



INDUSTRIAL COATINGS

CF158
CHEMFOS® 158

PRETREATMENT TECHNICAL DATA SHEET

IRON PHOSPHATE CONVERSION COATING

PRODUCT DESCRIPTION

CHEMFOS® 158 is a premium chlorate accelerated iron phosphate product. It's designed for use in five or six stage spray installations. The **CHEMFOS® 158** requires a minimum of one alkaline cleaning stage and a warm water rinse preceding it.

TECHNICAL PROPERTIES

Composition:	Liquid
Appearance:	Clear – Colorless
Recommended Concentrations:	See Use & Control Instructions
Recommended Temperatures:	140 ⁰ F-165 ⁰ F

PRODUCT ADVANTAGES

- Concentrated liquid material that imparts to the steel surface a complex iron phosphate coating.
- Applied properly, along with the use of an appropriate post rinse, this iron phosphate coating offers excellent paint adhesion and corrosion resistance.

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USE & CONTROL INSTRUCTIONS:

Operating Properties (Typical):

- | | |
|--|---------------------------------------|
| • Application | Normally used in a spray application |
| • Operating concentration | Total acid of 7.5 to 10.5 points |
| • Operating pH | 4.7 to 5.5 |
| • Acid consumed (alternative for pH control) | 0.1 to 0.9 pts |
| • Operating temperature | 140 ^o F-165 ^o F |
| • Operating time | 60 to 90 seconds |

Charge Instructions:

Charge Details:

- 1) Fill the clean tank to approximately $\frac{3}{4}$ of the operating level with fresh water.
- 2) Start circulating pump.
- 3) Slowly add about 3.8 gallons (14.5 liters or 40 pounds) of **CHEMFOS[®] 158** for every 100 gallons of bath volume.
- 4) Slowly add approximately 0.6 gallon (2.3 Liters or 7 pounds) of **CHEMFIL BUFFER** for every 100 gallons of bath volume to the tank, ensuring good circulation.
- 5) Mix well and adjust the final volume to the operating level with additional water as needed. This should produce a bath having a pH of 5.0 and a Total Acid of about 9 points. It is important that the pH be between 4.7 and 5.5 before operating. Most baths will require some additional adjustment before reaching this exact specification.
- 6) Heat bath to operating temperature.

Analysis Procedures:

CAUTION: DO NOT PIPETTE BY MOUTH!

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Total Acid (and optional Acid Consumed titration):

Equipment needed:

- Burette Assembly (add a second one if Acid consumed is tested in place of pH)
- 10-ml pipette and bulb
- 250-ml flask or beaker

Reagents needed:

- Thymolphthalein indicator
- Bromocresol Green indicator (optional-used for running acid consumed test)
- 0.1 N Sodium Hydroxide
- 0.1 N Sulfuric acid (optional-used for running acid consumed test)

Total Acid Procedure:

1. Pipette a 10 ml sample of the bath into a clean, dry flask or beaker.
2. Add 3-5 drops of Thymolphthalein indicator and swirl to mix.
3. Using the burette, titrate with 0.1N Sodium Hydroxide until the mixture turns to a light permanent blue or grey.
4. Record the number of ml of 0.1N Sodium Hydroxide as the Total Acid.

Adding approximately 0.4 gallons (1500ml) of **CHEMFOS[®] 158** will raise the Total Acid by 1 point for every 100 gallons of bath.

The TA level is best controlled by the continuous addition of **CHEMFOS[®] 158** concentrate by using a metering pump rather than by infrequent additions of large amounts of chemical. After the bath has been adjusted to the proper concentration pH adjustments can be made.

Acid consumed titration for pH control (optional):

1. Pipette a 10 ml sample of the bath into a clean, dry flask or beaker.
2. Add 10 drops of Bromocresol Green indicator and swirl to mix.
3. using the burette, titrate with 0.1N Sulfuric Acid until the mixture turns from blue to green. Do not continue further on to yellow.
4. Record the number of ml of 0.1N Sulfuric acid as the acid consumed (or negative free acid or pH control) value.

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pH determination (preferred method for pH control):

Equipment needed:

- pH meter
- Suitable pH electrode(s)
- Plastic squirt bottle (for rinsing the electrode)

Reagents needed:

- pH 4 buffer solution
- pH 7 buffer solution

pH meter procedure:

1. The pH of the operating solution should be checked with an electronic pH meter following calibration and operational procedures provided by the manufacturer.
2. Maintain the pH in the range of 4.7 – 5.5 for optimum quality.
3. pH adjustments can be made in the following manner:

Use **CHEMFOS[®] 158** to decrease the pH and **CHEMFIL BUFFER** to increase the pH.

- a) Approximately 10 fluid ounces (300 ml) of **CHEMFOS[®] 158** per 100 gallons will decrease the pH by 0.1 pH units.
- b) Approximately 3.5 fluid ounces (100 ml) of **CHEMFIL BUFFER** per 100 gallons will increase the pH by approximately 0.1 pH units.

Frequent additions of **CHEMFOS[®] 158** should be used as indicated previously to lower pH and to keep the concentration constant.

In the event of an emergency the pH can be lowered 0.1 units by adding approximately 50 mL of pH CONTROLLER solution per 100 gallons of operating solution. (It should be noted that the pH CONTROLLER only reduces the pH.

It may also keep the total acid in range but does NOT add the additional chemistry needed to produce a quality coating and should not be used for on-going bath replenishment.)

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TECHNICAL DATA SHEET DISCLAIMER—INDUSTRIAL COATINGS:

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