

E-PASSivate Yellow-Red

High Corrosion Resistant Trivalent Iridescent Yellow-Red Bright Passivation “Hex Like Color”

E-PASSivate Yellow-Red is a single dip yellow trivalent passivation that offers high salt spray resistance of up to 200-250 hours to white rust per ASTM B-117. No additional top coat is required to obtain this high degree of corrosion resistance. It produces a beautiful yellow bright trivalent passivation to meet automotive and all other industrial standards. Hours to red rust depends upon the thickness of the zinc plate.

It produces a true yellow conversion coating on plated alkaline non-cyanide, cyanide and chloride zinc deposits. It is simple to control.

EPI utilizes **E-PASSivate Yellow-Red A** as the base trivalent passivation and **E-PASSivate Yellow-Red B** for Color and corrosion protection, and **E-PASSivate Yellow-Red C** Color Booster which, in the presence of metallic contamination (zinc @2,000-4,000 ppm/iron @50-100 ppm), is added to improve fading color while extending bath life. Eventually bath will still have to be dumped or decanted.

Solution Make-Up and Operating Parameters

	Range	Optimum
E-PASSivate Yellow-Red A	9-11% by volume	10% by volume
E-PASSivate Yellow-Red B Hex Color	4-6% by volume	5% by volume
E-PASSivate Yellow-Red B Darker Yellow Red	9-11% by volume	10% by volume
E-PASSivate Yellow-Red C Color Booster	Do not add during makeup. Add 1-2% by volume increments to improve color.	
Raise pH to 1.9 at make up with Ammonium Hydroxide.		
Temperature	100-140°F (38-60°C)	120°F (49°C)
pH (*)	1.6 – 2.0	1.9
Time	30 seconds-2 minutes	1 minute
Agitation	Air agitation	High volume, low pressure, Do Not use compressed air

- Lower pH with Sulfamic Acid powder for extended bath life. **Do not dilute the Sulfamic Acid with water before adding to the tank!** 10-20% Nitric Acid can be added but can shorten bath life.
- Adjust pH @ operating temperature with ATC turned off.

**** IMPORTANT! When testing the pH of the E-PASSivate Yellow Red working solution the sample must first be heated to operating temperature.**

E-PASSivate pHa can be used to raise the pH of **E-PASSivate Yellow Red** on initial make up and additional required pH increases instead of ammonium hydroxide. Add **E-PASSivate pHa** approximately 0.2% by volume (0.2 gallon/100 gallons of batch solution) or (2ml per liter of solution) to raise the pH to 1.9.

NOTE:

Carbon dioxide is given off when making **E-PASSivate pHa** additions to the passivate solutions. Use with ventilation/air make up.

CAUTION! Do not allow the pH to rise to more than 2.4 as this can irreversibly destroy the effectiveness of the solution. For this reason, any parts that have fallen to the bottom of the tank should be removed as quickly as possible. This is because, as the metal dissolves in the solution the pH rises which, over time, can result in not being able to get the desired color. A new bath would have to be made up.

Processing Procedure

1. Zinc plated surfaces. The brightness of the final finish will be directly related to the brightness of the plated surfaces
2. Cold water rinse.
3. 1% by volume Sulfuric Acid rinse to neutralize residual plating solution.
4. Cold water rinse.
5. Immersion in **E-PASSivate Yellow-Red** solution for the length of time required to produce the desired finish.
6. Cold water rinse: 15 seconds.
7. Hot Air Dry – 150°F

Control: Normal control can be accomplished visually.

Take pH daily to keep at 1.6 – 2.0

Analytical Titrations

Chrome Concentration

1. Pipette 10 ml of the passivation sample into a 250 ml Erlenmeyer flask and dilute to 100 ml with distilled water.
2. Add 5 ml 20% Sodium hydroxide and 1 ml 35% Hydrogen Peroxide.
3. Boil solution for approximately 5 minutes.
4. Add 1 ml 10% Nickel Chloride Solution and continue boiling for an additional 2 minutes.
5. Cool solution to room temperature.
6. With mixing, add 10 ml Concentrated Hydrochloric Acid, 1 g Ammonium Bifluoride, 10 ml 10% Potassium Iodide and 2 ml Starch Indicator Solution.
7. Titrate the solution to a clear/green endpoint using 0.10 N Sodium Thiosulfate.

Calculation:

Percent of **E-PASSivate Yellow-Red A** = ml 0.10 N Sodium Thiosulfate x 1.476

Treating Hexavalent Chrome Tanks Prior To Using E-PASSivate Yellow-Red

Tank conditioning prior to **E-PASSivate Yellow-Red** is essential when transitioning from a hexavalent to a trivalent passivation.

Recommended Procedure:

The tank must be purged of the hexavalent passivation by removal of the solution and debris, scrubbed, then flushed out with water (including airlines). Next, fill the tank with fresh water and perform one of the following decontamination procedures depending on the type of reducing agent available:

1. Sodium Metabisulfite or Sodium Bisulfite;

Lower the pH of the water in the tank with nitric or sulfuric acid to 2.0 – 2.5 range. With low air agitation, slowly sift in the sodium metabisulfite/sodium bisulfite, watching for a solution color change (to a faint bluish-green) or the smell of excess sulfite (sulfur dioxide/"Rotten Eggs").

NOTE: The amount of sodium metabisulfite/sodium bisulfite used will depend on the level of hexavalent chromium present.

Fill the remainder of the tank to near overflowing so that all of the tank has contact with the solution. Swab the top edges of the tank with the solution also. Allow the solution to agitate for twenty (20) minutes, drain tank and flush entire tank, including airlines, with fresh water.

Make up **E-PASSivate Yellow-Red** according to the technical data sheet and check pH on initial startup.

2. Sodium Hydrosulfite;

No pH adjustment of solution is necessary! With low air agitation, slowly sift in the sodium hydrosulfite, watching for a solution color change (to a faint bluish-green) or the smell of excess sulfite (sulfur dioxide/"Rotten Eggs").

NOTE: The amount of sodium hydrosulfite used will depend on the level of hexavalent chromium present.

Fill the remainder of the tank to near overflowing so that all of the tank has contact with the solution. Swab the top edges of the tank with the solution also. Allow the solution to agitate for twenty (20) minutes, drain tank and flush entire tank, including airlines, with fresh water.

Make up **E-PASSivate Yellow-Red** according to the technical data sheet and check pH on initial start up.

Caution: There must be adequate tank ventilation while performing this treatment to insure the safe removal of sulfur dioxide fumes. **E-PASSivate Yellow-Red A** contains nitric acid. The Safety Data Sheets for **E-PASSivate Yellow-Red A, E-PASSivate Yellow-Red B, E-PASSivate Yellow-Red C** and **E-PASSivate pHa** must be read and understood before working with these products.

Equipment Requirements

Tanks: 304 or 316 stainless steel, Koroseal lined steel, polyethylene or PVC. Hooks, racks and baskets require the same materials. The working solution should be exhausted.

Heaters: If needed, should be 304 or 316 stainless steel.

Packaging

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: sellers and manufacturers 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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