

# Luster-On Products

## Technical Data Sheet

### **LUSTER-FOS 2700 HEAVY DUTY LIQUID ZINC PHOSPHATE**

#### **I. GENERAL DESCRIPTION**

Luster-Fos 2700 is a liquid, zinc phosphate material primarily designed to establish heavyweight (1,000 to 3,000 mg/ft<sup>2</sup>) absorbent coatings on steel surfaces. The heavy coatings produced by Luster-Fos 2700 provide excellent "soak-up" properties for supplemental coatings such as rust preventative oils or waxes. Luster-Fos 2700 may be used in immersion or 5-stage spray applications.

Luster-Fos 2700 can also be employed as a prepaint treatment. Coating weights in the range of 300 to 600 mg/ft<sup>2</sup> are recommended to insure corrosion resistance and excellent paint adhesion.

The superior chemical stability of Luster-Fos 2700 eliminates the need for preconditioning the phosphate bath and substantially reduces sludge build-up.

Properly applied, Luster-Fos 2700 meets the requirements of the following Federal and Military Specifications: TT-C-490 (Type I) and Mil-P-16232 (Type Z).

#### **READ MATERIAL SAFETY DATA SHEET BEFORE USING THIS PRODUCT**

#### **II. OPERATING CONDITIONS**

	<u>Heavyweight</u>	<u>Pre-paint</u>
<b>Concentration:</b>	4% v/v	2% v/v
<b>Time:</b>		
Immersion:	5-15 min.	3-5 min.
Spray:	3-5 min.	1-3 min.
<b>Temperature:</b>		
Immersion:	180-190°F	170-190°F
Spray:	170-190°F	170-190°F

## LUSTER-FOS 2700 (continued)

### III. TYPICAL CYCLES

#### A. HEAVYWEIGHT IMMERSION OPERATION

1. Clean - Luster-On 242  
Concentration - 6-10 oz/gal.  
Temperature - 160-190° F.  
Time - 3-5 min.
2. Rinse.
3. Phosphate - Luster-Fos 2700  
Concentration - 4% v/v.  
Temperature - 180-190° F.  
Time - 5-15 min.
4. Rinse.
5. Sealer - Luster-Fos 900, 940, 960 or Rust Preventative Oils.

#### B. HEAVYWEIGHT SPRAY OPERATION

1. Clean - Luster-On 243S  
Concentration - 5% v/v.  
Temperature - 160-180° F.  
Time - 1-3 min.
2. Rinse.
3. Phosphate - Luster-Fos 2700  
Concentration - 4% v/v  
Temperature - 170-190° F.  
Time - 3-5 min.
4. Rinse.
5. Sealer - Luster-Fos 900, 940, 960 or Rust Preventative Oils.

#### C. PRE-PAINT IMMERSION OPERATION

1. Clean - Luster-On 242  
Concentration - 6-10 oz/gal.  
Temperature - 160-190° F.  
Time - 3-5 min.
2. Rinse.
3. Phosphate - Luster-Fos 2700  
Concentration - 2% v/v (with addition of 0.15% Luster-Fos 2711)  
Temperature - 170-190° F.  
Time - 3-5 min.
4. Rinse.
5. Sealer (Dependent on paint steps).

## LUSTER-FOS 2700 (continued)

### III. TYPICAL CYCLES (continued)

#### D. PRE-PAINT SPRAY OPERATION

1. Clean - Luster-On 243S  
Concentration - 5% v/v.  
Temperature - 160-180°F.  
Time - 1-3 min.
2. Rinse.
3. Phosphate - Luster-Fos 2700  
Concentration - 2% v/v (with addition of 0.15% Luster-Fos 2711)  
Temperature - 170-190°F.  
Time - 1-3 min.
4. Rinse.
5. Sealer (Dependent on paint step).

### IV. CONTROL

Zinc phosphates are typically controlled by monitoring Total Acid and Free Acid Numbers along with iron contamination level. For heavyweight applications, Total Acid must be increased as iron level increases in the working solution as shown in Table 1. Free Acid Numbers are used more often as a troubleshooting tool. For pre-paint applications, Total Acid and Luster-Fos 2711 concentration must be monitored to maintain proper coating weights.

#### **FOR HEAVYWEIGHT OPERATION (SEE CONTROL PROCEDURE #1):**

	<u>Range</u>	<u>Optimum</u>
Total Acid Number -	16-30	16-24
Free Acid Number -	2.0-5.0	2.5-3.5
Iron -	0-0.8%	0.1%

#### **FOR PRE-PAINT OPERATIONS (SEE CONTROL PROCEDURE #2):**

	<u>Range</u>	<u>Optimum</u>
Total Acid Number -	16-24	16-20
Free Acid Number -	1.0-3.0	2.2-3.0
Luster-Fos 2711 -	0.5-3.0	0.5-2.0

Total Acid Number is increased 1 point for each addition of 2 pints Luster-Fos 2700/100 gals. of working solution. The Free Acid Number is increased 0.1 point for each addition of 1/2 pint Luster-Fos 2700/100 gals. of working solution. The Free Acid Number is decreased 0.1 point for each addition of 20 mL Luster-Fos 720 /100 gals. of working solution.

## **LUSTER-FOS 2700 (continued)**

### **V. HELPFUL COMMENTS**

Work must be thoroughly cleaned to obtain uniform phosphate coverage.

Avoid boiling phosphate solution - sludge build-up increases at rolling boil.

Tank should be periodically de-sludged.

Iron contamination may be controlled by a bleed and feed technique, cut and dilution technique or oxidation technique of iron with Luster-Fos Precip. Contact the Luster-On Customer Service Laboratory for additional assistance.

### **VI. EQUIPMENT**

Tanks should be constructed of T304 and T316 stainless steel; 1/4" black iron steel tanks may be used. Heating coils should be T304 or T316 stainless steel.

### **VII. DISPOSAL**

Neutralize and remove precipitate, which with the solution portion should be discharged in accordance with Federal, State and Local Regulations.

### **VIII. STORAGE**

Keep container closed when not in use. Keep from freezing - will restore after thawing.

### **IX. PACKAGE**

740 pound net poly-lined drums.

### **X. SAFETY AND HANDLING PRECAUTIONS**

#### **CAUTION! HIGHLY ACIDIC INDUSTRIAL PRODUCT**

Luster-Fos 2700 is a highly acidic industrial product that may cause burns of eyes and skin. Harmful if swallowed or inhaled. Avoid contact with eyes, skin and clothing. Wear safety goggles, rubber gloves and other suitable protective clothing. Wash thoroughly after handling. Use with adequate ventilation. Avoid breathing of vapor or mist.

#### **DO NOT TAKE INTERNALLY.**

Avoid contact or mixing with materials containing Chlorine. Before opening container, loosen closure slowly to relieve any pressure build-up. Keep container closed when not in use. Store in a cool place out of direct sunlight.

**LUSTER-FOS 2700** (continued)

**X. SAFETY AND HANDLING PRECAUTIONS** (continued)

**FIRST AID IN CASE OF CONTACT**

**FOR EYES:** Immediately flush eyes with plenty of water for at least 15 minutes holding apart to insure contact with all surfaces. Get immediate medical attention.

**FOR SKIN:** Immediately flush affected areas with plenty of water until all acid is removed. Remove contaminated clothing and shoes. Wash before re-use. Get immediate medical attention.

**IF SWALLOWED:** Wash out mouth thoroughly with water. Give several glasses of water to drink followed by milk of magnesia. Get immediate medical attention.

**IF INHALED:** Remove from exposure. In case of over-exposure, get medical attention.

**KEEP OUT OF REACH OF CHILDREN**

**FOR INDUSTRIAL USE ONLY**

This product is sold for industrial use only. Our suggestions for its use are based upon tests and procedures, which from experience we believe to be reliable. Since the use is beyond our control, neither we, nor our distributors, can assume responsibility, either expressed or implied, for the results and/or for violation of any patents or any claims resulting from such use.

**LUSTER-FOS<sup>®</sup>** is a registered trademark of **LUSTER-ON PRODUCTS, INC.**

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# Luster-On Products

## Technical Data Sheet

### **LUSTER-FOS 2700**

#### **CONTROL PROCEDURE #1** **Titration Procedure for Heavy Zinc Phosphate Coating Solution**

##### **TOTAL ACID**

1. Pipet 5 ml of the solution into a 250 ml Erlenmeyer flask.
2. Add 50ml water and 5 to 6 drops of phenolphthalein indicator.
3. Titrate using 0.1N Sodium Hydroxide solution to first permanent pink color.
4. The number of milliliters of Sodium Hydroxide represents the Total Acid Number.

##### **FREE ACID**

1. Pipet 5 ml of the solution into a 250 ml Erlenmeyer flask.
2. Add about 50 ml of distilled water and 5 to 6 drops of Bromophenol Blue Indicator.
3. Titrate using 0.1N Sodium Hydroxide solution. The color will change from yellow to green to blue. The first permanent blue color is the end point.
4. The number of milliliters of Sodium Hydroxide represents the Free Acid Number of the solution.

##### **IRON CONTENT**

1. Pipet 5 ml of the solution into a 250 ml Erlenmeyer flask.
2. Add about 50 ml of distilled water and about 25 drops of 10% Sulfuric Acid solution.
4. Titrate using 0.042N Potassium Permanganate solution until pink end point persists for 15 seconds.

##### **CALCULATION**

ml of Permanganate x 0.047 = % iron.

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# Luster-On Products

## Technical Data Sheet

### **LUSTER-FOS 2700**

#### **CONTROL PROCEDURE #2**

#### **Titration Procedure for Pre-Paint Zinc Phosphate Solution**

##### **TOTAL ACID**

1. Pipet 10 ml of the solution into a 250 ml Erlenmeyer flask.
2. Add about 50-ml distilled water and 5 to 6 drops of phenolphthalein indicator.
3. Titrate using 0.1N Sodium Hydroxide solution to first permanent pink color.
4. The number of milliliters of Sodium Hydroxide represents the Total Acid Number.

##### **FREE ACID**

1. Pipet 10 ml of the solution into a 250 ml Erlenmeyer flask.
2. Add about 50 ml of distilled water and 5 to 6 drops of Bromophenol Blue Indicator.
3. Titrate using 0.1N Sodium Hydroxide solution. The color will change from yellow to green to bluish-green to blue. The first permanent blue color is the end point.
4. The number of milliliters of Sodium Hydroxide represents the Free Acid Number of the solution.

##### **LUSTER-FOS ADDITIVE 2711**

1. First test solution using Ferrous Iron Test Papers.
2. If test papers turn red or pink, you will be titrating for ferrous iron. Avoid this by adding 2 fl.oz of Luster-Fos 2711 per 100 gallons of solution.
3. After each 2 fl.oz.addition of Luster-Fos Additive 2700, check with Ferrous Iron Test Papers until the test paper remains white.
4. The solution is now ready to be titrated for Luster-Fos 2711.
5. Pipet 25 ml of the solution into a 250 ml Erlenmeyer flask.
6. Add about 25 ml of distilled water and about 25 drops of 10% Sulfuric Acid solution.
7. Titrate using 0.042N Potassium Permanganate solution until pink end point persists for 15 seconds.
8. Milliliters of Permanganate represent the Luster-Fos 2711 number.

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## Technical Data Sheet

**TABLE 1**  
**Recommended Total Acid Values for heavyweight**  
**Luster-Fos 2700 with Iron contamination.**

<b>% Iron</b>	<b>Recommended Total Acid Number</b>
0.0%	16 - 18
0.1%	18 - 20
0.2%	20 - 22
0.3%	22 - 24
0.4%	24 - 26
0.5%	26 - 28
0.6%	28 - 30

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