

B/OX™ 322 Interim

Non-Selenium Antiquing/Oxidizing Process for Brass, Bronze & Copper

B/OX 322 is a two part liquid concentrate antiquing/oxidizing process for copper and its alloys. **B/OX 322** produces a blue/grey/black color. It replaces polysulfide and selenium base antiquing processes.

The end color can be controlled by using different amounts of **B/OX 322A** and **B/OX 322B**. For a starting point, use **B/OX 322A** at 20%, **B/OX 322B** at 7.5% and water 72.5% by volume. **NOTE:** It is important to use the exact amount and the order when charging a bath. Add **B/OX 322A** first, water and then **B/OX 322B**.

Some experimentation should be done with properly prepared sample parts using various dilution and immersion times prior to charging a production tank. Once the optimum conditions are determined they can be consistently reproduced in production.

The natural color of the alloy and the mechanical finish on the surface will affect the final color of highlighted or burnished finishes. The ultimate color will also be enhanced when top coated with a lacquer or wax, and therefore, the topcoat should be applied prior to judging the color or before comparing with antiqued finishes.

The easy to relieve **B/OX** finishes increase productivity by reducing the time required for buffing or burnishing and the consumption of buffing wheels, compounds and burnishing media is reduced.

EQUIPMENT REQUIRED

Acid resistant tanks, tumbling barrels, baskets, hooks, and racks must be used with the **B/OX** and **E-Pik** solutions. Plastic, plastic lined, rubber lined, glass or stainless steel tanks are suitable. Mild steel may be used for the cleaning, rinsing and sealant tanks. A mild steel immersion heater is required for the **E-Kleen** tanks. A filtration system may be required with the **B/OX** solution. In some infrequent installations an ion exchange system may be required for the rinse water after the **B/OX** solution to remove heavy metals.

FINISHING PROCEDURE

1. Surfaces must be free of oxides and residual plating solutions.
 - a.) Plated surfaces should be thoroughly rinsed with cold water followed by another short rinse in a room temperature 5% Sulfuric Acid solution or **EPI's E-Pik 215** acid salts (1/4 oz to 2 oz/gallon water) to neutralize residual alkaline plating solutions.

b.) Wrought alloys and sheet stock can be mechanically cleaned and deoxidized by burnishing, belt sanding, glass bead, or sand blasting. Chemical cleaning and deoxidizing can be accomplished with **EPI's E-Kleen 148-E** soak cleaner or **E-Kleen 125** electro cleaner, followed by **E-Pik 215**. A cold water rinse is used following cleaning and deoxidizing to remove residual solutions or blasting dust.

2. **Oxidizing Brass, Bronze, and Copper (Solid Copper; Non-cyanide or Cyanide Copper Plating-For Acid Copper Plate- See Below)**

Immerse pieces, while still wet from the preceding rinse in the **B/OX** solution for the length of time necessary to produce the desired color. Rotating perforated plastic barrels are recommended for processing small parts. When using dip baskets, the parts should be agitated when immersed in the solution to break air bubbles and to assure solution contact with all surfaces.

3. Rinse thoroughly in bottom fed overflowing cold water rinse. A stagnant hot water rinse can be used to speed drying, but it should be preceded by a short cold water rinse to minimize staining. Hot rinses should be maintained at 160° to 180°F and dumped periodically or overflowed very slowly. A rinse aid may be helpful in eliminating water spots.
4. Force drying in heated spin dryers, ovens or cob meal will minimize streaking and staining. Large architectural panels should be wiped dry or blown dry. Small parts do not require drying if they will be barrel or vibratory burnished immediately after rinsing.
5. "Highlighted" or relieved antique finishes are produced by buffing, scratch brushing, barrel or vibratory burnishing.
6. Sealing the finish with a protective topcoat will enhance the color and impart corrosion and abrasion resistance. A clear acrylic lacquer topcoat such as **E-Tec 520** produces a hard, dry US 10L finish. **E-Tec 501** produces an oily US 10B finish.
7. For a hand applied wax topcoat we use **RENWAX**.

ACID COPPER PLATE PROCESS

1. **E-Brite 200/205** non-dye acid copper process is recommended (dye processes can cause adhesion problems)
2. Use **E-Pik 219** micro-etch for copper, 1 pound/gallon, 70-80°F, 1-3 minutes
3. Cold water rinse
4. **B/OX 322**
5. Cold water rinse (do not touch, film fragile)
6. Dry parts (after parts are dry the film sets up)

METAL FINISHING SOLUTION CONTROL

A Component

1. Take a sample of the **B/OX 322** solution.
2. Pipette a 25 ml sample and transfer to a clean 125 ml Erlenmeyer flask. Add 50 mls of water.
3. Add 10 ml of 0.2% Starch indicator.
4. Titrate with 0.1 N Potassium Iodate until the color changes to dark blue/brown.

Concentration: % by volume of B/OX 322A = ml of Potassium Iodate x 1.9

B Component

1. Take a sample of the **B/OX 322** solution
2. Pipette a 25 ml sample and transfer to a clean 125 ml Erlenmeyer flask. Add 50 mls of water.
3. Add 10 drops of methyl orange indicator.
4. Titrate with 1.0 N Sodium Hydroxide until the orange color changes from red to dark yellow/brown.

Concentration: % by volume of B/OX 322B = ml of Sodium Hydroxide x 0.81

CAUTION

The **B/OX** solutions are mildly acidic. Avoid contact with eyes, skin, and clothing. Wear safety glasses with eye shields, protective gloves and aprons when preparing solutions and while working with the solutions. Do not mix the **B/OX** solutions with alkaline materials, cyanide containing materials, or any other chemical substances. The **B/OX** solutions are toxic if taken internally. Do not work with the **B/OX** solutions without first reading and understanding the **SAFETY DATA SHEETS** furnished by EPI.

PACKAGING

One (1), five (5), and 55 gallon non-returnable containers.

IMPORTANT NOTICE! For Industrial Use Only

The following is made in lieu of all warranties, expressed or implied, including the implied warranties of merchantability and fitness for purpose: sellers and manufacturers only obligation shall be to replace such quantity of the product as proved to be defective. Before using, user shall determine the suitability of the product for its intended use, and user assumes all risk and liability whatsoever in connection therewith. **Neither seller nor manufacturer shall be liable either in tort or in contract for any loss or damage, direct, incidental or consequential, arising out of the use or the inability to use the product.**

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