



PRODUCT INFORMATION

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MARTRON MICRO 24 Micro-Crystalline Zinc Phosphate

Section 1: PRODUCT DESCRIPTION and FEATURES

Martron Micro 24 bath produces an extremely fine micro-crystalline zinc phosphate coating by the immersion method and is used where a light phosphate is required (400 to 600 mgs/ft²) such as rust proofing under paint, under oil, or internal areas of plated parts. The coating, properly applied, prevents rust formation under paint and reduces the amount of paint required, due to its smooth, fine texture.

Martron Micro 24 can be used to protect internal areas of plated parts where the plating does not deposit and can be part of a rust proofing system where hydrogen embrittlement is a factor since it produces no embrittlement.

- No hydrogen embrittlement
- High tolerance for iron contamination
- Soft sludge for easy maintenance
- Controlled via Total Acid and Iron Titrations
- Wide operating windows

Section 2: SAFETY PRECAUTIONS

Always read and understand the Safety Data Sheet (SDS) for any chemical product prior to using the product to ensure familiarity with the methods of safe handling and health hazards associated with **Martron Micro 24**.

Section 3: MAKE UP and MAINTENANCE OF MARTRON MICRO 24

Equipment

Tanks and any ancillary equipment should be constructed of polypropylene, stainless-steel or Koroseal lined steel tanks. Heat with steam or hot water using external heat exchanger, or de-rated stainless-steel immersion heaters. Teflon coated heaters can also be used. Ensure adequate ventilation is provided.

Solution Make Up

If Operated at Normal Temperatures

	Optimum	Range
Martron Micro 24	4% (vol)	3.5 – 4.5% (vol)

If Operated at Lower Temperatures

	Optimum	Range
Martron Micro 24	8% (vol)	6 – 8% (vol)

Make Up Procedures

- Fill the tank approximately 75% by volume with clean water.
- With agitation, add the required amount of **Martron Micro 24**
- Add sufficient water to bring the solution up to working level and mix thoroughly
- Adjust solution temperature, and confirming solution composition by analysis

Operating Conditions**If Operated at Normal Temperatures**

	Optimum	Range
Total Acid Points	30	26 – 34
Temperature	185°F	160 - 212°F
Immersion Time	5 min.	0.5 – 10 mins.

If Operated at Lower Temperatures

	Optimum	Range
Total Acid Points	52	45 - 60
Iron – not to exceed at 30 Total Acid Points		3.5 grs/L
Temperature	145°F	140 - 150°F
Immersion Time	5 min.	0.5 – 10 mins.

Typical Cycle

- Alkaline cleaning
- Water rinse
- Acid pickle
- Water rinse
- **Martron Micro 24**
- Water rinse
- Seal rinse

Operating Notes

A special use for **Martron Micro 24** is as a break-in agent on wearing surfaces such as gears, pins, rocker arms, valves, etc., to provide a separating agent, which will allow two steel surfaces to “mate” properly without welding or galling. Tests must be performed to determine the applicability of **Martron Micro 24** for this specialized use.

If the phosphate coating is to be used for wearing surfaces, it is customary to replace the chromic rinse with soluble oil in the final rinse.

Cleaning

Martron Micro 24 requires a clean surface for coating. It does not deposit over soiled surfaces. A low-foaming cleaner should be used. Inhibitors or cationic agents should not be used because they can retard or inhibit the deposition of a phosphate coating. Cleaners have been developed for this use to provide soil free surfaces acceptable to phosphate coatings. The cleaning tank should be skimmed daily to remove floating soils.

Pickling

Most all acids are satisfactory for pickling, but phosphoric acid is preferred. Inhibitors should not be used. Some wetting agents are satisfactory, while other inhibit proper reaction. Therefore, they must be selected with care. Time and temperature of the pickle solution are dependent upon the work to be accomplished. Over-pickling and smut formation lead to inferior phosphate coatings.

Phosphating

To secure uniformity of finish, it is important to maintain proper bath concentration and temperature control. The temperature should not vary more than 5 total degrees. **Martron Inc.** can supply analysis for Total Acid and Iron that is needed for control.

Agitation of accumulated sludge is to be avoided to prevent depositing on work. It is advisable to remove whatever small amount of sludge is found by decanting as required. Scale deposits on coils should be cleaned off if they interfere with bath temperature.

Times of immersion are usually short; however, long immersion times do not increase coating weights, nor are they detrimental. Cessation of gassing is a good indication of complete coating. Rinsing following phosphating is important to the corrosion resistance of the coating. Double rinsing, spray rinsing, or highwater input are recommended.

Final Rinse

The final rinse is made by adding the desired chromic rinse to water. The bath should be replaced daily. Much of the final corrosion and humidity resistance depends upon the proper use of the chromic bath. The work need not be rinsed following the chromic rinse, but a tap water or a deionized water rinse can be used to prevent staining. It can be heated or cold. The chemical reaction is not heat depended; the heat is usually supplied to assist in drying.

Soluble Oil

If oil is desired, please contact **Martron Inc.** for a suitable type specifically designed for your needs.

Process Control

Solution maintenance is a function of drag out and soil contamination and varies by application. Solution concentration is maintained by the following wet chemical analysis.

Martron Micro 24 is easily controlled by "chasing" the points of ferrous iron with points of total acid. The iron and total acid are titrated and then the total acid is brought into range as listed in the table below.

Iron Points by Titration	Total Acid Points by Titration
0 – 1	22 – 27
1 – 2	27 – 30
2 – 3	30 – 33
3 – 4	33 – 36
4 – 5	36 – 39
5 – 6	39 – 42
6 – 7	42 – 45
7 – 8	45 – 48
8 – 9	48 – 51
9 – 10	51 – 54
10 – 11	54 – 57
11 – 12	57 – 60

Martron Micro 24 should be analyzed on a regular basis to produce the most consistent results.

Total Acid Titration Procedure

Equipment Required

- 10.0 ml pipet
- 250 ml Erlenmeyer flask
- 25 ml buret with stand

Reagents Required

- Phenolphthalein Indicator solution

- 0.1 N Sodium Hydroxide solution

Procedure

- Pipette a 10.0 ml sample of the phosphating solution into a 250 ml Erlenmeyer flask.
- Add approximately 50 mls of Distilled or Deionized Water.
- Add 10 drops of Phenolphthalein Indicator solution (solution is clear).
- Titrate the clear solution with 0.1 N Sodium Hydroxide solution to a pink endpoint.
- Calculation:
Total Acid Points = ml of 0.1 N NaOH

Iron Titration**Equipment Required**

- 10.0 ml pipet
- 250 ml Erlenmeyer flask
- 25 ml buret with stand

Reagents Required

- 1:1 Sulfuric Acid / Phosphoric Acid Indicator solution
- 0.2 N Potassium Permanganate solution

Procedure

- Pipette a 10.0 ml sample of the phosphating solution into a 250 ml Erlenmeyer flask.
- Add approximately 50 mls of Distilled or Deionized Water.
- Add 10 drops of 1:1 H₂SO₄/H₃PO₄ Indicator solution.
- Titrate solution with 0.2 N Potassium Permanganate solution to a pink endpoint.
- Calculation:
(grs/L) Total Iron = ml of 0.2 N KMnO₄

Refer to table of Total Acid vs. Iron and make the appropriate addition of **Martron Micro 24** to increase the total acid to match the iron points in table. An addition of 1.0% by volume of **Martron Micro 24** will increase the Total Acid Points by 7.5.

Section 4: WASTE TREATMENT

Consult appropriate Federal, State, and local regulatory agencies to ascertain proper disposal procedures. Do not discharge into waterways or sewer systems. Disposal will depend on the nature of waste material.

Section 5: STORAGE

Avoid the freezing of **Martron Micro 24**. Store the **Martron Micro 24** in an appropriate area with compatible materials. All chemicals should be stored in compliance with all applicable federal, state or local requirements.

Section 6: NON-WARRANTY and DISCLAIMER

The data contained in this bulletin is believed by **Martron Inc.** to be true, accurate and complete. Since the final methods of use of this product are in the hands of the customer, and beyond **Martron Inc.'s** control, **Martron Inc.** cannot guarantee that the customer will obtain any specific result. Accordingly, **Martron Inc.** does not assume any responsibility for the use of this product by the customer, the results obtained, nor the infringement of any patents of third parties.