

Emerald™ Seal 303

Emerald Seal 303 is a final rinse compound designed for use in the last stage of iron or zinc phosphatizing 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 Type M & Type Z 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.

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

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

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.

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Our People. Your Problem Solvers.

For more information on this process,
please call us at 203.756.5521 or email: techservice@hubbardhall.com

Hubbard-Hall holds certifications for **ISO 9001:2015**, Responsible Distribution, as accredited by the **ACD** (Alliance for Chemical Distributors) and as a **Women-Owned Small Business**, as well as maintaining an association with **Omni-Chem**¹³⁶.