



# PRODUCT INFORMATION

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EMERGENCY - **CHEMTREC 800-424-9300**

REF. # **MFC-002540 and MFC-002541**

## MARTRON SFE-AT Cleaner/Iron Phosphate

### Section 1: PRODUCT DESCRIPTION and FEATURES

**Martron SFE-AT** is a low foaming, low temperature, acidic product formulated to prepare and condition steel substrates. **Martron SFE-AT** provides a uniform iron phosphate coating that inhibits corrosion and improves the adhesion and durability of paint finishes.

Because **Martron SFE-AT** is a low foaming, low temperature product, it is readily suited for use in spray washers or in immersion tanks with agitation.

- Provides effective cleaning at low temperatures
- Combines cleaning and phosphatizing into one step
- Works in both spray and immersion applications
- Provides uniform coating weights
- Does not contain molybdenum
- Does not contain fluoride

This process consists of the following products:

- **Martron SFE-AT**
- **Martron SFE-AT Additive**

### 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 SFE-AT**.

### Section 3: MAKE UP and MAINTENANCE OF MARTRON SFE-AT

#### Equipment

Tanks and any ancillary equipment should be constructed of high-density polypropylene, or stainless-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.

High temperature plastic nozzles and piping may be used to simplify maintenance.

**Solution Make Up**

**Spray Application**

	<b>Optimum</b>	<b>Range</b>
<b>Martron SFE-AT</b>	3% (vol)	2 – 4% (vol)

**Immersion Application**

	<b>Optimum</b>	<b>Range</b>
<b>Martron SFE-AT</b>	5% (vol)	4 – 6% (vol)

**Make Up Procedures**

- Fill the tank approximately 75% of its working volume with clean warm water (100 – 120°F)
- With continuous stirring, add the required amount of **Martron SFE-AT**
- Add balance of water to bring the solution up to working level
- Stir to mix thoroughly
- Heat solution to operating temperature

**Operating Conditions**

**Spray Application**

	<b>Optimum</b>	<b>Range</b>
Temperature	110°F	100 - 120°F
Dwell Time	60 sec.	45 – 75 sec.
Spray Pressure		10 – 20 psi

**Immersion Application**

	<b>Optimum</b>	<b>Range</b>
Temperature	130°F	120 - 140°F
Dwell Time	1.5 min.	1 – 2 mins.

**Typical Cycle**

- **Martron SFE-AT**
- Flowing rinse
- Seal rinse

**Operating Notes**

**Pressure (Check and record every 2 hours of operation)**

The recommended pressure operating range is 10 – 20 psi. If the pressure is outside of the recommended range, adjust the pressure by opening (increase) or closing (decrease) the value until pressure reading is within the operating range.

**Operating Temperature (Check and Record every 2 hours of operation)**

The operating temperature range is 100 to 140°F depending if the process is spray or immersion. If the operating temperature is outside the recommended range, **STOP** processing parts until the temperature issue is rectified.

If the temperature is out of range, verify that the temperature control on the control panel is set correctly. Adjust if necessary and recheck the temperature in 30 minutes. Resume processing parts when temperature readings are within operating range.

- If the temperature is below the operating range, check burners to insure they are lit.
- If the burners are not lit, follow proper start up procedures to light burners.
- If the temperature is above operating range, contact supervisor or plant maintenance.

**Free Acid Side**

It is recommended that the bath run on the free acid side when oxide removal is desirable. However, as a result, less film coating weight will develop. It is recommended when processing steel that has been laser cut.

**Acid Consumed Side**

Using the typical processing state, the optimal range corresponds to the ideal film coating weight.

**Process Control**

Solution maintenance is a function of drag out and soil contamination and varies by application. Total Acid is directly proportional to the concentration of the bath. Therefore, concentration of the bath can be controlled by controlling the Total Acid.

**Analytical methods**

**Determination of Total Acid**

**Equipment**

- 10.0 ml pipet
- 250 ml Erlenmeyer Flask
- 25 or 50 ml buret with stand

**Reagents Required**

- Phenolphthalein Indicator Solution
- 0.1 N Sodium Hydroxide Solution

**Procedure**

- Pipet a 10.0 ml sample of the bath into a 250 ml Erlenmeyer flask.
- Add 4 – 5 drops of Phenolphthalein Indicator solution. The solution should remain clear.
- Titrate slowly with 0.1 N Sodium Hydroxide solution until the solution changes to a permanent pink color.
- Calculation:

Operating Range: 5.5 – 10.0 points    Optimum Range: 6.5 – 9.0 points  
 Total Acid Points = mls of 0.1 N NaOH

<u>% Concentration (by volume)</u>	<u>mls. of 0.1 N NaOH</u>
1.0	2.6
2.0	7.7
5.0	12.8

**Process Replenishment**

**STOP** processing parts if the Total Acid reading is outside of the operating range.

If the Total Acid is less than 6.5 points, increase the Total Acid by adding **Martron SFE-AT**. Add 0.39 gallons of **Martron SFE-AT** per 100 gallons of bath solution to raise the concentration by 1.0 ml.

If the Total Acid is greater than 9.0 points, decrease the Total Acid by turning off the chemical feed pump until the Total Acid is within operating range.

Resume processing when the Total Acid reading is within operating range.

**Determination of Acid Consumed**

**Note:** If adjustments were made in the Total Acid Step, wait 30 minutes before performing this titration.

**Equipment**

- 10.0 ml pipet
- 250 ml Erlenmeyer Flask
- 25 or 50 ml buret with stand

**Reagents Required**

- Bromocresol Green Indicator Solution
- 0.1 N Sodium Hydroxide Solution
- 0.1 N Hydrochloric Acid Solution

**Procedure**

- Pipet a 10.0 ml sample of the bath into a 250 ml Erlenmeyer flask.
- Add approximately 25 mls of DI water.
- Add 10 – 12 drops of Bromocresol Green Indicator solution. The sample will turn either yellow/green or blue in color.
- Titrate the sample as follows:  
If Yellow or Green – Free Acid Side
- Titrate with 0.1 N Sodium Hydroxide solution until the color changes to blue.
- Calculation:  
Free Acid Points = ml of 0.1 N NaOH  
If Blue – Acid Consumed Side (Recommended)
- Titrate with 0.1 N Hydrochloric Acid solution until the color changes to green.
- Calculation:  
Operating Range: 0 – 0.7 points Optimum Range: 0.2 – 0.5 points  
Acid Consumed Points = ml of 0.1 N NaOH
- **STOP** processing parts if the Total Acid reading is outside of the operating range.
- Approximately 30 minutes after making adjustments to bath, repeat steps 1 – 4 until readings are within operating range.

**If on Free Acid Side....**

Pts. Of Free Acid Measured:	Amount of Martron SFE-AT Additive (Per 100 gallons of Phosphate Sol.)	
0.1	0.025 lbs.	11.3 grs.
0.2	0.029 lbs.	13.2 grs.
0.3	0.033 lbs.	15.0 grs.
0.4	0.038 lbs.	17.2 grs.
0.5	0.042 lbs.	19.1 grs.
0.6	0.046 lbs.	20.9 grs.
0.7	0.050 lbs.	22.7 grs.
0.8	0.054 lbs.	24.5 grs.
0.9	0.058 lbs.	26.3 grs.
1.0	0.063 lbs.	28.6 grs.
1.1	0.067 lbs.	30.2 grs.
1.2	0.071 lbs.	32.2 grs.
1.3	0.075 lbs.	34.0 grs.
1.4	0.079 lbs.	35.8 grs.
1.5	0.083 lbs.	37.6 grs.

**If on Acid Consumed Side...**

Pts. Of Acid Consumed Measured:	Amount of Martron SFE-AT Additive (Per 100 gallons of Phosphate Sol.)	
0.1	0.008 lbs.	3.6 grs.
0.2	No Additive Required	
0.3	No Additive Required	
0.4	No Additive Required	
0.5	No Additive Required	
	Amount of Martron SFE-AT (Per 100 gallons of Phosphate Sol.)	
0.6	0.008 gals.	0.03 Liters
0.7	0.021 gals.	0.08 Liters
0.8	0.029 gals.	0.11 Liters
0.9	0.042 gals.	0.16 Liters
1.0	0.050 gals.	0.19 Liters
1.1	0.063 gals.	0.24 Liters
1.2	0.071 gals.	0.27 Liters

**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 freezing **Martron SFE-AT** process components. Store the **Martron SFE-AT** process components 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.