



## ***STEELCOTE 962***

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- ***Nickel-free, single additive process.***
- ***Ideal for a wide variety of applications.***
- ***Minimizes bath dumping or decanting.***
- ***Medium coating in the range of 1400-1800 mg/ft<sup>2</sup>.***
- ***Easy to maintain.***
- ***Economical to use.***

### **NICKEL-FREE ZINC PHOSPHATE FOR IMMERSION APPLICATIONS**

**STEELCOTE 962** is a nickel-free zinc phosphate process formulated to provide excellent corrosion protection and paint base on ferrous surfaces. It produces a medium-high crystalline deposit with coating weights in the range of 1400-1800 mg/ft<sup>2</sup>.

**STEELCOTE 962** is supplied as a single additive system that is effective over a wide temperature range. No additional accelerators, activators or additives are necessary. It produces a low amount of sludge, thus it offers outstanding operating life in production.

**STEELCOTE 962** is ideal as a base before application of decorative or protective organic finishes. It is also excellent as a base for solid film lubricants, for break-in, anti-wear and anti-scuffing applications, as a lubricant carrier for tube and wire drawing and an excellent uniform and tenacious base for paint adhesion.

# OPERATING DATA

<b>STEELCOTE 962</b>	<b>4-5% by vol.</b>
<b>Temperature</b>	<b>160-180° F. (71-82° C)</b>
<b>Time</b>	<b>5-15 minutes.</b>
<b>STEELCOTE 962 Titration</b>	<b>20-25</b>

## SOLUTION CONTROL

The phosphate solution should be analyzed on a regular schedule for proper concentration. For heavy loads, once every 4 hours and for lighter loads, every 8 hours. **STEELCOTE 962** concentrate is used to maintain the total acid level. A 1% by volume addition equals 5 points total acid. The operating concentration of the phosphate solution is dependent upon the ferrous iron content. The chart below may be used as a reference for controlling an operating bath.

<u>Ferrous Iron Points</u>	<u>Recommended Total Acid Points</u>
0-1	20-24
1-2	24-28
2-3	28-32
3-4	32-36
4-5	36-40

The above is recommended for installations operating with automatic metering equipment, if manual additions are made, use the following formula;  $4 \times \text{Fe} + 18 \pm 2 = \text{Total Acid Level}$ .

### Analytical

Using a Total Acid Titration and Ferrous Iron Titration and maintenance of the correct ratio between the two titrations controls the **STEELCOTE 962** bath.

#### Pointage Titration

1. Pipette a 10 ml. sample of the bath into a beaker.
2. Add 3 to 4 drops of Bromo Phenol Blue Indicator Solution.
3. Titrate with the 0.1N Sodium Hydroxide until the sample changes from a yellow to a blue color.

Record the number of milliliters of Titrating Solution used as the *Pointage*.

#### Ferrous Iron Titration

1. Pipette a 10 ml. sample of the bath into a beaker.
2. Add 15 to 20 drops of 50% Sulfuric Acid Test Solution.
3. Fill the automatic burette to the zero mark with 0.042N Potassium Permanganate Titrating Solution.
4. While stirring slowly, add the Titrating Solution to the sample until a pink color persists for at least 15 seconds.

Record the number of milliliters of Titrating Solution used as the *Ferrous Iron Titration*.

#### **Ratio**

In a manual operation the following formula is used to determine the ratio:

$$(3.5 \times \text{Fe}) + 25 = \text{Total Acid Level which should be maintained at } \pm 2.$$

**Example:**  $(3.5 \times 1.5) + 25 = 35.5$ . The Total Acid Titration should be between 33.5 to 37.5 **STEELCOTE 962**

## **OPERATION NOTES**

- Always keep in mind that the rate of reaction is determined by *time, temperature and concentration*.
- The quality of the phosphate coating is directly related to the quality of the pre-treatment cycle. If work is not properly cleaned, descaled, and rinsed the appearance, quality and corrosion resistance will be less than satisfactory. Your **A BRITE REPRESENTATIVE** can assist in selecting the proper pre-treatment cycle that will best suit your needs.
- Phosphate coatings themselves provide very little corrosion protection. Hence, the coating must be covered with a solvent or water emulsion oil, an organic film such as paint or wax or a chrome or non-chrome seal. **A BRITE** offers various **BRITEGUARD** products that can improve the corrosion resistance of phosphate coatings significantly.

## **EQUIPMENT**

### **Tanks/Heaters**

Tanks may be constructed of mild steel, however, 316 stainless steel are recommended. 316 stainless steel plate coils or fire tubes are recommended. Direct under fired gas or electric immersion heaters are not recommended since there is a tendency for sludge and scale to build up on the outside surface of the heater and localized overheating will result.

### **Ventilation**

Since solutions operate at elevated temperatures, ventilation is suggested to remove the steam vapors. Plastic, fiberglass or stainless steel equipment will provide maximum operating life.

## **STORAGE/HANDLING**

**STEELCOTE 962** is stable upon standing and has excellent shelf life. Store in a dry area and protect from freezing. It is not combustible. The use of **STEELCOTE 962** requires the handling of acidic materials. Avoid contact with skin and eyes. Wear proper protective clothing, rubber boots, apron, gloves and face shield. In event of contact, flush immediately with large volumes of water and contact a physician. **Refer to the Material Safety Data Sheet for more complete information before using this product.**

## **WARRANTY**

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