



INDUSTRIAL COATINGS

(CS59)

CHEMSEAL 59

A CHROME-FREE FINAL RINSE

PRODUCT DESCRIPTION



PRODUCT ADVANTAGES

- Formulated to provide improved adhesion and added corrosion protection
- Environmentally acceptable
- Minimizes waste disposal costs
- Can be used safely on phosphate steel, zinc, zinc alloys and aluminum.

CHEMSEAL 59 is a chromium-free concentrate for use as a final rinse after phosphating with CHEMFOS® iron or zinc phosphates.

TECHNICAL PROPERTIES



Composition:	Liquid
Appearance:	Clear colorless to pale yellow

Odor:	Mild
Specific Gravity:	1.10
Pound per Gallon:	9.2

Flash Point:	None
Foaming Tendency:	Low
Recommended Diluent:	Water

Behavior in Hard Water:	Good
Rinsability:	Good
Biodegradable Surfactants:	N/A

Recommended Concentration:	See Use Inst.
Recommended Temperatures:	Ambient
pH (concentrate):	N/A
pH (working solution):	4.2 – 4.8

USE & CONTROL INSTRUCTIONS:

CHEMSEAL 59 can be used in both spray and immersion processes. The **CHEMSEAL 59** should be operated at ambient temperature for 30 to 60 seconds for best results. A typical process sequence appears below:

Stage 1	CHEMKLEEN (the proper CHEMKLEEN product will be recommended by your PPG representative)	
Stage 2	Warm water rinse	
Stage 3	RINSE CONDITIONER (for zinc phosphate only)	
Stage 4	CHEMFOS® (the proper CHEMFOS® product will be recommended by your PPG representative)	
Stage 5	Ambient water rinse	
Stage 6	CHEMSEAL 59	
	Temperature	Ambient
	pH	4.2-4.8
	Fluoride	140-175 PPM
Stage 7	Deionized water	

It is recommended that the **CHEMSEAL 59** bath be dumped on a weekly basis.

INITIAL MAKE-UP

Fill the tank 3/4 full with fresh water (Deionized water is preferred). For each 100 gallons of working volume add 9.2 lb. (1 gallon) of **CHEMSEAL 59** and then mix thoroughly. Bring the solution level close to the working level, check the pH and add enough CHEMFIL BUFFER while mixing to bring the pH within the operating range.

The amount of CHEMFIL BUFFER necessary for pH adjustment will vary for each installation due to water hardness and pH. The table below can be used as a guide to calculate the usual amount of CHEMFIL BUFFER.

<u>INITIAL BATH pH</u>	<u>CHEMFIL BUFFER/100 GALS</u>
4.5-4.80	0 mls
4.1-4.49	19 mls
3.8-4.09	41 mls
3.5-3.79	73 mls
3.3-3.49	113 mls
3.15-3.29	153 mls
3.0-3.14	188 mls
less than 3.0	add 200 mls, and then recheck

The bath pH should be checked after each addition of CHEMFIL BUFFER.

Note:

When adjusting the pH of **CHEMSEAL 59** with CHEMFIL BUFFER, only add 3/4 of the calculated amount of CHEMFIL BUFFER to the **CHEMSEAL 59** bath, mix thoroughly and determine the pH of the bath before adding any additional CHEMFIL BUFFER.

FLUORIDE CONTROL

The **CHEMSEAL 59** bath is controlled by a fluoride measurement. Fluoride is measured using a fluoride ion specific electrode. The recommended fluoride range is 140 to 175 PPM.

For every 10-PPM below the recommended range, add 330 ml (11 fl. oz.) of **CHEMSEAL 59** concentrate per 100 gallons of bath volume. The bath concentration is best controlled by the continuous addition of the **CHEMSEAL 59** concentrate by use of a metering pump rather than by infrequent addition of large amounts of chemical.

PRIMARY FLUORIDE METHOD (LIQUID CITRATE BUFFER)

1. Standardize the meter using the 100 PPM and 500 PPM fluoride calibration standards. These standards should be fresh each week and should be kept in sealed jars during that week.
2. Prepare the **CHEMSEAL 59** sample by pipetting 2 ml of the bath and mixing with 50 ml of Citrate Buffer. Measure the fluoride of this sample. Allow five minutes for the sample to reach equilibrium before taking a reading.

SECONDARY FLUORIDE METHOD (POWDER PILLOWS)

1. Transfer 25 ml of each standard to separate, clean 50 ml beakers. Add one ISA powder pillow to each 25 ml of standard. Stir the solution until the powder is completely dissolved. Calibrate the fluoride ISE meter with the 3 standards. Fresh standards should be prepared weekly and stored in clean sealed containers.
2. Prepare a dilute solution of the **CHEMSEAL 59** sample by transferring 10 ml of the **CHEMSEAL 59** bath into a clean beaker and adding 90 ml of DI water. Transfer 25 ml of diluted **CHEMSEAL 59** solution into a 50 ml beaker and add one ISA powder pillow. Stir to completely dissolve the powder.
3. Place the fluoride electrode into the diluted **CHEMSEAL 59** solution. When the electrode is stable, the concentration of fluoride in the diluted **CHEMSEAL 59** will be displayed. Multiply the displayed concentration by 10 to obtain the final concentration of fluoride. The recommended final concentration range is 140 to 175 mg/L

MATERIALS NEEDED FOR SECONDARY METHOD

1. Hach model 50265 Fluoride Electrode and a Model EC-20 ISE meter.
(or equivalent electrode and meter capable of reading concentration directly)
Hach can be contacted at 1(800) – 227 - 4224
2. Fluoride Ionic Strength Adjuster Powder Pillows (Hach Cat # 258999)
3. Fluoride Standard Solutions: 1 mg/L, 10 mg/L and 100 mg/L (Note: mg/L=ppm)

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pH CONTROL

The recommended pH range is 4.2 to 4.8.

Using a pH meter standardized at pH 7 and 4, measure the pH of the **CHEMSEAL 59** baths. The pH of the **CHEMSEAL 59** baths may drift downward in some installations. The pH can be adjusted with CHEMFIL BUFFER as described above. The pH should not rise above the recommended range if the appropriate fluoride range is maintained.

NOTE:

In the event that the fluoride level is correct and no additional product add is warranted, but the pH is high, use CHEMSEAL pH CONTROLLER 150 to drop the pH without increasing fluoride level.

CHEMSEAL pH CONTROLLER 150 should only be used to adjust pH after determining that the fluoride levels in the **CHEMSEAL 59** are at the appropriate concentrations and the pH of the **CHEMSEAL 59** is above the recommended operating range.

To lower the pH by 0.1-pH unit, add 50 ml of CHEMSEAL pH CONTROLLER 150 per 100 gallons of operating solution.

EQUIPMENT NOTES:

While existing mild steel equipment should be acceptable for use with **CHEMSEAL 59**, stainless or lined equipment is preferred.

New construction should be stainless, lined or other corrosive-resistant material.

PRECAUTIONS:

Corrosive material. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Store away from alkalis. If frozen, allow complete thawing and mixing before using.