Electrochemical Products Inc.
17000 WEST LINCOLN AVE. / NEW BERLIN, WI 53151-2781
PH 262-786-9330 / FAX 262-786-9403

TECHNICAL DATA

B/OX™ 316

Room Temperature Oxidizing Solution Used to Produce Antique Verdi-Green and Blue Finishes on Copper, Brass and Bronze Surfaces

Solution Makeup

B/OX 316 liquid concentrate is used full strength or diluted with water to produce a natural verdi or patina green or bluish color on copper alloys. The natural looking finishes are produced by first treating the copper or brass surfaces with **B/OX 311** to produce a brown finish. The subsequent **B/OX 316** finish will adhere better to the brown finish than it will to bare copper or brass surfaces.

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. Bluish finishes are obtained with no dilution of the concentrate or with dilutions of up to one (1) part concentrate to two (2) parts water and immersion times of one (1) to three (3) minutes. Greenish shades are developed by using dilutions of three (3) or more parts water and immersion times of one (1) to three (3) minutes.

Antique finishes may be protected with a wax or lacquer top coat. The ultimate color will be influenced and enhanced by the top coat and it 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.

FINISHING PROCEDURE

1. Thoroughly clean and degrease pieces with **EPI’s E-Kleen 148-E** or **E-Kleen 110** heavy-duty, low temperature (65^{o}F to 140^{o}F) alkaline soak cleaners. A typical cleaning time is 5 to 10 minutes. **E-Kleen 154**, an acidic cleaner used at 10% by volume in water, may also be used to clean and deoxidize in one step. Large Architectural panels and objects should be cleaned by belt sanding, glass bead or sand blasting or with other abrasive media.
2. Rinse small objects in a bottom-fed, overflowing cold water rinse. Large objects with a water spray.
3. Immerse pieces in **B/OX 311** solution for 30 seconds to 3 minutes to produce a brown to dark brown finish. (See **B/OX 311** Technical Data Sheet.) A heavy, porous coating of **B/OX 311** is desirable because it will absorb and retain the **B/OX** solution.
4. Rinse with water.
5. Immerse pieces in the **B/OX 316** solution for one (1) to three (3) minutes. 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.

6. Remove pieces from the **B/OX** solution and allow them to air dry without rinsing. Forced warm air drying will affect the color development. The higher the drying temperature, the greener the color produced.
7. After drying, an optional cold water rinse may be required to remove residue chemicals.
8. Brush surfaces lightly to "highlight" or produce an antiqued finish.
9. Seal the finish with **EPI's E-Tec 520** clear acrylic lacquer or **E-Tec 521** wax.

Additional Processing Information

1. For antiquing freshly plated surfaces, Step #1 can be eliminated. A thorough water rinse following plating must be used prior to Step #3.
2. Immersion time in the **B/OX** solution should be as short as possible for plated surfaces to avoid stripping the plate.

Equipment Requirements

The **B/OX** tank should be constructed of mild steel. Racks, hooks, and baskets should be constructed of stainless steel or polypropylene. Non-ferrous metals such as galvanized iron, bronze, copper, tin or aluminum should not be used as the materials will contaminate or deplete the solution.

Hot alkaline cleaning and the **B/OX** solutions must be exhausted. The duct work may be of stainless steel, polypropylene or PVC. Galvanized steel should not be used. Your **EPI** representative is available to assist you in selecting and installing the complete tank system required for the process.

Caution

The **B/OX 316** solution contains Ammonium Hydroxide. It may cause severe burns. Do not get in eyes, on skin or clothing. Do not take internally. Wear eye protection (glasses, goggles, or face shield), protective gloves and rubber apron when mixing solution and while working with the solution. Gas-proof goggles are the preferred eye protection. Work with the **B/OX 316** only in an area with good, forced ventilation to avoid breathing the ammonia vapors.

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. For eyes, call a physician.

When withdrawing **B/OX 316** concentrate from shipping container, be sure to be in an area with forced ventilation.
Avoid contact of **B/OX 316** concentrate and working solutions with acidic materials or other alkaline materials. Do not mix **B/OX 316** with any other chemicals or solutions.

Do not work with **B/OX 316** without first reading and understanding the **Material Safety Data Sheet** furnished by **EPI**.

Packaging

One (1), 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: seller's and manufacturer's 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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