



Black Zinc

Product Code: 2232009

Revised Date: 2.23.2018

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DESCRIPTION

Black Zinc is an acidic powdered product developed to be mixed with nickel(II) sulfate hexahydrate to impart a black conversion coating of zinc die casting, galvanized stock and electroplated zinc parts. The black coating serves as a base for organic coatings (lacquers, paints, waxes and oils) and also provides an esthetic appeal.

FEATURES

- 80° F to 100° F temperature range (27 to 37° C)
- Blackens a wide range of zinc alloys
- Simple plastic tanks or pails

TYPICAL APPLICATIONS

- Plated zinc
- Cast zinc: Zamac series
- Galvanized surfaces

The coating imparted by the **Black Zinc** bath will not withstand outdoor use. If such an application is intended, then the parts must also be given a clear lacquer, oil or wax coating.

The black coating attained in the **Black Zinc** bath will be a dull jet black. A very glossy black coating is obtained on buffed work, such as buffed zinc die-casting.

The **Black Zinc** bath reacts with the zinc to form the black coating consequently the resultant black coating is very adherent and will resist temperatures up to 350° F. Because of this reaction between the **Black Zinc** solution and the zinc surface it is necessary that zinc plate thickness be of the order of 0.3 mil, if plated work is to be blackened.



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OPERATING CONDITIONS

Concentration:	Black Zinc	0.89 lbs/gal (96 g/l)
.....	Nickel(II) Sulfate Hexahydrate	0.11 lbs/gal (24 g/L)

Temperature:80° to 100° F (27 to 33° C)

While the operating temperature may range between 80 to 100° F, with the optimum being 85° F. The highest blackening speed is achieved at 90° F.

Operating temperatures below 80° F will result in non-uniform colors-black with iridescent colors. Temperatures above 100° F can cause the coating to be gray rather than black and also will deplete the solution rather rapidly. In order to not deplete the solution's life, it is important not to exceed 100° F.

Immersion time:5 to 20 minutes

This time will be dependent upon the solution temperature and age of the bath. Agitation of the work or of the solution accelerates the rate of blackening.

Immersion times longer than 30 minutes will result in loss in color, in that the coating will be "steely" in appearance rather than jet black. Short immersion time less than 2 to 3 minute will produce an iridescent color.

Agitation:recommended - solution or work movement
Agitation accelerates the formation of the black coating.

pH:operating range 3.9 to 5.5

As the **Black Zinc** solution is being used the pH will fall. At a pH of 3.7 the **Black Zinc** solution will attack the zinc die-castings and above 5.5 black coating will not be as intense. The addition of ammonium hydroxide to the **Black Zinc** will raise the pH of the solution. Sulfuric acid will lower the bath pH.

Tank ventilation:recommended

Tanks:koroseal, lined steel or polypropylene

Heating units:karbate, teflon or tantalum





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BATH CONTROL

Operate the bath until exhaustion and then make up a fresh bath. Should the configuration of the work be such that there is an excessive solution drag-out then additions of 3.2 oz/gal of **Black Zinc** and 0.8 oz/gal of nickel(II) sulfate hexahydrate should be made to the solution when the blackening time becomes longer than 30 minutes.

BATH MAKE-UP

Fill the tank half full with cold water. Add the required pounds of **Black Zinc** and Nickel(II) Sulfate Hexahydrate, mix thoroughly and then fill tank with water to the final level.

PROCESS CYCLE

1. Immersion clean, 10% Aquaease™ SL 80, 150 to 160° F.
2. Cold water rinse.
3. Activation - 30 second immersion, Acid Salt W, 4 to 6 oz/gal, room temperature.
4. Cold water rinse.
5. Blacken - **Black Zinc**, 80 to 100° F, 5 to 20 minutes.
6. Cold water rinse.
7. 1 to 5-minute immersion in a chromic acid solution at 0.1 to 0.2 oz/gal, room temperature.
8. Hot water rinse and dry.

The purpose of the chromic acid solution is to neutralize and dissolve any salts which remain on the work's surface.

Note:

1. The chromic acid immersion is usually only inserted in the above cycle when processing zinc die castings.
2. Do not allow the chromic acid solution to enter the **Black Zinc** bath, in that, its presence will be an inhibiting action on the **Black Zinc** bath.





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CONTROL

Avoid contact with skin and eyes - wear goggles and rubber gloves when handling the **Black Zinc**.

In case of contact, flush exposed areas with cool water for 15 minutes; for eyes also get immediate medical attention.

Avoid breathing the dust from the **Black Zinc** powder. A respirator is recommended when handling the material.

WASTE TREATMENT

Consult the local authorities in your area for the disposal of the **Black Zinc** solution.

WARRANTY

THE QUALITY OF THIS PRODUCT IS GUARANTEED ON SHIPMENT FROM OUR PLANT. IF THE USE RECOMMENDATIONS ARE FOLLOWED, DESIRED RESULTS WILL BE OBTAINED. SINCE THE USE OF OUR PRODUCTS IS BEYOND OUR CONTROL, NO GUARANTEE EXPRESSED OR IMPLIED IS MADE AS TO THE EFFECTS OF SUCH USE, OR THE RESULTS TO BE OBTAINED.

