Mi-Tique™ 1791

Room temperature antiquing solution for copper, brass, and Muntz metal, which produces color tones from light Flemish browns and statuary bronzes to blackish browns to black.

Features & Benefits

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

Operating Conditions

INSTRUCTIONS

Mi-Tique 1791 liquid concentrate is diluted with water and used at room temperature 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 immersion time. 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.

SOLUTION MAKEUP AND COLOR DEVELOPMENT

Prior to charging a production tank, some experimentation should be done with properly prepared sample parts, using various dilutions and immersion times to determine the conditions required to produce the desired color. Black and blackish-brown finishes are obtained with dilutions of one (1) part concentrate to 3 to 6 parts water and immersion times of 1 to 3 minutes. Light statuary brown colors are developed by using short immersions of 30 seconds or by increasing the dilution to 8-15 parts water. Immersion times and concentrations are not critical, and the colors can be consistently reproduced in production.

Antique finishes should be protected with oil, wax, or lacquer topcoat. Since the ultimate color will be influenced and enhanced by the topcoat, the topcoat must be applied before judging the

depth of color or before comparing with other antique finishes. The natural color of the alloy and the mechanical finish on the surface will also affect the final color of "highlighted" or burnished finishes.

SURFACE PREPARATION

PLATED SURFACES

1. Minimum plating thickness should be 3-4 mils.
2. Rinse thoroughly in cold water.
3. Rinse for 15-30 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.
4. 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. 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 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 drier, 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,
5. barrel or vibratory burnishing.
6. A protective topcoat should be applied to enhance the color and give added abrasion and corrosion resistance. The appropriate Hubbard-Hall’s 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 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 Procedures section or the strength can be maintained by recording the time of immersion. When the time required to produce the desired color increases, add sufficient 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 10-15% 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	CHEMICALS REQUIRED
25mL pipette	6N Hydrochloric Acid
50mL burette	15%w/w Potassium Iodide
Burette stand	0.1N Sodium Thiosulfate
Ring stand	2%w/w Soluble Starch Solution
250mL Erlenmeyer flask	

1. Pipette 25mL of production bath into a 250mL Erlenmeyer flask.
2. Add 75mL water to flask.
3. Add 10mL 6N Hydrochloric Acid to flask.
4. Add 20mL 15%w/w Potassium Iodide to flask.
5. Swirl the solution 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 dark again, but additional Sodium Thiosulfate should not be added. The first endpoint is correct.

8. Record mL of Sodium Thiosulfate solution used.
9. Calculate the %v/v Mi-Tique 1791 as follows:

Mi-Tique 1791 (%v/v) = 0.3623 X mL 0.1N Sodium Thiosulfate

Test Kit Method

EQUIPMENT REQUIRED	CHEMICALS REQUIRED
4 oz mixing bottle	2 oz 0.5 N Sodium Thiosulfate
2 syringes (5 mls)	4 oz 6 N Hydrochloric Acid
2 syringes (3 mls)	8 oz 15%w/w Potassium Iodide
	4 oz 2%w/w Starch Indicator

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 approximately 50mL of water.
3. Add 2 mL 6N Hydrochloric Acid to the bottle.
4. Add 4 mL of the 15%w/w 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 0.5N Sodium Thiosulfate solution, from the dropping bottle - drop by drop - counting the drops while swirling the bottle.
7. The end point is marked by a sudden change in color from dark black to light brown.
8. Record the drops of 0.5N Sodium Thiosulfate solution used.
9. Calculate the %v/v Mi-Tique 1791 as follows:

Mi-Tique 1791 (%v/v) = 0.3556 X drops 0.5N Sodium Thiosulfate

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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