

Ultra-Blak™ 455

Black Chemical Conversion Finish for Cadmium & Zinc

Ultra-Blak 455 is an acidic liquid concentrate which is used at 25% by volume in water. The mildly acidic solution is maintained at 150°F to 180°F to produce a decorative and durable black finish on cadmium plated, zinc plated and zinc diecasts.

FINISHING PROCEDURE, FRESHLY PLATED SURFACES

1. Rinse in bottom-fed, overflowing cold water rinse.
2. Immerse for 10 to 30 seconds in a 1/2% by volume Nitric Acid solution to neutralize residual alkaline plating solution which could contaminate the **Ultra-Blak 455** solution.
3. Rinse in bottom-fed, overflowing cold water rinse.
4. Immerse pieces, while still wet from the preceding rinse, in the **Ultra-Blak 455** solution (120°F to 180°F) until a uniform, deep black color is developed. Immersion time usually will be from 1 to 10 minutes, depending upon the condition of the cadmium or zinc surface.
5. Rinse in bottom-fed, overflowing cold water rinse.
6. Seal the finish by immersion for one (1) minute in **EPI's E-Tec 501** for an oily finish, **E-Tec 504** for a soft, dry finish or **E-Tec 520** for a hard, dry finish.

FINISHING PROCEDURE, PASSIVE SURFACES

1. Thoroughly clean and degrease piece with **EPI's E-Kleen 148-E** hot (180°F) alkaline soak cleaner. A typical cleaning time is 5 to 10 minutes.
2. Rinse in bottom-fed, overflowing cold water rinse.
3. Immerse in a 2% - 5% by volume Nitric Acid solution or 2-5% by volume Sulfuric Acid solution at room temperature for 10 to 60 seconds to activate the metal surfaces.
4. Rinse in bottom-fed, overflowing cold water rinse.
5. Proceed with step 4 above.

OPERATION AND MAINTENANCE

Pieces to be blackened may be processed in baskets, tumbling barrels or hung on racks or hooks depending upon the shape and weight and production requirements.

Problems will rarely arise with a properly maintained and controlled **Ultra-Blak 455** solution. Most problems can be traced to insufficient surface preparation of the work or incorrect operating temperature.

Ideally, the temperature of the solution should not drop below the recommended operating range of 170°F to 180°F when work is introduced. Sufficient heat should be maintained to ensure that the solution does not drop below this temperature range for more than a few minutes, even with the heaviest loads.

Operating the bath at the maximum recommended temperature of 180°F will promote faster reaction, producing the black finish in a shorter time. On zinc diecasts high temperature will etch the zinc substrate. If gassing on the zinc diecast surface is evident then lower temperature.

Frequent small additions of concentrate will produce more uniform and more consistent results than large amounts added less frequently. This is also true for water replenishment to compensate for evaporation loss.

The concentration of the **Ultra-Blak 455** solution can be determined and monitored with the following titration procedure:

1. Take a sample of the **Ultra-Blak 455** production bath.
2. Pipette a 5 ml sample into a 250 ml Erlenmeyer flask and dilute to 50 ml with distilled water.
3. Add 6 to 8 drops of 5% Potassium Chromate solution. Titrate with 0.1N Silver Nitrate solution to a reddish-brown endpoint.
4. **Ultra-Blak 455** (% by volume) = ml of 0.1N Silver Nitrate x 1.67

EQUIPMENT

The **Ultra-Blak 455** tank should be constructed of stainless steel, rigid polypropylene, lined steel or other acid-resistant material. Cleaning and rinse tanks may be constructed of mild steel, while acid pickling tanks should be plastic, rubber-lined or rigid polypropylene. Polypropylene is also the recommended material for racks, hooks and baskets. Non-ferrous metals such as galvanized iron, bronze, copper, tin or aluminum should not be used as these materials will contaminate or deplete the **Ultra-Blak 455** solution.

Gas heating units may be used to heat solutions in stainless steel and mild steel tanks which should be underfired and insulated. For solutions in lined, polypropylene and other acid-resistant tanks, quartz immersion heaters are recommended.

Hot alkaline cleaning, acid pickling and the **Ultra-Blak 455** solutions should be exhausted. The duct work may be of the same materials as recommended above for the tanks. Galvanized steel should not be used.

CAUTION

The **Ultra-Blak 455** concentrate and its solutions are mildly acidic. Avoid contact with eyes, skin and clothing when handling. Wear goggles or face shield, protective rubber gloves and rubber apron.

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

Do not mix **Ultra-Blak 455** or its solutions with alkaline materials or with any other chemicals or solutions.

Do not work with **Ultra-Blak 455** or the **E-Kleen** products without first reading and understanding the **MATERIAL SAFETY DATA SHEET** furnished by **EPI**.

PACKAGING

Five (5) gallon pails and 55 gallon drums

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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