



Metal Finishing Systems

Birchwood Laboratories, Inc.
7900 Fuller Road
Eden Prairie, MN 55344 USA
Tel: 952/937-7931
Fax: 952/937-7979
www.birchwoodcasey.com

LUMICLAD® Black Oxide Process for Aluminum
(Patent Applied For)

Operating Instructions

PRODUCT DESCRIPTION

The LUMICLAD® Black Oxide Process is an electroless blackening method that forms a non-dimensional, conductive black finish on all aluminum alloys. The finish is tightly adherent to the substrate and exhibits inherent lubricity for break-in of mating surfaces and galling resistance. The LUMICLAD black finish is about 1.5 microns thick (.000060”), with a porous crystal structure that absorbs an optional topcoat sealant.

OPERATING CONDITIONS

Bath Makeup	50% by volume
Operating Temperature	190-200° F
Immersion Time	10 minutes
Equipment Construction	Tank: Polypropylene or acid-proof Heater: Teflon. Use 200 watts per gallon Racks/baskets/barrels: Polypro, titanium
Ventilation	Desirable. Vapors contain water only.
Solution Agitation	Desirable. Use CPVC or acid-proof pump

BLACKENING PROCEDURES

The LUMICLAD process utilizes the following sequence:

1. **CLEAN/MICROETCH** in SAFE SCRUB® ETCH cleaner, 70-130° F, 10 minutes.
2. **RINSE** in clean, flowing water tank for 15 seconds.
3. **APPLY PRIMER** LUMIPRIME® Primer/Prep solution; 70° F; 5 minutes.
4. **RINSE** in clean, flowing rinse tank for 15 seconds.
5. **BLACKEN** in LUMICLAD® solution at 190-200° F; 10 minutes.
6. **RINSE** in clean, flowing water tank for 15 seconds.
7. **SEAL** with a clear topcoat appropriate to the end-use of the article:
For a clear hard finish, use SATIN SHIELD® aqueous acrylic wax sealant,
For a slightly oil finish, use DRI TOUCH® DS Dewatering Sealant.

Some aluminum alloys may carry a heavy oxide and may require more aggressive surface preparation, such as glass bead blasting. High copper alloys (2024, 7075) may require somewhat different cycle times.

A non-uniform final finish usually indicates incomplete cleaning or incomplete oxide removal. These parts can usually be re-processed with good success: re-clean the surface thoroughly, then re-prime and re-blacken in the normal manner. Alternatively, the parts can be glass bead blasted to remove the old finish, then re-blackened. The immersion times of the various steps should then be adjusted in order to re-establish the optimum cycle times. Your BIRCHWOOD CASEY representative can assist you.

BATH MAINTENANCE

As the LUMICLAD working solution operates, its concentration will gradually diminish, the reaction will slow down and the bath will turn blue. At this point, the bath should be replenished with fresh LUMICLAD concentrate at a rate of about 20% of the initial makeup quantity. For example, in a 100 gallon tank, the original bath makeup requires 50 gallons of LUMICLAD concentrate. To replenish the tank, add 20% of this amount, or 10 gallons of concentrate.

PACKAGING AND STORAGE

Supplied in 5-gallon and 55-gallon plastic, nonreturnable drums. Store in closed container.

PROCESS LINE EQUIPMENT

Complete tank lines are available in all sizes, at modest cost, from BIRCHWOOD CASEY. Please ask for details and price proposal.

WASTE TREATMENT

The LUMICLAD process utilizes zinc and molybdenum chemistry to form the black finish. To prevent these materials from entering the drain, the process line may be fitted with an Ion Exchange System, available from BIRCHWOOD CASEY, to purify and recycle the rinse waters in order to operate as a self-contained, closed-loop system. Please ask for details.

Before Using This Product – Please Read, Understand and Follow all the Precautions shown on the Product Label and on the Material Safety Data Sheet.

The Material Safety Data Sheet can be found on our website: www.birchwoodcasey.com

Always Apply Appropriate Labels to any Container used to Store or Apply this Product.

NOTE: The information contained herein is provided in good faith and is believed to be correct as of the date hereof. However, Birchwood Laboratories, Inc. makes no representations as to the comprehensiveness or accuracy of the information. Birchwood Laboratories, Inc. will not be responsible for damages of any kind resulting from the use of or reliance upon such information.

LUMICLAD® Black Oxide Concentrate (Product Numbers 640050, 640051, 640058)

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