

## Technical Data Sheet • CHEMEON® Deox 3400/3500(A)

### Description:

CHEMEON® Deox 3400 is a liquid acid mixture that is used in combination with CHEMEON® Deox 3500(A), a granular product, to produce a deoxidizer for high silicon castings such as 380, 383, 384, and 390. CHEMEON® Deox 3400 is used at 100% in combination with Deox 3500A at 2 – 8 oz/gal. The solution is operated at room temperature.

### Operating Conditions:

|                        |  |
|------------------------|--|
| Method of Application: | Immersion  |
| Concentration:         | 100 % by volume of CHEMEON® Deox 3400<br>2 - 8 oz/gal (15 - 60 g/L) of CHEMEON® Deox 3500(A) |
| Temperature:           | 70 - 90 °F (20 to 30 °C)   |
| Time:                  | 0.5 - 2 minutes  |
| Tank Material:         | Polyethylene, Polypropylene Korseal, or Rubber lined   |

### Solution Control:

#### CHEMEON® Deox 3400

1. Pipet 2 mL of the deox bath into a 250 mL volumetric flask and bring to the mark with DI water.
2. Pipet 5 mL of the diluted bath into a 250 mL Erlenmyer flask.
3. Prepare a blank by adding 5 mL of DI water into a second Erlenmyer flask.
4. Pipet 25 mL of 0.1 N ferrous ammonium sulfate (FAS) into each flask.
5. Add 20 mL of concentrated sulfuric acid to each flask.
6. Add a stir bar to each flask.
7. Gently boil solution in flasks for 10 minutes without mixing.
8. Remove from heat and cool.
9. Add 50 mL of DI water and 10 drops of ferroin indicator to each flask.
10. Immediately titrate with 0.1 N ceric sulfate until the color changes from red to blue.
11. Record the mL of 0.1 N ceric sulfate necessary to reach the endpoint for the blank and sample.
12. Calculation:  
$$\text{Deox 3400 (\% by volume)} = [(\text{mL 0.1 N ceric sulfate for blank}) - (\text{mL 0.1 N ceric sulfate for sample})] \times 12.6$$

#### CHEMEON® Deox 3500(A)

1. Pipet 1 mL of the deox solution into a 100 mL volumetric flask.
2. Bring to volume with sodium acetate buffer.
3. Immediately pour the solution into 150 mL plastic beakers and add a stir bar.

4. Using a fluoride probe and specific ion meter, calibrate with 50 and 500 ppm fluoride standards.
5. Measure the concentration of the bath sample while stirring.
6. The reading is the fluoride concentration of the sample in ppm.

The measured fluoride concentration should be between 50 and 250 ppm.

Addition of Deox 3500:

One ounce per gallon of Deox 3500 corresponds to a fluoride concentration by 3675 mg/L.

Note that dissolved aluminum in the deox 3400/3500 tank will react with fluoride and so addition of 1 oz/gal Deox 3500 may not result in a measured increase of 3675 ppm in the tank.

Preparation of sodium acetate buffer (1 L):

1. Add 14 g of anhydrous sodium acetate, 1.74 g of glacial acetic acid, and dilute to 1L with water.
2. The pH of solution should be 5.4.

Preparation of fluoride standards.

1. See the Table listed below for the amount of sodium fluoride that is needed for each standard. Use high purity sodium fluoride, > 99%. Store the sodium fluoride in a dessicator.

| Fluoride Concentration (ppm) | Quantity of NaF Needed (grams) |
|------------------------------|--------------------------------|
| 50                           | 0.1105                         |
| 500                          | 1.1053                         |

2. Weigh the appropriate amount of sodium fluoride into a weighing boat or weighing paper using an analytical balance and quantitatively transfer to a 1 liter volumetric flask. (DI water should be used to aid in quantitatively transferring the sodium fluoride from the weighing boat to the volumetric flask.) Pipet 10 ml of CHEMEON® Deox 3400 into the 1 L volumetric flask. The CHEMEON® Deox 3400 addition will help the fluoride standards have a similar matrix to the bath sample. For each standard, it is not necessary to weigh the exact amount shown above, only an approximate amount. The actual fluoride concentration can then be determined using the following conversion:

$$\text{Fluoride Concentration (ppm)} = (\text{grams NaF}) \times (452.38)$$



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3. Fill the 1 liter volumetric flask with DI water.
4. Store the Fluoride standards in 1 liter plastic bottles at room temperature. The standards should have a shelf life of 6 months if properly stored.

### **Physical and Safety Data:**

CHEMEON® Deox 3400 is a highly acidic liquid corrosive to skin and eyes.

CHEMEON® Deox 3500(A) is a highly corrosive solid that can irritate and burn the skin and eyes. This product can pass through the skin.

Rubber gloves, boots, apron, and safety glasses should be worn when handling both materials.

If contact occurs, flush affected area with water for 10 minutes.

If burning continues consult a physician

### **Packaging:**

CHEMEON® Deox 3400 55 gallon poly non-returnable drum

CHEMEON® Deox 3500(A) 50 lb pails

### **Storage:**

CHEMEON® Deox 3400 should be stored in sealed containers located in a cool, dry, ventilated area away from strong alkaline and oxidizing materials. Contact with either could produce a violent reaction. Keep container tightly closed when not in use.

CHEMEON® Deox 3500(A) should be stored in sealed containers located in a cool, dry area away from alkaline products.

### **Waste Disposal:**

CHEMEON® Deox 3400/3500(A) solution may require neutralization to a specified pH range depending on Federal, State, and local waste treatment regulations. This product contains fluoride which is regulated in some areas.

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