

# Emerald™ Seal 303

Emerald Seal 303 is a final rinse compound designed for use in the last stage of iron or zinc phosphating processes. Emerald Seal 303 is a non-chromic acid product and provides in-process flash rust protection as well as additional corrosion protection for metal under paint or adhesive coatings.

Emerald Seal 303 can also be used as a non-chrome seal to meet MIL-DTL-13924E for Class 1 coatings.

## Features & Benefits

Eliminates flash rusting	Aids in elimination of reworking parts
Meets MIL-DTL-13924	Non-chrome seal for class 1 coatings
Low to no foam	Good for spray systems

## Operating Conditions

Appearance	Clear, colorless liquid
Foaming ability	Controlled (low)
pH	9.9 – 10.2 @ 2% dilution
Rinsing	Superior
Solubility	Excellent
Specific gravity	1.03 – 1.06 (water =1.0)

### Usage procedures

For most operations, Emerald Seal 303 should be used at 0.5 – 3 gallons per 100 gallons of water. When necessary, adjust pH to desired operating range. Consult your Hubbard-Hall representative for the optimum operating concentrations.

### Material Safety

Emerald Seal 303 is safe as a final rinse / sealer on ferrous metals. Consult your Hubbard-Hall representative for instructions that best conform to your production needs.



**Cleaning**  
the Hard to Clean



**Finishing**  
the Hard to Finish



**Treating**  
the Hard to Treat

## Titration Method

1. Obtain a 25 mL sample.
2. Add approximately 5 drops of Bromophenol Blue indicator to the sample.
3. Add 0.1N Hydrochloric Acid to the sample using a burette until the test solution changes from blue to yellow.
4. Record mL used.

Calculation

$$\text{Concentration} = \text{mL } 0.1\text{N HCl} \times 0.192$$

Compare the number of mL to the table below:

mL 0.1N HCl	% Concentration
0.5	0.10
1.0	0.19
1.5	0.29
2.0	0.38
2.5	0.48
3.0	0.58
3.5	0.67
4.0	0.77
4.5	0.87
5.0	0.96
5.5	1.06
6.0	1.15
6.5	1.25
7.0	1.35
7.5	1.44
8.0	1.54
8.5	1.63
9.0	1.72
9.5	1.83
10.0	1.92

mL 0.1N HCl	% Concentration
10.5	2.02
11.0	2.12
11.5	2.21
12.0	2.31
12.5	2.40
13.0	2.50
13.5	2.60
14.0	2.69
14.5	2.79
15.0	2.88
15.5	2.98
16.0	3.08
16.5	3.17
17.0	3.27
17.5	3.37
18.0	3.46
18.5	3.56
19.0	3.65
19.5	3.75
20.0	3.85

## Test Kit Method

1. Fill test bottle 1/3 full of water.
2. Add 5 mL of Emerald Seal 303 working solution.
3. Add 5 drops Methyl Orange and swirl.
4. Add 0.72N Hydrochloric Acid dropwise while swirling until the solution changes from yellow to red.
5. Record the number of drops used.

Calculation

$$\text{Concentration} = \# \text{ Drops } 072N \text{ HCl} \times 0.25$$

## Caution

Emerald Seal 303 should be stored in a cool dry area. Store away from incompatible substances; see an issued SDS. Please refer to the label and SDS bulletins for all warnings, recommendations for safety equipment and other regulatory information.

WARRANTY: THE QUALITY OF THIS PRODUCT IS GUARANTEED ON SHIPMENT FROM OUR PLANT. IF THE USE RECOMMENDATIONS ARE FOLLOWED, DESIRED RESULTS WILL BE OBTAINED. SINCE THE USE OF OUR PRODUCTS IS BEYOND OUR CONTROL, NO GUARANTEE EXPRESSED OR IMPLIED IS MADE AS TO THE EFFECTS OF SUCH USE, OR THE RESULTS TO BE OBTAINED.

## Our people. Your problem solvers.

For more information on this process please call us at

1-800-648-3412

or [techservice@hubbardhall.com](mailto:techservice@hubbardhall.com)

