Product Bulletin
Product Name: Phos & Clean HS-222
Product Code: 2201930
Revision Date: February 12, 2024

Phos & Clean HS-222

STEAM & CLEAN PHOSPHATE TREATMENT. HS-222 is a HIGH SOLIDS metal cleaner and iron phosphate treatment for use in steam cleaners, pressure wash-wand units, and soak tanks. Excellent grease, oil, and soil removal.

HS-222 provides paint and coating preparation which bonds and enhances corrosion resistance of large hard to finish products. For use on all metals of steel, zinc, galvanize, and aluminum.

HS-222 meets all specifications requiring a cleaner/iron phosphate treatment. Coating weights of 40-75 mg/ft. (9/04) HS -222 meets requirements of spec AMS-2480-F., MIL Spec TTC-490 TYPE I.

Features & Benefits

Rapid cleaning and providing an amorphous iron phosphate coating.
Easily removes difficult oils, greases, smut, light rust and films.
MILDER TO EMPLOYEES AND NO STRONG ODORS.
Liquid which is easily mixed into feeders and mixing valves.
Provides superior corrosion resistance and bonding of paints.
Attacks difficult smut and surface residues.

Can be used on steel, aluminum and zinc galvanize.
Meets requirements of government and automotive specification

Physical Data

Specific gravity	1.148
Product Type	Liquid
PH	~4.0
LBs/Gal	9.57
Foam, 0=Low 9=High	9
Shelf Life Years	10 Years
Freeze Information	Not Damaged by Freezing

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Operating Conditions/Typical Processing

3 STAGE CLEAN & COAT PROCESS:

1) Air “blow-off” unit to be cleaned and phosphate coated. (Surface Dust)
2) Apply HS-222 at: Steam Wand: 1/2-3% for 30-120 sec., 150-212 deg.F.
   Soak(Steel) 3-5% for 2-5 minutes, pH 4.5-5.5 @ 115-150 deg.F.
   Soak(Aluminum) 3-5% for 2-5 minutes, pH 4.0-4.5 @ 115-150 deg.F
3) Apply evenly to the surface. If items are large start at the bottom.
4) (OPTIONAL) Rinse with warm water and dry completely to prevent rusting or oxidation. Note a sealer rinse can be used such as NCS-100.
5) Dry

Packaging

Container Type	POLY
Net Units	526
Tare Wt.	25 Lb
Gross Wt.	553
DOT_NAME	Not regulated by DOT
DOT Hazard	Not Regulated
Tariff ID:	2835.22.00

Use Parameters

Concentration Range	2-5% by volume
Temperature Range	120-212 F.
Time Range	30-120 seconds
Agitation	As necessary

Waste Disposal

NEUTRALIZE PH, REMOVE FATS, OILS, GREASE AND HEAVY METALS

Holding Tank Materials of Construction:

ACID RESISTANT, STAINLESS, OR POLY

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Testing, Operating, & Trouble Shooting Data

Dropper Test: Order Test Kit #100

1) Take A 5 Ml Sample
2) Add 3-5 Drops Of Phenol Indicator
3) Add Drop By Drop Of 1.0n Naoh, Counting The Drops Until The Color Changes To A Permanent Pink.
4) The # Of Drops Required Divided By 2 = % By Volume
   10 Drops = 5%
   8 Drops = 4%
   6 Drops = 3%
   4 Drops = 2%

Titration Procedure 9/10

1) Make Sure The Ph Is Within Operating Range
2) Take A 10ml Sample,
3) Add Indicator #1 (phenolphthalein Indicator)
4) Titrate With 0.1n Naoh.
5) The # Of Mls Multiplied By A Factor Of 0.6 = % By Volume.
   Target 3-5% Typical

Ph Targets (immersion & Recycle Systems) Target 4.5-5.4

Maintain Ph Below 5.4
**a New Tank Will Have A Lower Ph, Typically 3.5-4.0. Allow Ph To Drift Upwards By Processing Work. Once The High End Range Has Been Achieved Add Hs-222 To Lower Into The Typical Operating Range Of 4.5-5.0

Neutralization Of Hs-222 (disposal)

To Neutralize A 5% Solution Of Hs-222 From A Ph Of 5.0 To:

To A Ph Of 7.0: Add ½ Gallon Of Ph Adjuster #14 Per 100 Gallons Of Working Solution Of Hs-222 (@ 5% With A Ph Of 5.0)
To A Ph Of 8.0: Add ¾ Gallon Of Ph Adjuster #14 Per 100 Gallons Of Working Solution Of Hs-222 (@ 5% With A Ph Of 5.0)

**it Is Best To Add Small Increments Of Diluted Ph Adjuster 14 Slowly And Check The Ph As You Go. This Will Help Prevent Overshooting

Corrective Actions to Correct Flash Rusting During Iron Phosphatizing

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When Applied in Spray Wand / Steam Wand Applications (3-2014)

1) Ph Of Solution Exiting the Wand Should Be in The Range Of 4.6 – 5.6 Preferred Ph When Doing Cast Iron or Fresh Machined Steel Would Be 5.0 -5.6
2) Concentration Of the Iron Phosphate Should Be Checked and Feed Rates Adjusted to Allow for Proper Use Rate. Low Concentrations May Provide Detergency but May Not Provide the Adequate Level of Phosphate Material to Provide a Rust Controlling Conversion Coating. Maintain And Test for Concentration. Typically, 1 ½ - 3% Is Used for Wand Applications.
3) High Volume Nozzle Should Be Used Wherever Possible. It Is Important to Provide a Flooding Stream to The Surface to Assure That Adequate Liquid Is on The Metal to Provide the Conversion Coating. Steam Or Light Mist Will Accelerate Rusting. Liquid Must Be on The Surface to Provide the Chemical to React with The Metal.
4) When Possible (Or If Needed) A Flash Rust Resistant Rinse Should Be Used. Materials Such as Poly Film 2010 2 ½ - 1% Applied to The Metal Surface as A Rinse Will Stop Any Latter Rusting Prior To Paint or Top Coatings.
5) When Processing Large Surfaces with A Wand, Always Start At The Bottom And Work Up. This Will Substantially Eliminate Streaking of The Surface. This Procedure Will Provide the Highest Level of Surface Quality and Appearance.
6) For Fresh Shot Blasted Cast Iron, It May Be Necessary To Apply Poly Film 2010 2 ½ - 1% Anti-rust To The Raw Metal Surface Before Attempting To Phosphate Coat The Metal. Cast Iron Is A Heat Sink And Does Not Raise In Temperature Fast Enough In Some Cases To Stop Light Flash Rust.

Notes: Cast Iron Can Presents the Most Difficulty Considering It’s A Very Active Surface After Fresh Metal Shot Blasting

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Other Information

It is important that the OSHA DATA, "Material Safety Data Sheet" be carefully read and reviewed with the users of this product. OSHA data is required to be posted in the work area by law.

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