Product Bulletin

Product Name: Laserguard HFP
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Laserguard® HFP

Laserguard HFP is a chrome-free, liquid product that is added to a water rinse to prevent tarnishing, staining, green salt formation, pit corrosion, finger marking and spotting-out of copper surfaces. It is used in conjunction with the laser pickling system in copper and brass milling applications.

Laserguard HFP is ideally suited for application in the final water rinse (still) following the copper plating or pickling process because it will preserve the fresh appearance for weeks, even under high humidity storage conditions.

Laserguard HFP solutions may be used to protect copper, brass or their alloys.

The barrier film produced by this solution is completely invisible and has many times the corrosion resistance of bare copper. It will withstand 200 hours exposure to tropical humidity conditions without discoloration, whereas bare copper will start to corrode after one hour.

Note: Laserguard HFP is not recommended for protecting copper surfaces against outdoor exposure. It should only be used on work that is stored indoors.

Features & Benefits

Highly concentrated	Low storage footprint
Versatile	Effective on all copper-based alloys
Suppresses fingerprints	Less rejects
Low surface tension	Less drag-out reduces dry time

Operating Conditions

Concentration	0.1% – 1.0%
Temperature	Ambient – 140°F (60°C)
Immersion Time	5 – 45 sec
Tanks	Stainless Steel, fiberglass, Polyethylene, Polypropylene, or rubber lined steel tanks. Plain Steel tanks will tend to rust and, consequently, interfere with the function of the inhibitor.

Heating Coils	Stainless Steel or copper or copper-plated steam coils.
Ventilation	Recommended for heated solutions.

Consumption rate

One gallon of a 1% by volume Laserguard HFP solution will treat approximately 500 ft^2 of metal surface.

Operation of Laserguard HFP

The work should be immersed for a minimum of 30 seconds or sprayed in a room temperature solution and then dried. Operating the Laserguard HFP solution at 140°F will reduce the immersion time to an average of 5 to 10 seconds and facilitate drying of the work.

Note: Water rinse after the Laserguard HFP solution will reduce the degree of protection obtained.

A protective film will not form on unclean surfaces (water-break / hydrophobic surface), therefore; the work entering the Laserguard HFP solution should be wet and water-break free.

Control Method

The control procedure below uses the Hach Triazole Kit #2167500.

1. Insert the Benzotriazole color disk into the comparator.
2. Take 3 mL, from your working bath, and add to a 250 mL volumetric flask.
3. Fill to 250 mL mark with DI Water.
4. Rinse the 25 mL glass bottle from the Hach Kit, with the diluted bath solution.
5. After rinsing, fill the glass bottle to the 25 mL mark with the diluted bath solution.
6. Add 1 Triazole Powder Pillow from the Hach Triazole Kit.
7. Swirl to mix.
8. Place the glass bottle with test solution into the Hach Triazole Kit case storage unit and insert the UV Lamp. Run UV Lamp for 5 minutes.
9. If no yellow color is detected, you need to add 1% by volume of Laser Guard HFP to replenish your bath.
10. If there is a color change to yellow, rinse and fill one plastic tube with the solution. Place into the inside slot of the comparator.
11. Rinse and fill the second tube with the diluted bath solution. Place into the outside slot on the comparator.
12. Hold comparator so that there is a light source behind the tubes. Rotate the disk until the colors match.
13. Use the following chart to determine the Laserguard HFP bath concentration.

% Laserguard HFP	ppm Benzotriazole
0 - 0.25	0
0.35	1
0.50	2
0.65	3
0.80	4
1.00	5
1.25	6
1.50	7
1.75	8
2.00	9
2.35	10
2.70	11
3.00	12
3.40	13
3.80	14
4.25	15

If you do not have a Hach Triazole Test Kit you can control your Laserguard HFP bath by observing the work coming out of the solution. Failure of the solution to "break" cleanly from the metal surface will indicate that the concentration of Laserguard HFP is low. Therefore, an addition of 1/2 percent by volume of Laserguard HFP should be made at this point.

Waste Disposal

Laserguard HFP consists of organic chemicals dissolved in a solvent-water solution and may contain metals processed through the operating solution. Consult local agencies regarding waste effluent regulations.

Caution

Laserguard HFP contains organic materials dissolved in a solvent-water solution. Do not get in eyes, on skin, or on clothing. Always wear goggles and rubber gloves when handling Laserguard HFP solutions. Use with adequate ventilation.

Keep Laserguard HFP away from sources of heat, sparks and open flame. Avoid contact with oxidizing agents as fire may result from such contact. Keep container tightly closed in a cool area and protect container from physical Damage.

Avoid prolonged or repeated contact with skin. Skin contact may defat skin or cause skin irritation.

In case of contact, immediately flush skin or eyes with plenty of cool water for 15 minutes; for eyes, get immediate medical attention. Remove contaminated clothing and wash before re-use.

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