Product Bulletin

Product Name: Mi-Tique 1791 LB
Product Code: 2300003
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Mi-Tique® 1791 LB

Room temperature blackening and antiquing solution for Sterling silver-, nickel-, and silver-surfaces, and copper alloys. Produces light to blackish brown to black color tones. Specifically formulated for use over very thin, bright brass plating.

Features & Benefits

Molybdenum free	Reduction of hazardous chemicals
US 5, 10B, US 20 Finish	Matching of hardware finishes
Uniform deposition coating	Easily relieved to get varying levels for worn appearance
ROHS and REACH Compliant	Reduction of hazardous chemicals

Operating Conditions

Instructions

The Mi-Tique 1791 LB liquid concentrate is diluted with water and used as an immersion "oxidizing" solution. The color developed and the reaction rate with the various metal surfaces is controlled by varying the concentration and the length of immersion. Prior to charging a production tank, some experimentation should be done with properly prepared sample parts to determine the conditions required to produce the desired finish.

Equipment

Acid-resistant tanks, tumbling barrels, baskets and racks must be used with the Mi-Tique solutions. Plastic, plastic-lined, rubber-lined, glass or stoneware are suitable. Mild steel may be used for the cleaning, rinsing and sealant tanks.

Blackening Silver Surfaces

1. Clean, if necessary, with the appropriate Hubbard-Hall Aquaease cleaner. Mechanically engraved surfaces do not have to be clean if they are blackened immediately after engraving.
2. Rinse thoroughly with cold water to remove residual activator solution.
3. Dilute one (1) part Mi-Tique concentrate with 1 to 3 parts water and determine by test the shortest immersion time required to produce the desired depth of black. The immersion time is controlled by varying the amount of water.
4. Rinse with hot or cold water and force air dry.

5. A variety of attractive antiqued or "highlighted" finishes are produced by buffing, scratch barrel or vibratory burnishing.
6. Apply a topcoat of a wax or clear acrylic lacquer to enhance the depth of black.

Blackening Nickel Plating

1. Freshly plated nickel surfaces should be kept wet with rinse water to prevent the surface from becoming too passive to react with the Mi-Tique solution. The reactivity will depend upon the level and type of brighteners used in the nickel plating and it may be necessary to activate the surface with an acidic or reverse current nickel activator.
2. Rinse thoroughly with cold water to remove residual activator solution.
3. Dilute one (1) part Mi-Tique concentrate with 3 to 9 parts water and determine by test the shortest immersion time required to produce the desired depth of black. Varying the amount of water will shorten or lengthen the immersion time. Interference colors of varying intensity and color from gold to purple will be developed on the surface prior to the desired black. Immersing parts longer than necessary may cause the black finish to fade out.
4. Rinse with hot or cold water and force dry.
5. Apply a topcoat of a wax or clear acrylic lacquer to enhance the depth of black.

FINISHING BRASS, BRONZE, COPPER AND MUNTZ METALS

Surface preparation

1. Rinse thoroughly in cold water.
2. Rinse for 15 to 30 seconds in a dilute solution of the appropriate Hubbard-Hall Acid Salt to neutralize residual alkaline plating solution, which could contaminate the Mi-Tique solution.
3. Rinse thoroughly in cold water.

Wrought alloys and sheet stock

1. Thoroughly clean part with the appropriate Hubbard-Hall Aquaease cleaner, followed by subsequent deoxidizing with the appropriate Hubbard-Hall Acid Salt, or burnish, belt sand, glass bead or sandblast the surface.
2. Rinse thoroughly with cold water to remove residual cleaning solutions or blasting dust.

"Oxidizing", relieving and sealing

1. Immerse pieces, while still wet from preceding rinse, in the Mi-Tique solution for the length of time necessary to produce the desired color. The darker brown shades are obtained with dilutions of 3 to 6 parts water and 2 to 3-minute immersions. Dilutions of eight or more parts water and 1 to 2-minute immersions produce light brown shades. Rotating perforated barrels are recommended for processing small parts. If dip baskets are used, the parts should be agitated when first introduced into the solution to break air bubbles and to assure solution contact with all surfaces.
2. Rinse thoroughly with water. If a hot water rinse is used to accelerate drying, it should be

preceded with a short dip in cold water to minimize staining.
3. Force dry in heated spin dryer, oven or cob meal. Large architectural panels should be wiped dry or blown dry with compressed air. Small parts do not have to be dried if they are to be barrel or vibratory burnished immediately after rinsing.
4. A variety of attractive antiqued or "highlighted" finishes are produced by buffing, scratch brushing, barrel, or vibratory burnishing.
5. A protective topcoat should be applied to enhance the color and give added abrasion and corrosion resistance. The appropriate Hubbard-Hall Metal Guard should be applied to obtain the desired finish.

Solution replenishment and maintenance

The solution is gradually depleted through use but may be replenished indefinitely with periodic additions of Mi-Tique 1791 LB concentrate. The strength of the solution and the amount of concentrate to be added can be determined by titrating with sodium thiosulfate as outlined in Chemical Control Procedure or the strength can be maintained by recording the time of immersion. When the time required to produce the desired color increases, add enough concentrate to reduce the time to your established standard.

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 greater, and frequent small additions are recommended.

With automatic lines, a bath history should be established immediately after charging the tank by keeping a record of the number of loads processed versus 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 of the solution and the coverage will be increased by continuous circulation and filtration. An alternative is to allow the solid by-products of the reaction to settle to the bottom of the tank and transfer the solution to a clean, plastic-lined drum to be retained for recharging after the tank is cleaned.

Titration Method

Equipment Required
25 mL pipette
50 mL burette
Burettes stand
Ring stand
250 mL Erlenmeyer flask

Chemicals required
6N Hydrochloric Acid
15% w/w Potassium Iodide
0.1 N Sodium Thiosulfate
2% w/w Soluble Starch

1. Pipette 25mL of production bath into a 250mL Erlenmeyer flask.
2. Add 75mL water to flask.
3. Add 10mL 6 N Hydrochloric Acid to flask.
4. Add 20 mL 15%w/w Potassium Iodide to flask.
5. Swirl the mixture once, stopper or aluminum foil covered stopper, and store in the dark for 10 minutes.
6. Add 10mL starch solution to give a dark blue green to almost black color.
7. Titrate with 0.1N Sodium Thiosulfate solution until the dark black color changes to a light brown. Please Note: Upon standing, the light brown color will turn black again, but additional Sodium Thiosulfate should not be added. The first endpoint is correct.
8. Record mL used.

Calculation

$$Concentration = mL\ 0.1\ N\ Na_2S_2O_3 \times 0.3448$$

Test Kit Method

Equipment Required	Chemicals Required
4 oz mixing bottle	2 oz 0.5 N Sodium Thiosulfate
2 syringes (5 mL)	4 oz 6 N Hydrochloric Acid
2 syringes (3 mL)	8 oz 15% w/w Potassium Iodide
	4 oz 2% w/w Starch Indicate

A sample of a freshly prepared production bath should always be taken as a control solution prior to running any parts through the bath. If a sample was not taken, a laboratory prepared solution at the same concentration may be used as the control solution.

1. Transfer a 5 mL sample of the production bath into the mixing bottle.
2. Dilute with water to the 50 mL mark.
3. Add 2 mL 6 N Hydrochloric Acid to the bottle.
4. Add 4 mL of the 15% by weight Potassium Iodide solution.
5. Add 2 mL of 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.
8. Record the number of drops used.

Calculation

$$Concentration = \#\ Drops\ 0.5\ N\ Na_2S_2O_3 \times 0.358$$

Caution

The Mi-Tique solution is mildly acidic. Avoid contact with eyes, skin, and clothing. Wear eye shields, protective gloves and aprons.
The solution is toxic if taken internally. Read and understand the OSHA Safety Data Sheet and drum warning labels prior to working with or handling this product.

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