Green-Bond Trust

Green-Bond Trust is designed to replace iron and zinc phosphate on steel and galvanized substrates. Green-Bond Trust will produce a conversion coating on aluminum meeting AAMA 2604 and 2605 guidelines with the proper paint or powder coating. Green-Bond Trust is a uniquely formulated conversion coating resulting in a microcrystalline lattice structure that consists of thin tightly interlocked layers on the substrate surface. Green-Bond Trust differentiates itself as "SAM", rapidly self assembling molecule. Whereas iron phosphate initiates at specific sites on the substrate accounting for the "window" effect and zinc phosphates precipitate as crystals.

Features/Benefits

- Effective on aluminum, galvanize, and steel
- Reduced Cost of Energy; operates at ambient temperature as low as 10 ^{o}C (50 ^{o}F)
- Phosphate-free and NPE-free
- RoHS Compliant
- Meet AAMA 2604 and 2605 guidelines
- Standalone product for aluminum application
- Conjunction Additive for steel and galvanize – Green-Bond Additive
- Eliminates the need for environmental hazardous chrome conversion coatings
- Will not scale
- Easier to maintain; less sludge, easy to recharge, little or no nozzle cleaning
- Lower maintenance cost, less downtime, longer bath life, and more consistent quality
- No "flash corrosion"*

Green-Bond Trust can be used to replace a four-stage or more phosphate system and can be used in either spray or immersion systems. The parts will need a cleaning stage prior to Green-Bond Trust. **A clean part is essential for Green-Bond Trust**. Also the parts will need to be rinsed following Green-Bond Trust coating. A typical five stage system would be 1. Clean (Aqua Cleaner) 2. Rinse (Tap Water) 3. Green-Bond Trust 4. Rinse (Tap Water) 5. RO/DI Water

Normal Operating Conditions

Concentration	1 to 3 % by volume Green-Bond Trust
Temperature	Ambient to as low as 10 ^{o}C (50 ^{o}F)
Treatment Time	15 to 60 seconds
Nozzle Pressure	5 to 15 psi
pH	4.5 to 5.3

Green-Bond Trust can be adjusted with Aqua pH adjuster to raise the pH within the range of 4.5 to 5.3. Normal virgin baths will start with a pH between 2.5 and 3. The bath will need to be slowly raised into the proper operating pH range. Green-Bond Additive

Green-Bond Trust

should be used on steel and galvanize substrates as a water conditioner to enhance the performance of Green-Bond Trust where the water may be problematic.

Maintenance

Customers using this process typically dump their baths every 1- 2 years. There will be no sludge, just a little silt in the tank, which can be rinsed out with a hose. Green-Bond Trust bath is controlled by pH and spectrophotometric analysis.

Analysis of Green-Bond Trust

This procedure can be used to determine the operational level of active ingredients in Green-Bond Trust.

Apparatus:
5 ml Volumetric Pipette
10 ml Graduated Cylinder
Pocket Colorimeter Measuring Cell
Pocket Colorimeter II, 420 nm (Supplied by Aqua Bond)
Cellulose Nitrate Filter Paper, 0.45 µm, 4.7 cm (Supplied by Aqua Bond)
Filter Holder (Supplied by Aqua Bond)

Reagents:
Green-Bond Trust Acid (66 Bé Sulfuric Acid diluted 50 / 50 with DI or RO water)
DI water
Hydrogen Peroxide (3 % strength)

Procedure:

1. Pipette 5 ml of DI water into the measuring cell.
2. Add 2 ml of Green-Bond Trust Acid to the cell. Swirl to mix.
3. Filter 5 ml of Green-Bond Trust solution.
4. Add 2 ml of filtered Green-Bond Trust solution to the cell. Swirl to mix. The solution should be colourless or free of solids at this point.
5. Add 2 ml of Hydrogen Peroxide. Shake the measuring cell for 60 to 90 seconds. A yellow colour will develop.
6. Zero the pocket colorimeter using 10 mL of DI water in a clean measuring cell.
7. Place the measuring cell to be tested into the instrument and press “read”.
8. Record the number displayed on the colorimeter.

Analysis of Green-Bond Additive

This procedure can be used to determine the operational level of Green-Bond Additive.

Green-Bond Trust

Apparatus: 5 ml Volumetric Pipette, Type A
10 ml Graduated Cylinder
Phosphate Colorimeter Analysis Cell
Phosphate Colorimeter Test Kit, 115 Vac UV Lamp (Supplied by Aqua Bond)
Cellulose Nitrate Filter Paper, 0.45 µm, 4.7 cm (Supplied by Aqua Bond)
Filter Holder (Supplied by Aqua Bond)

Reagents: Potassium Persulfate Pillow (Supplied by Aqua Bond)
PhosVer 3 Powder Pillow (Supplied by Aqua Bond)
DI water

Procedure:

1. Filter 1 ml of Green-Bond Trust solution and dilute it to 50 mL with DI water.
2. Fill an analysis cell to the 10 ml mark with the diluted sample from Step #1. Label it as "Blank".
3. Fill another analysis cell to approximately 25 mL with the diluted sample from Step #1. Label it as "Bath".
4. Add the contents of one Potassium Persulfate Pillow into the analysis cell labelled "Bath" and swirl to mix.
5. Insert the ultraviolet lamp (UV) in the "Bath" cell and turn it on for 10 to 15 minutes.
6. After 10 to 15 minutes has elapsed, turn off the UV lamp, rinse it off with DI water, and dry it (do not touch the lamp).
7. Pour out 10 ml from the "Bath" sample into another analysis cell.
8. Add the contents of one PhosVer 3 Powder Pillow to the 10 mL "Bath" sample from Step #7. Swirl to mix.
9. Wait two minutes for full colour development.
10. Place the "Blank" from Step #2 into the instrument, tightly cover, and press ZERO. The display should read **0.0 mg/L PO_4**.
11. Take the "Blank" out of the instrument and replace it with the "Bath" sample from Step #9.
12. Press READ and multiple the reading by 5. Record result.

Equipment

Tanks and equipment may be constructed of mild steel if used in conjunction with Green-Bond Additive for steel and galvanize substrates. Feed pumps and transfer lines coming into contact with Green-Bond Trust should be fabricated from appropriate acid resistant materials.

Product Storage Information

Green-Bond Trust

Green-Bond Trust freezes below 0 ºC (32 ºF). If the product freezes, simply thaw in a warm place and stir thoroughly before use.

* The product will appear as flash rust under the following circumstances;

1. If the product dries on the surface of a part it will typically look like flash rust. In reality it is the acid salt left over from the bath. It is very similar to boiling a pot of water to the point where only the salts exist.

2. Operating the bath pH too low or heating the bath will cause the reaction to go so fast that it can't form the microcrystalline structure in an orderly fashion and will yield rust like coating.

3. Substrate chemistry – the thin coating of Green-Bond Trust can act like a prism on some steels. The refraction of light through the coating may give a gold, blue, or purple appearance. Many people confuse the gold coating with rust.

The data and statements contained in this bulletin are based on testing information and are believed to be accurate and reliable. This bulletin is not a Guarantee or Warranty, express or implied regarding the products use. The product is sold on the condition that the purchaser will do their own tests to determine the suitability of the product in a particular application.

READ THE SDS BEFORE USING THIS PRODUCT