

## Metal Blackening Processes Conventional Hot Oxide

- Ultra-Blak 400**  
For Steel
- Black oxide ( $\text{Fe}_3\text{O}_4$  - Magnetite) finishes are produced on steel surfaces with this mixture of alkaline salts and oxidizing agents combined with penetrants, catalysts, activators, rectifiers and wetters. Salts are used at 5.75 pounds per gallon of water at a temperature of 285°F. Complies with military specification MIL-DTL-13924D Class 1.
- Ultra-Blak 400-L**  
For Steel
- A highly concentrated liquid version of **Ultra-Blak 400** which is recommended for black oxide installations where it is desired to automate the replenishment addition of the blackening salts solutions through a pump and liquid level control system. It is also ideal for the initial charging of black oxide baths which will be replenished with the powdered **Ultra-Blak 400**.
- Ultra-Blak 404**  
For Cast Iron
- The preferred oxidizing salt mixture for blackening cast iron, malleable iron as well as some mild low carbon steels. Concentration of 4.75 pounds per gallon of water at temperatures of 250° to 260°F.
- Ultra-Blak 407**  
For  
Stainless Steel
- Black oxide finish for stainless steels. Oxidizing salts used at 4.75 pounds per gallon of water at temperatures of 250° to 260°F. The finishes comply with military specification MIL-DTL-13924D Class 4. The versatile solution may also be used to blacken malleable and cast iron as well as some mild low carbon steels.
- Ultra-Blak 407-L**
- A liquid version of **Ultra-Blak 407**.
- Ultra-Blak 420**  
For  
Copper/Brass
- A liquid oxidizer package that you add to 50% by weight Sodium Hydroxide to achieve the black oxide finish on copper alloys. It is used at 24% by volume **Ultra-Blak 420** and 16% by volume 50% by wt. Sodium Hydroxide. The resulting blackened finish is a deep black and abrasion resistant finish. Copper alloys (brass) that have high zinc content (15% to 35% zinc) need to use activator step to blacken high zinc copper alloys.
- Ultra-Blak 455**  
For  
Cadmium/Zinc
- Black finish for cadmium and zinc. Liquid concentrate used at 25% by volume in water at temperatures of 120° to 160°F.

- Ultra-Blak 460**  
For Zinc  
A non-chromated black chemical conversion finish for diecast and plated zinc surfaces. Salts used at 6 to 8 oz. per gallon of water and temperatures of 150° to 170°F.
- Ultra-Blak 465**  
For Nickel  
Black chemical conversion finish for nickel plated surfaces. Liquid concentrate used at 25% by volume in water at temperatures of 160° to 180°F.
- Ultra-Blak 466**  
For Nickel  
Black chemical conversion finish for nickel plated surfaces. 2 Parts Liquid concentrate – Part A is used at 25% by volume in water and Part B is used at 2% by volume in water at temperatures of 70° to 160°F
- Ultra-Blak Rectifier**  
Additive for black oxide solutions to control the build-up of excessive red iron oxide and copper which cause off colored reddish finishes. Liquid concentrate used at 0.5 to 1 ounce per gallon of oxide solution.
- NOTE:** **Ultra-Blak®** is a registered trademark of **EPI-Electrochemical Products Inc.**

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