Product Bulletin

Product Name: Black-Magic RT S26
Product Code: 2260009
Revision Date: January 2, 2024

Black-Magic® RT S26

Black-Magic RT S26 is a room temperature blackening solution predominately used for low smut black on cast iron; however, it can be used to blacken steel or tool steel.

Features & Benefits

Maintains black over time with castings and high silicon alloys	Blackens difficult alloys
ROHS and REACH compliant	Product good for use in Europe

Operating Conditions

Equipment

Acid-resistant tanks, tumbling barrels, baskets, hooks and racks must be used with Black-Magic RT S26 and other acid solutions. PVC, plastic lined or rubber lined tanks and plastic-coated hooks and racks are suitable. Mild steel may be used for the cleaning, rinsing and sealant tanks.

Surface Preparation

Items to be blackened must be thoroughly cleaned and deoxidized. Some experimentation should be done with sample parts to determine the degree of cleaning and activation required to produce a uniform black finish. Parts to be blackened should be protected from rust during fabrication and in-plant storage prior to blackening to minimize surface preparation.

Cleaning

The type and degree of surface soil will determine the length of time required for cleaning and the number or cleaning steps and cleaning temperature. Lightly soiled parts can be cleaned with the appropriate Hubbard-Hall cleaner. Heavily soiled parts may require a longer immersion times and temperatures upwards of 180° F.

Deoxidizing

Surface rust, if present, should be removed with 5 to 20% solution of Acid Brite 40 at room temperature. Immersion times will normally range from one to five minutes. Muriatic acid should not be used to remove rust from cast iron. Use Acid Brite 40 only.

Product Bulletin

Product Name: Black-Magic RT S26
Product Code: 2260009
Revision Date: January 2, 2024

Activation

Black-Magic RT Predip S is used as an activator for difficult-to-blacken passive steel surfaces or as a conditioner to enhance the evenness of color between machined and unmachined areas. Black-Magic RT Predip S is normally used at 10% by volume at room temperature. Immersion times will normally range from two to five minutes.

Blackening

Prior to charging a production tank, some experimentation should be performed with properly prepared sample parts, using various dilutions of the RT S26 and different immersion times to determine the conditions required to produce the desired depth of black. As a starting point a 10%v/v solution should be tried. Determine by test, the shortest immersion time necessary to produce the desired depth of black, usually two to three minutes, depending upon the alloy and surface hardness. If the required immersion time exceeds five minutes, the concentration should be lowered to 8% by volume and the immersion time re-evaluated.

On occasion, the steel surface may be too reactive with the 10% by volume solution, resulting in a slight rub off the black finish, if this happens the concentration should be raised and the immersion time re-evaluated.

Finishing Procedure

1. Clean and prepare surface as determined above.
2. Rinse for a minimum of 30 seconds in overflowing cold water to remove residual cleaner.
3. Immerse parts in the Black-Magic RT S26 solution for the length of time necessary to produce the desired depth of black.
4. Rinse for minimum of 30 seconds in overflowing cold rinse.
5. To displace the rinse water, seal the finish, enhance the depth of black and impart corrosion resistance: immerse parts for one to two minutes in Hubbard-Hall's Metal Guard sealants. The ultimate depth of black will not develop until the sealant is completely absorbed into the Black-Magic RT S26 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 solution contact with all surfaces.

Solution Replenishment and Maintenance

The blackening solution is gradually depleted through use but may be replenished indefinitely with periodic additions of the Black-Magic RT S26. The strength of the solution and the amount of concentrate to be added can be determined by titrating with sodium thiosulfate as outlined in the control procedure.

The frequency of additions will depend upon the volume of work processed. For optimum results, the solution should be maintained at 85% of its original strength or better with frequent small additions.

With automatic lines, a bath history should be established immediately after charging the tank by keeping a record of the processed verses the titrated strength to determine the point at which the bath is depleted approximately 10% to 15% and replenishment is necessary. Timed metering pumps triggered by the load are recommended for maintaining a consistent strength. The life and the coverage of the solution will be increased by continuous circulation and filtration.

For more complete operation instructions for the appropriate Hubbard-Hall cleaner, Metal Guard sealants, and Acid Brite 40, please see the individual instruction sheets.

Test Kit Method

Equipment required	Chemicals required
4 oz Mixing Bottle	4 oz 6 N Hydrochloric Acid
2 syringes (5 mL)	8 oz 15% w/w Potassium Iodide Solution
2 syringes (3 mL)	0.5 N Sodium Thiosulfate Solution
	0.2% Soluble Starch Solution

1. Transfer a 5 mL sample of the production bath into the mixing bottle.
2. Dilute with 30 mL water.
3. Add 2 mL 6N Hydrochloric Acid.
4. Add 4 mL of the 15% by weight Potassium Iodide solution.
5. Add 2 mL of 2 % starch solution. The solution will become a dark blue to almost black color.
6. Add the 0.5 N Sodium Thiosulfate solution, from the dropping bottle - drop by drop - counting the drops while swirling the flask.
7. The end point is marked by a sudden change in color from dark black to light brown. Note: Upon standing, the light brown color will turn dark again, but additional Sodium Thiosulfate solution should not be added. The first end point is correct.
8. Record the number of drops used.

Calculations

$$\textit{Concentration} = \#\ \textit{Drops}\ 0.5\ N\ Na_2S_2O_3 \times 0.286$$

Caution

The RT S26 solution is mildly acidic. Avoid contact with eyes, skin, and clothing. Wear eye shields, protective gloves and apron. The solutions are toxic if taken internally.

Product Bulletin

Product Name: Black-Magic RT S26
Product Code: 2260009
Revision Date: January 2, 2024

WARRANTY: HUBBARD-HALL INC. IS NOT RESPONSIBLE FOR THE MISUSE, MISAPPLICATION, OR MISHANDLING OF THIS PRODUCT. SEE THE TERMS AND CONDITIONS OF SALE ON OUR WEBSITE FOR ADDITIONAL TERMS AND CONDITIONS CONCERNING OUR PRODUCTS, INCLUDING BUT NOT LIMITED TO, LIMITATIONS AND DISCLAIMERS OF WARRANTIES AND LIABILITIES.

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].