attack for weeks to months for protection of parts while in process or short term storage.

### **Renaissance Wax (RENWAX)**

**RENWAX** has a crystalline structure much finer than totally natural waxes, a property that confers a highly efficient moisture resistance. When thinly applied and rubbed out to full luster, the wax film is (and remains) glass-clear, with no discoloration either of the wax or the underlying surface. **RENWAX** is free from acids (pH neutral) and will not damage even sensitive materials. It can be used as a final coat/inhibitor over **Insta-Blak** and **B/Ox** finishes.

### **Clear Air-Dry Water-Based Gloss Lacquer**

**E-LAQ 525** is an acrylic lacquer designed to provide exceptional benefits for coating metal surfaces or metals blackened with **EPI's Insta-Blak, Ultra-Blak or B/OX** finishes. Foremost among these benefits are its depth, clarity, and environmentally friendly and non-flammable chemical makeup. Baking will increase hardness and durability. **E-LAQ 525** provides a water resistant, hard and clear finish, yet since it is a milky appearing liquid, it allows the user to gauge coverage and film depth as the part is coated.

**10/06/16**