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Product Bulletin

Product Name: Black-Magic RT Z40
Product Code: 2260008
Revision Date: March 10, 2025

Black-Magic® RT Z40

Black-Magic RT Z40 is a room temperature solution for blackening zinc.

Features & Benefits

Blackens a wide range of alloys	Cast, galvanized, and plated
ROHS and REACH compliant	Product good for use in Europe

Operating Conditions

Equipment

Acid-resistant plastic, plastic-lined or rubber-lined tanks, tumbling barrels, baskets and racks must be used with Black-Magic RT Z40 and other acidic solutions. Mild steel may be used for the cleaning, rinsing and sealant tanks.

Parts to be blackened must be thoroughly cleaned and deoxidized before blackening to ensure a uniform and adherent black finish. Zinc plated surfaces must be free of chromate conversion coatings which can be removed with an alkaline soak cleaner.

Parts should be cleaned with an appropriate Hubbard-Hall's alkaline soak cleaner to clean and etch or to clean without etching. Part cleaning usually requires a minimum of 5 minutes at a temperature range of 160°F to 180°F.

Following cleaning and an intervening cold-water rinse, surfaces are deoxidized and activated at room temperature with an appropriate acid solution for cast or plated surfaces. Immerse parts for 30 to 90 seconds with plated surfaces and for 5 minutes with cast surfaces. Freshly plated surfaces will require only an acid activation for 30 to 90 seconds.

Solution Makeup

Black-Magic RT Z40 is used at a concentration of one (1) part concentrate (10%v/v) to nine (9) parts water at room temperature.

General Finishing Procedure

1. Clean, deoxidize and activate surfaces as outlined above.
2. Rinse in a bottom-fed, overflowing cold water rinse.
3. Immerse parts in Black-Magic RT Z40 solution for 2 to 5 minutes.
4. Rinse in a bottom-fed, overflowing cold water rinse.

5. To displace the rinse water, seal the finish, enhance the black, and impart corrosion resistance: immerse parts for one to two minutes in the appropriate Hubbard-Hall Metal Guard sealant. The ultimate depth of black will not develop until the sealant is completely absorbed into the Black-Magic RT Z40 surface and this may take several hours. A sealant must be applied before judging the depth of black.

Note: Rotating perforated plastic barrels are recommended for processing large volumes of small parts. If dip baskets or racks are used, the parts should be agitated when first introduced into each solution and water rinse to break air bubbles and to assure uniform contact with all surfaces.

Solution Replenishment and Monitoring

With time and usage, the Black-Magic RT Z40 working solution will become depleted and must be replenished with Black-Magic RT Z40 concentrate. The concentration of the solution is monitored by means of the chemical titration procedure in the control procedure section.

The frequency of addition depends on the amount of work processed. It is recommended to keep the working solution at least 70% full strength. Frequent small additions are recommended.

Simulated Pewter and Brass Finishes

Following Step 4, force dry the blackened parts in a heated spin drier, oven, or cob meal. Relieve or "highlight" the blackened surfaces by buffing, scratch brushing barrel or vibratory burnishing. A simulated pewter finish can be obtained by top-coating the "highlighted" finish with a clear lacquer. A simulated brass finish is produced by top-coating with a transparent gold lacquer.

Test Kit Method

Equipment required
4 oz Mixing Bottle
4 Syringes (5 mL)

Chemicals required
2 %w/w Sodium Bicarbonate Solution
0.5 %w/v Soluble Starch Indicator
4 oz 0.1 N Iodine Solution

1. Transfer 5 mL of the Black-Magic RT Z40 working solution into the mixing bottle.
2. Add 5 mL of clean water
3. Add 4 mL 2 %w/w Sodium Bicarbonate solution.
4. Add 4 mL starch indicator.
5. Add 0.1 N Iodine solution dropwise until a color change lasting 30 seconds is reached. The color change is from clear green to dark blue.
6. Record the number of drops used.

Calculation

Concentration = # Drops 0.1 N Iodine x 0.50

Note: A new 10% by volume Black-Magic RT Z40 solution would require about 20 drops of 0.1 N Iodine solution to produce the deep blue end point.

Caution

The Black-Magic RT Z40 solution is mildly acidic. Avoid contact with eyes, skin, and clothing. Wear eye protection (glasses or face shield), protective gloves and rubber apron when mixing solutions and while working with the solution. Avoid contact of Black-Magic RT Z40 solutions with alkaline materials. DO NOT mix Black-Magic RT Z40 with any other chemicals or solutions.

Read and understand Safety Data Sheet when working with Black-Magic RT Z40 solution.

Our People. Your Problem Solvers.

For more information on this process,
please call us at 203.756.5521 or email: techservice@hubbardhall.com

Hubbard-Hall holds certifications for **ISO 9001:2015**, Responsible Distribution, as accredited by the **ACD** (Alliance for Chemical Distributors) and as a **Women-Owned Small Business**, as well as maintaining an association with **Omni-Chem**[136].