

# ChromiCoat<sup>®</sup> L25

Liquid chromate conversion coating for aluminum.

## PRIMARY APPLICATION

ChromiCoat<sup>®</sup> L25 is a liquid chromate conversion coating for aluminum. Applied by immersion or spray, it provides excellent paint adhesion and improved corrosion resistance. ChromiCoat L25 may be controlled to produce either colorless coatings for use under paint, or rich golden coatings. It is ideally suited for high speed, continuous strip-line operations and is easily metered through automated equipment. For some operations, and particularly high production ones, ChromiCoat T3 is recommended for replenishment of ChromiCoat L25 solutions. ChromiCoat L25 meets the following Military Specifications: MIL-DTL-81706B, Class 1A and Class 3, Form I (Liquid), Method C (Immersion) and MIL-DTL-5541F. ChromiCoat L25 is listed on the Qualified Products List QPL-81706. ChromiCoat L25 is also listed on Boeing Process Specification BAC 5719 for Type I (immersion) and Type II (manual application).

## CHEMICAL CHARACTERISTICS

chemical composition .....	hexavalent chromium, fluoride, nitric acid, accelerators
physical form.....	dark brown liquid
odor.....	acid
specific gravity .....	1.142 at 20°C (68°F)
bulk density .....	9.5 pounds/gallon at 20°C (68°F)
viscosity .....	2 – 6 cps, Brookfield Spindle 1, 60 rpm
flash point.....	none
foaming tendency .....	none
behavior in hard water .....	not recommended
rinsability .....	good
biodegradable .....	not applicable, non-surfactant material
phosphorous-free.....	yes
normal working concentrations .....	0.5 – 5.0 % by volume
normal working temperatures .....	80 – 120°F (27 – 49°C)
pH at working concentrations .....	1.6 – 2.0

## APPLICATION PROCEDURES

Operating temperatures and working concentrations for applying Oakite ChromiCoat L25 are largely determined by the type of coating desired and the application method employed.

**Preparing the Solution:** Hard water salts can adversely affect the performance of ChromiCoat L25 by complexing active ingredients, preventing attainment of the optimum operating pH and adding contaminants that can reduce the coating's corrosion resistance. Therefore, deionized (DI) or reverse osmosis (RO) water should be used.

### Applying ChromiCoat L25 on Aluminum by Immersion, for general applications:

1. Remove organic soils with an alkaline cleaner.
2. Rinse in cold running water; two separate rinses are desirable.
3. If necessary for oxide removal or for finished part appearance, etch in a Chemetall Oakite product such as Etchant A45.

4. Rinse in cold running water; two separate rinses are desirable.
5. if necessary, desmut in a Chemetall Oakite deoxidizer.
6. Rinse in cold running water; two separate rinses are desirable.
7. Immerse in a solution of Oakite ChromiCoat L25. Concentrations, temperatures and immersion times are listed below according to the type of coating desired.

**For standard color coatings (25 to 80 mg/ft<sup>2</sup>):** use a concentration of 3% to 5% by volume, between 90 and 110°F (32 – 43°C) for 1 to 3 minutes at a pH range of 1.6 to 1.8.

**For lightweight color coatings (15 to 25 mg/ft<sup>2</sup>):** use a concentration of 1.5% to 3% by volume, between 80 and 100°F (27- 38°C) for 20 to 30 seconds at a pH of 1.6 to 1.8.

**For colorless coatings (5 to 15 mg/ft<sup>2</sup>):** use a concentration of 1/2 to 1% by volume, between 80 and 100°F (27 – 38°C) for 10 to 25 seconds at a pH range of 1.6 to 2.0.

8. Rinse in cold running water; two separate rinses are desirable.
9. Dry at 140°F (60°C) maximum.

#### **Applying ChromiCoat L25 on Aluminum by Immersion, for MIL-DTL-5541F, class 1A:**

1. Clean with a non-etch alkaline detergent. Oakite 61 B is recommended.
2. Rinse in cold running water; two separate rinses are desirable.
3. ChromiCoat L25 at 3 – 5% by volume, between 90 and 100°F (32 – 43°C) for 3 minutes at a pH of 1.6 to 1.8.
4. Rinse in cold running water; two separate rinses are desirable.
5. Dry at 140°F (60°C) maximum.

#### **IMPORTANT**

When aluminum alloy 2024T3 is coated for MIL-DTL-5541F applications, its best not to use an etch or deoxidizer. However, if oxides are present and must be removed, a chromium-based deoxidizer such as Deoxidizer 34L is recommended.

#### **Applying Oakite ChromiCoat L25 in accordance with MIL-C-5541, Class 3, Form 1, Method C:**

1. Clean with a non-etch alkaline detergent. Oakite 61 B is recommended.
2. Rinse in cold running water; two separate rinses are desirable
3. Deoxidize with Deoxidizer 34L, 10% by volume, between 65 and 75°F (18 – 24°C), 2 minutes
4. Rinse in cold running water; two separate rinses are desirable.
5. ChromiCoat L25 at 2 - 3% by volume between 75 and 85°F (24 – 29°C) for 15 seconds at a pH of 1.6 to 2.0.
6. Rinse in cold running water; two separate rinses are desirable.
7. Dry at 140°F (60°C) maximum.

**Solution Control:** ChromiCoat L25 is controlled using Gardotest Procedure 137.

Sample Size: 5.0 mls

Factor: 0.56

If necessary, fluoride content may be monitored using Gardotest Procedure 152. The bath pH is controlled with a calibrated pH meter. The probe should be calibrated with 2.0 and 4.0 buffer and contact with the ChromiCoat L25 should be limited for long probe life.

#### **Replenishment**

Concentration: For most applications, ChromiCoat L25 baths may be replenished with ChromiCoat L25. In applications with a high amount of surface area processed, with minimal drag-out, it may instead be necessary to replenish with ChromiCoat T3, which has a lower pH and higher fluoride content.

pH adjustment: If the pH of the ChromiCoat L25 bath rises above the 1.8 to 2.0 maximum, add 2.5 pint/100 gallons (350 ml/100 liters) of Gardobond Additive H 7140/1 to reduce the pH by 0.2 - 0.4 units. If the pH of the ChromiCoat L25 bath falls below 1.6, the pH may be increased with additions of Gardobond Additive H 7212 which is diluted 1:10 with DI or RO water. Add slowly with good mixing.

## **EQUIPMENT**

The Chemetall Oakite Electrodeless Conductivity/Concentration Control System and Chemical Metering Pump can be used to monitor and automatically maintain the concentration of this product using conductivity. Please contact the Chemetall Oakite Process Equipment and Engineering Department for specific recommendations.

## NOTES ON USE

1. The quality of the water used to prepare solutions has an important influence on the quality of the final ChromiCoat L25 coating. For best results, deionized (DI) or reverse osmosis (RO) water is preferred for bath make-up, replenishment and final rinsing.
2. Where extrusions are processed, a non-silicated alkaline detergent may be required.
4. The quality of the ChromiCoat L25 coating is largely influenced by concentration, pH, time, temperature and bath agitation.
5. Cold water must be used when rinsing.
6. Coatings are relatively hard when dry, but may be damaged if brushed or wiped while still wet.
7. Stainless steel alloy 316L or polypropylene tanks are recommended. Heaters should be constructed of alloy 316L.
8. Keep the concentrate as well as solutions of Oakite ChromiCoat L25 away from combustible, organic or readily oxidizable materials. Avoid contact or mixing with chlorine-releasing materials.
9. Avoid the introduction of steel or ferrous alloys to the working solution.
10. ChromiCoat L25 baths are more active when made up fresh. Its recommended to operate at the low end of the operating ranges (lower concentration, lower temperature, shorter time) with a fresh bath.

## SAFETY AND HANDLING

Prior to handling and use of any of the materials referenced in this document, the Material Safety Data Sheets should be read and understood by all personnel in contact with these materials.

## KEEP OUT OF REACH OF CHILDREN

## STORAGE

Dry indoor storage at temperatures between 40°F and 100°F is recommended, away from any incompatible materials referenced in the Material Safety Data Sheets. All containers should be tightly closed when not in use.

## DISPOSAL

Any disposal of the materials referenced in this document should be in accordance with all applicable federal, state, and local regulations. The process solution can contain components other than those present in the materials as supplied. Analysis of process solutions may be required prior to disposal.

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