



BRITEGUARD™ PITCHBLACK TC-II™

- ***Trivalent chromate.***

- ***120 plus hours of protection.***

- ***Glossy, non-iridescent, non-conductive coating.***

- ***Good adhesion and hardness.***

- ***Economical to make-up and maintain.***

- ***Consistent, deep, rich black color.***

TRIVALENT BLACK CHROMATE CONVERSION COATING FOR ZINC

PITCHBLACK TC-II is a unique two part Trivalent Black Chromate System that is designed to provide a uniform, consistent black deposit on electroplated zinc deposits. It has been specifically formulated for high production loads, where ease of use, consistent color and a high degree of corrosion protection are desired. With proper control and when used in conjunction with *BriteGuard RP-82 Post Treatment Process*, *PITCHBLACK TC-II* can provide in excess of 120 hours of protection before the appearance of white corrosion.

PITCHBLACK TC-II provides a coating that is glossy, non-iridescent and non-conductive, with better adhesion and hardness than competitive black chromate coatings.

PITCHBLACK TC-II is a silver-free product formulated to minimize fading or discoloring. It is economical to make-up and maintain, and offers exceptionally long life in production.

OPERATING DATA

	<u>Alkaline Zinc</u>	<u>Chloride Zinc</u>
PITCHBLACK TC-II Part 1	1-2%/vol.	3%/vol.
PITCHBLACK TC-II Part 2	5%/vol.	5%/vol*.
Temperature	75-90° F. (23-32° C)	Same
Time	30 sec	30 sec.
pH	1.5	1.3

** In many cases a make up of 5-6% by vol. is recommended. If work appears dull or olive drab in color, add additional Part 2*

PROCESS CYCLE

1. Zinc Plate, .0002" minimum.
2. Cold water rinse.
3. Activate, 0.5%/volume nitric acid.
4. Cold water rinse.
5. **PITCHBLACK TC-II BLACK CHROMATE.**
6. Cold water rinse.
7. **BRITEGUARD RP-82 POST-DIP*.**
8. Dry (160°-180° F).

** Necessary for proper chromate performance.*

SOLUTION CONTROL

The best results are obtained when routinely performing the following; 1) Performance solution maintenance, 2) pH solution maintenance, and 3) Analytical solution maintenance.

Performance Solution Maintenance

This is accomplished on the production line by the operator, whenever production is run. It consists of keeping track of the time required to complete the coating. The optimal dip time is 5-10 seconds past the time when no observable color change takes place when viewed under a strong light. The best coatings are produced when this occurs in 40 seconds. As the dip time increases additions of 0.5%/volume **PITCHBLACK TC-II Part 1 and Part 2** will increase the deposit speed of the coating.

pH Solution Maintenance

pH should be checked often with a calibrated pH meter and maintained upward by sodium hydroxide or ammonia or down by **PITCHBLACK pHa**.

PITCHBLACK TC-II PART 1

- 1) 10 ml sample into flask.
- 2) Add 100 mls of D.I. water.
- 3) Add 10% caustic solution to raise pH to 10.0-11.0.
- 4) Add 2 ml 35% Hydrogen Peroxide and heat solution for 20-30 min near boiling.
- 5) Cool solution and add 25-50 ml of DI water.
- 6) Add 10 mls of concentrated sulfuric acid.
- 7) Add 10 ml of 10% Potassium Iodide.
- 8) Titrate w/0.1N sodium thiosulfate to straw color.
- 9) Add 1-2 ml of 1% Starch Solution.
- 10) Continue titration with 0.1N Sodium Thiosulfate until blue color disappears.

Calculation: Mls of thiosulfate x 0.25 = % by volume **PITCHBLACK TC-II PART 1**.

PITCHBLACK TC-II PART 2

To be accomplished via Atomic Absorption Spectroscopy.

Maintain at 900-1200 mg/liter. An addition of 1-1.5% of **PART 2** will raise iron content by 300 mg/liter.

PROCESS TIPS

- **BRITEGUARD RP-82 POST-DIP** must be used to insure both chromate performance and color.
- During normal operation the **PART's 1 & 2** are consumed and the dissolved zinc and pH rises making the reaction time longer and longer. Best coatings are produced in 15-50 seconds. As the dip time increases (over 50 seconds) a typical maintenance addition of 0.5%/volume **PITCHBLACK TC-II Part 1 and Part 2** should be made and will increase the speed of the coating.
- pH should be checked often with a calibrated pH meter and maintained by very small additions of nitric acid.
- Parts basket should be shaken or mechanically agitated initially, then not at all for the last 10-15 seconds.
- Different part configurations may require different process cycles. The **A BRITE TECHNICAL SERVICE LABORATORY** can assist in determining the proper process cycle for each specific operation.
- pH is important! Keep at recommended levels. When raising pH, be sure to use rayon grade caustic or better.
- The corrosion resistance that **PITCHBLACK TC-II** offers will drop as the level of zinc rises. For high performance always keep the zinc content below 15,000 to 20,000 p.p.m. This is accomplished by decanting of the solution and replenishment with D.I. water and **PITCHBLACK TC-II PART 1 & 2**.
- Hot water rinsing should not be used as it will tend to dull the finish and decrease corrosion resistance of the chromate.
- Rinse, rinse, rinse, rinse, both before and after chromating, this is a key to success.
- Do not allow solution to become depleted or almost depleted. Maintain with small routine additions determined via analysis of bath with a correlation of the amount of work going through the line.
- Lower pH with dilute nitric acid, raise with dilute sodium hydroxide.
- Acid activation before blackening helps the removal of organic films, chlorides and cyanide. Dip also removes passive films that form on baked zinc prior to blackening. A 0.2-0.5% nitric acid pre-dip is recommended.
- Always allow chromate to "age" for at least 24 hours in order for corrosion or abrasion tests to be meaningful.

EQUIPMENT

PVC, Koroseal or cross-linked polyethylene tanks are satisfactory. Teflon coils are recommended. Ventilation is normally not required. Dipping baskets should be polyethylene. *Do not use stainless steel.* Metal contact can hinder blackening process.

STORAGE/HANDLING

PITCHBLACK TC-II is an industrial chemical. Keep containers closed when not in use and away from combustible materials. Avoid contact with skin and eyes. Wear proper protective clothing, rubber boots, gloves apron and face shield. In the event of contact, flush area with water and contact a physician. ***Refer to the Material Safety Data Sheet for more complete information before using this product.***

WARRANTY

The information presented herein, while not guaranteed, is to the best of our knowledge true and accurate. No warranty or guarantee expressed or implied is made regarding the performance of any products, since the manner of use is beyond our control. No suggestion for product use nor anything contained herein, shall be construed as a recommendation for its use in infringement of any existing patent, and we assume no responsibility or liability for operations which do infringe any such patents. The above includes confidential and proprietary information of **A BRITE** and is furnished to you for your use solely on products or processes supplied to you by us.