



I S O 9 0 0 1 R E G I S T E R E D

C L E V E L A N D B L A C K O X I D E

## Case History – Hardware Industry

Product: Bionic Wrench™ Pliers

Customer: Penn United/Loggerhead Tool

### Features:

- The black color is aesthetically appealing.
- Black Oxide is an industrial selling point versus simply a coating.

### Advantages:

- Black Oxide will not be damaged by the mechanical movement of mating parts
- Eliminates Galling.

### Benefits:

- Black Oxide is cosmetically appealing
- Color adaptability
- Eco-friendly
- Commercially accepted
- Cost effective



### Why Cleveland Black Oxide

We have over 50 years of black oxide conversion coating experience. We process over 8-million pounds of carbon, alloy and stainless steels; brass, bronze, copper; cast zinc and cast iron each year. And we have the experience, technologies and services to solve your coating problems.

### Tank Capacity, Part Handling & Processing

We have the largest tanks in the industry – 17' long for steel parts, and can go beyond that size on a case-by-case basis. For stainless steel we have 12' tanks, and for Copper, Brass & Bronze, and Die Cast Zinc - 4' tanks. We offer rack process for parts not suitable for barrel or basket processing. We also design custom fixtures and process menus to meet all your special needs.

### QC/Lot Control

A processing menu is created for each order and carefully followed – paying strict attention to times, temperatures, concentrations of solutions, and all other process parameters. These parameters and job history are stored in our computers, making a permanent record of your jobs. Records of all solution concentrations are maintained for periodic report and analysis. Tracking procedures are in place for lot segregation when required.

### Exclusive Processes

Cleveland Black Oxide has developed a number of unique black oxide coatings including Black Onyx™ which produces a high luster finish on heat treated and hot rolled parts, and our Bi-Met™ process which is a conversion coating for brazed parts and dissimilar metal assemblies.

### Service, Research & Technical Assistance

Send us your prototypes and we'll test and recommend a black oxide coating system that meets your protection, appearance and performance needs.

### Quotations & Rush Orders

Quotes are promptly submitted upon receipt of sample parts or prints. Approximately 80% of all orders are ready within 48 hours. Our plant is in operation 18 hours a day and emergency service is available.

### Cleveland Black Oxide

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HARDWARE