Technical Process Bulletin

Technical Process Bulletin No. 234116
This Revision: 02/14/2002

ALODINE® 1200S Coating Chemical
Brush Application

1. Introduction:

ALODINE 1200S is a powdered chemical used in an aqueous solution to produce, on aluminum or aluminum alloys, a protective coating which ranges in color from light iridescent golden to tan. The coating produced provides excellent protection for painted and unpainted aluminum and bonds paint well.

ALODINE 1200S coating chemical, being listed on the Qualified Product List QPL-81706, is an approved material to be used by Method B (brush processing) to produce Class 1A and Class 3 coatings in accordance with Military Specification MIL-C-5541C.

ALODINE 1200S coating chemical and other Alodine coating chemicals are listed in the Qualified Product List QPL-81706 as approved materials for other Methods and Classes of Military Specification MIL-C-5541B.

It is applied using an acid-resistant brush, a swab or a synthetic sponge. This brush method of application is used when:

1. the number of pieces processed per day is not large, or
2. the parts to be treated are too large to be immersed conveniently in a tank, or
3. touching-up abraded or damaged areas on work which has been previously coated with Alodine.

2. Preparation of Alodine Coating Chemical Solution:

Mix 2 oz. of ALODINE 1200S coating chemical per gallon of water (this is equivalent to 15 g of ALODINE 1200S coating chemical per liter of solution). Stir well until the powder is dissolved.

Note: A small amount of insoluble material may settle out of solution; this can be disregarded. Use an acid-resistant container when preparing the solution (See Section 8).

3. Process Sequence:

Operation No. 1 - Clean	)	See Section 4
Operation No. 2 - Rinse	)	
Operation No. 3 - Coat with ALODINE 1200S	)	See Section 5
Operation No. 4 - Rinse	)	See Section 6
Operation No. 5 - Dry	)	

The work, after processing and drying is ready for use either painted or unpainted.

4. Preparation of the Work:

Cleaning:
The preferred method of cleaning is to remove grease, oil, and corrosion with Deoxidine® 624 acid cleaner or Special Deoxidine MIL-M-10578 cleaner. However, where no corrosion is present, thorough wiping with clean solvent is satisfactory.

Solvent wiping is preferred for touching up reworked, abraded, or damaged areas of parts previously anodized or treated with Alodine coating chemicals.

Rinsing:
When cleaning with Deoxidine acid cleaner, the excess solution and soil must be flushed from the surface with clean water or wiped off with clean, water-damp cloths prior to the application of the ALODINE 1200S coating chemical solution.

5. Application of ALODINE 1200S:

Apply the diluted ALODINE 1200S coating chemical solution liberally to the aluminum surface. Treat at one time only as large an area as can be conveniently handled with the equipment being used (approximately 6 to 10 square feet of surface).

Use an many applications as necessary to get the coating desired, allowing approximately one minute reaction time between applications and before final water rinsing. The color of the coating will range from a light, iridescent golden to tan depending on the aluminum alloy, temperature and number of applications.

Coating is completed more rapidly when the work and the ALODINE 1200S coating chemical solution are at room temperature (approx. 65° to 75°F) (18.3° to 24°C) or above. Normally, 1 to 5 minutes is required for coating formation.

6. Rinsing and Drying:

Excess ALODINE 1200S coating chemical solution should be removed by either of the following methods:

a. Flush the work thoroughly with clean water followed by (1) air drying; (2) blowing dry with compressed air; (3) warm or hot air drying; or (4) wiping dry with clean cloths.
b. Wipe with water-damp cloths followed by wiping dry with clean cloths.

Any seams, joints, and crevices should be blown dry with clean, dry, compressed air and the moisture splatters wiped dry with clean rags.

7. Operational Recommendations:

a. Rags, sponges, swabs, etc., used for applying or removing the ALODINE 1200S coating chemical solution should not be allowed to dry. If allowed to dry, they may constitute a fire hazard. Immediately after use, they should be thoroughly washed in water before discarding.
b. Operators should be equipped with rubber gloves, aprons, and goggles to avoid contact with the solution. If spray applicators are used operators should also be provided with respirators to prevent inhalation of the atomized solution.
c. Adequate ventilation should be provided for the Alodine processing area. Operators must not breathe Alodine coating chemical vapors. Open containers in a well ventilated area. Keep containers closed when not in use.

Post Treatment:
The coated metal, wet from the water rinse, is treated with a dilute post treatment solution. This treatment materially increases the corrosion resistance of the coating and is an essential part of the process. A number of DEOXYLYTE post treatment chemicals are available and the proper one for each installation will be recommended.

Drying:
The treated articles should be dried immediately after the post treatment. Enough heat usually remains from a hot post treatment to cause heavy gauge articles to dry satisfactorily. If the post treatment is not heated or the articles do not dry satisfactorily, an indirect fired drying unit or any other means which will not contaminate the treated surface with fumes, oil, or partially burned gases may be used. If an oven or other heat source is used, the temperature of the metal surface should not be permitted to exceed 150° Fahrenheit to maintain optimum corrosion resistance.

Products with cavities or pockets which trap moisture should be blown dry with clean, compressed air. Moisture spatters should be dried with clean cloths.

Dried, unfinished parts should not be handled. If handling if necessary, plastic or clean (often changed) cotton gloves should be used.

8. Equipment Notes:

Acid-resistant (wood, rubber, stainless steel, or plastic) buckets, troughs, or other suitable containers are used to hold the diluted ALODINE 1200S coating chemical solution. Lead, glass, tin or galvanized iron should not be used. Storing the solution in mild steel containers will result in a slow decomposition of the solution.

Ordinary spray equipment (satisfactory for short or infrequent application) will be attacked slowly by ALODINE 1200S coating chemical. This may be minimized by thoroughly flushing with water immediately after use. For continuous use, plastic or stainless steel cups and nozzles should be used in spray equipment.

9. Storage Requirements:

ALODINE 1200S coating chemical is an acidic oxidizing agent. It is not affected by freezing. It should be stored in a cool, dry area and apart from organic compounds or easily oxidizable materials.

10. Waste Disposal Information:

Applicable regulations covering disposal and discharge of chemicals should be consulted and followed.

The processing bath is acidic and contains chromium and ferricyanide. Waste treatment and neutralization will be required prior to discharge to the sewer. (Refer to Waste Treatment Information Bulletin WT1004, available on request.)

11. Precautionary Information:

When handling the chemical products used in this process, the first aid and handling recommendations on the Material Safety Data Sheet for each product should be read, understood and followed.

The following precaution should be observed during the operation of the ALODINE 1200S coating bath:

Adequate ventilation should be provided for the process area. Operators must not breathe ALODINE coating bath vapors. Open containers in a well ventilated area. Keep containers closed when not in use.

The processing bath contains chromic acid in excess of 0.1% when prepared as recommended. The following statement, or one similar to it, should be included as part of the process tank labeling.

> "Possible cancer hazard based on tests with laboratory animals. Overexposure may create cancer risk."

Refer to the Material Safety Data Sheet for additional information.

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Form Revised 16 May 1997