

## E-Tec 555

### Dual Purpose Non-Chromated Boric Acid Base Sealer for Black Oxide Ultra-Blak 400/400-L and Kool-Blak 225 Meeting MIL SPEC DTL-13924 E & Zinc Phosphate E-Phos 661 Meeting MIL SPEC 16232-G, Type Z, Class 4

**E-Tec 555** does not contain any chromates and thus it eliminates costly disposal problems.

**E-Tec 555** significantly improves the corrosion resistance of **E-Tec** rust preventives.

**E-Tec 555** complies with **MIL SPEC DTL-13924 E (12 September 2018)** when used with **Ultra-Blak 400/400-L** and **Kool-Blak 225**.

#### **Reference to Military Standard**

**3.4.2. Sealing** – Class 1 coatings shall be sealed using non-chromated sealers in accordance with the sealer manufacturers recommendation.

This sealer does not affect the oxalic test like some sealers can.

**E-Tec 555** is a liquid concentrate which is diluted with DI/RO water and then applied by either immersion or spray at economical low concentrations.

**E-Tec 555** meets MIL-SPEC 16232-G, Type Z, Class 4, 72 hours ASTM-B-117 Salt Spray

#### **SOLUTION MAKE-UP:**

**Concentration:** 0.5-2.0% by volume

**Temperature:** Ambient to 150°F

**Time Range (Ambient to 150°F):** 60 Seconds optimum (30 - 90 Seconds)  
Aluminum: 1.5 minutes - 2 minutes

**pH of Working Solution:** 3.5 – 5.5. The pH should be kept between 3.5 and 5.5, using **E-Tec 555** to lower the pH and 0.1 molar sodium hydroxide to raise it. If white precipitate forms, too much NaOH is being added too quickly. If caught early, agitation can be used to get it back into solution. Otherwise, a new solution will need to be made up.

1. Fill tank with DI/RO water, and add **E-Tec 555** at 1.0% by volume (7 to 9 pints per 100 gallons of DI/RO water or 10 ml per one liter).
2. Circulate solution and check pH. If pH is high, add **E-Tec 555**. If pH is low, add highly diluted liquid Sodium Hydroxide 1% by volume.
3. For optimum performance, operate at a temperature range of ambient to 150°F.

#### **EQUIPMENT REQUIREMENTS**

Steel, stainless steel and poly tanks and heating coils.

## **FINISHING PROCEDURE:**

### **A. Black Oxide**

1. Blackening **Ultra-Blak 400/400-L** and **Kool-Blak 225**
2. 2 - 3 rinse tanks for 30 – 60 seconds each.
  - Note: Drag in of blackening solution will raise the pH of **E-Tec 555** requiring more **E-Tec 555** to lower pH and shortening **E-Tec 555** bath life.
3. Seal parts in room temperature to hot (150° F) **E-Tec 555** for 30-90 seconds.
4. Two options for Step 4:
  - a) Dry parts without further rinsing by using warm moving air or comparable process that prevents staining;
  - b) Go to Step 5 without any rinsing.
5. **E-Tec 510/515** water soluble oil or **E-Tec 501, 502, 503, 504, 505 and 505+** rust preventative.

### **B. Zinc Phosphate**

1. Zinc Phosphating **E-Phos 661**
2. 2 - 3 rinse tanks for 30 – 60 seconds each.
  - Note: Drag in of phosphating solution will lower the pH of **E-Tec 555** requiring very dilute sodium hydroxide (1M sodium hydroxide) to raise the pH to prevent precipitating the **E-Tec 555** out.

## **SOLUTION CONTROL**

### **CONDUCTIVITY METER**

Obtain baseline of new bath at operating temperature.

- A. DI/RO Water source = ??
- B. ½ - 1% by volume **E-Tec 555** = ??
- C. Total conductivity of about = ??

When total conductance exceeds 4-5 times the original level, the bath should be diluted with DI/RO water, dumped or decanted to reduce solids in bath.

### **TITRATION PROCEDURE**

1. Take a 10 ml sample of the working solution with a graduated cylinder.
2. Add 3 to 5 drops of Phenolphthalein Indicator and swirl to mix.
3. Titrate with 0.10 Normal Sodium Hydroxide to a permanent pink color. Record the number of ml used.
4. **Calculation:**

[ml of 0.1N Sodium Hydroxide x 0.7] - 0.2 = % by volume of **E-Tec 555**

pH meter calibrated at 4.7 and 10 pH. Maintain 3.5 to 5.5, lower pH with **E-Tec 555**, raise pH with highly diluted sodium hydroxide (1% by volume)

### **CAUTION**

**E-Tec 555** liquid concentrate is mildly acidic. Direct contact may cause burning of eyes and skin. It is harmful if swallowed and should not be inhaled.

Avoid contact with eyes, skin and clothing. Wear safety glasses, rubber gloves and other suitable protective clothing when handling the **E-Tec 555** concentrate. Wash thoroughly after handling. Use with adequate ventilation and avoid breathing mist or vapors. Do not take internally.

### **PACKAGING**

Five (5) gallon and (55) gallon non-returnable containers.

### **IMPORTANT NOTICE! For Industrial Use Only**

The following is made in lieu of all warranties, expressed or implied, including the implied warranties of merchantability and fitness for purpose: seller's and manufacturer's only obligation shall be to replace such quantity of the product as proved to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. **Neither seller nor manufacturer shall be liable either in tort or in contract for any loss or damage, direct, incidental or consequential, arising out of the use or the inability to use the product.**

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