Product Bulletin
Product Name: Mi-Phos M-5 Neutralizer
Product Code: 2203002
Revision Date: December 21, 2023

Mi-Phos™ M-5 Neutralizer

Mi-Phos M-5 Neutralizer has been specifically developed to reduce excessive free acid in a Mi-Phos M-5 process bath.

Features & Benefits

Single component powder	Better total free: free acid ratio control
Reduces excess free acid	Uniform manganese phosphate coatings

Typical Applications

- Automotive
- Hand Tools
- Military DOD parts

Titration Method

Total Acid:
1. Pipet a 2 mL sample of the Mi-Phos M-5 solution into a 150 mL beaker.
2. Add 5 drops of Phenolphthalein indicator and mix well.
3. Titrate using 0.1N Sodium Hydroxide to a pink color.
4. Record mL used.

Note: A solution made up as per specification normally results in a titration of 12.0 mL of 0.1N Sodium Hydroxide solution.

Free Acid:
1. Pipet a 2 mL sample of the Mi-Phos M-5 solution into a 150 mL beaker.
2. Add 3 to 4 drops of Bromophenol Blue indicator and mix well.
3. Titrate using a 0.1 N Sodium Hydroxide from a green color to a purple color.
4. Record mL used.

Note: The normal amount of 0.1 N Sodium Hydroxide required to make the color change is 2.0 to 2.2 mL.

The ratio of the Total Acid to the Free Acid is important and should be kept within 1:6 to 1:7.5. In order to figure this radio, use the following formula:

RATIO = Total Acid / Free Acid

Excessive Free Acid in this bath can be caused by heating the solution without processing any work or by only processing a small amount of work in a large volume tank.

Excessive Free Acid is likely to etch the metal surface excessively, fail to produce a complete coating within the normal processing time or produce a smudgy and non-adherent coating, which can be wiped off or give a rough coating.

Excessive Free Acid can be neutralized by the addition of Mi-Phos M-5 Neutralizer. Additions of 4 oz per 100 gallons of solution will lower the Free Acid 0.1 mL of 0.1 N Sodium Hydroxide. This material should be made into a slurry prior to the addition to the solution of Mi-Phos M-5. Then the solution should be mixed thoroughly prior to the processing of production. Allow bath to settle.

Note - The Free Acid will normally not get too low.

When the Hydrogen Peroxide is added to a Mi-Phos M-5 bath to reduce iron, you will create excessive Free Acid that must be reduced, or you will obtain poor coatings. This is done by adding 2 lb of Mi-Phos M-5 Neutralizer for every 1 lb of Hydrogen Peroxide used.

Additions of Mi-Phos M-5 Neutralizer, should be made by making the product into a slurry prior to adding.

1. Let it react for 15 minutes.

2. Perform another Iron check and repeat procedure if required.

Best operating temperature to perform this procedure is between 200°F and 210°F. Let the sludge created by this procedure settle prior to running any production.

Waste Disposal

Wear protective equipment during cleanup of a spill or leak. Absorb with an inert material such as sand, earth, or vermiculite. Dispose of residue consistent with federal, state, and local regulations.

Mi-Phos M-5 Neutralizer is for industrial use only. Read Safety Data Sheet and product label before using. Also, follow supplier’s recommendations for all other chemicals mentioned in this technical bulletin.

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Caution

Avoid contact with eyes or skin. Do not swallow. Avoid breathing dust or mist. Use with adequate ventilation.

When handling or using Mi-Phos M-5 Neutralizer or its solutions, wear rubber apron, rubber boots, rubber gloves, chemical safety goggles, and face shield. Wash thoroughly after use. Wash clothes before reuse. Store in tightly closed containers away from feed and food products.

In case of skin contact: immediately flush with large amounts of water for at least twenty minutes. In case of eye contact, immediately flush with large amounts of water for at least twenty minutes and call a physician. If swallowed, call a physician immediately. If inhaled, remove victim to fresh air and call a physician.

Our People. Your Problem Solvers.

For more information on this process,
please call us at 203.756.5521 or email: techservice@hubbardhall.com

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