



Technologies

TECHNICAL INFORMATION ALODINE 600

1. INTRODUCTION

ALODINE 600 is a powdered chemical used to produce a chromate conversion coating on aluminium and its alloys, which ranges in colour from light, iridescent golden to tan.

This product does not contain complex cyanides.

It is particularly recommended where a low dielectric resistance coating is desired.

ALODINE 600 is a chemical Conversion Coating Material conforms to MIL-C-81706 for use by Application Methods A, B and C, Classes 1A and 3. Form II. Its listing on QPL-81706-16 indicates its acceptance under MIL-C-5541E.

2. SUMMARY OF OPERATING DATA

Coating Bath Make Up

For each 1,000 litres of bath, add to the water with stirring	
ALODINE 600	15 kgs per 1,000 litres of bath
* ALODINE Toner 22	10 litres per 1,000 litres of bath
*Not required when processing to meet Class 3 of MIL-C-5541E	

Control Points (for Normal Operating Conditions)

ALODINE Titration	8.4 mL
Temperature	21-38°C
Treating Time	1-5 minutes
pH	1.5-2.1

3. PROCESS SEQUENCE

Operation No. 1	Clean
Operation No. 2	Rinse
Operation No. 3	Coat with ALODINE 600
Operation No. 4	Rinse
Operation No. 5	Acidulated Rinse

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

Note: When aluminium to be treated with **ALODINE 600** has corrosion products or heavy oxide on the surface, the corrosion or heavy oxide should be removed by installing two additional tanks between Operation Numbers 2 & 3 above; one is for deoxidising with a Deoxidiser and one is for an additional cold water rinse.

4. SURFACE PREPARATION

Most work can be cleaned using a suitable **Ridoline**. If the work is heavily soiled and additional cleaning powder is needed, a **Ridosol** (a detergent cleaner additive) may be added to the **Ridoline** bath. The work, after cleaning, should be rinsed with water. This rinse should be continuously overflowed to avoid contamination.

Note: Your Henkel technical representative will recommend the proper type of cleaner for each processing line.

5. MAINTENANCE OF THE BATH

The **ALODINE 600** bath is controlled in the plant by a titration and a pH check. The pH is determined with an electrometric pH meter.

Standardisation of Titrating Solution 31

- a. Pipette 10 ml of Titrating Solution 30 into a flask and add 20 ml Reagent Solution 44.
- b. Add 4-6 drops of Indicator 12. Solution should turn green.
- c. Titrate with Titrating Solution 30 until the green solution just turns blood red.
- d. Record the number of mLs of Titrating Solution 31 added as A mLs.

$$\text{Correction factor (f)} = \frac{10}{A}$$

5. MAINTENANCE OF BATH (continued)

Alodine Titration

- a. Pipette a 5 mL samples of the **ALODINE 600** bath into an iodometric flask and dilute to approximately 100 mL.
- b. Add approximately 20 mL of Reagent Solution 44.
- c. Add 4-6 drops of Indicator 12.
- d. Rinse the lip several times with water and replace the stopper.
- e. Fill the automatic burette to the zero mark with Standardised Titrating Solution 31.
- f. Titrate with Titrating Solution 31 until a blood red colour is obtained.
- g. Multiply mLs of Titrating Solution 31 added by Standardisation Factor (f) to get corrected **ALODINE** titration.
- h. Record the corrected number of millilitres of Titrating Solution 31 used as the **ALODINE** Titration.

Replenishment

Normal replenishment of the **ALODINE 600** bath involves the addition of 1.8 kgs of **ALODINE 600** per 1,000 litres of bath for each millilitre of titration lacking. The bath should be kept within 1 mL of the specified **ALODINE** Titration.

pH Adjustment

As the bath is used, the pH has a tendency to rinse. This may require an addition of nitric acid to restore the pH to its proper operating level. Increments of large bulk additions of nitric acid are to be avoided in favour of more frequent, small additions.

6. OPERATIONAL RECOMMENDATIONS

1. Each alloy reacts with the **ALODINE 600** solution to produce a coating that is characteristic of that alloy. For the treating time selected, the bath should produce light iridescent golden tan to coatings on aluminium. However, local conditions may effect the operation of the bath.
2. The initial charge and replenishment data contained herein are normal for most installations; however, your Henkel technical representative may suggest a deviation from this data if indicated by local conditions.

3. If the **ALODINE** coating is powdery, the cause may be found in one or more of the following:
 - a. The pH of the bath is too low for the concentration used.
 - b. The work has been improperly cleaned and/or rinsed.
 - c. The **ALODINE** bath has become contaminated with phosphates, sulphates or some other contaminant (an analysis is required.) In most cases, phosphates in the **ALODINE** bath will stop-off coating completely.
 - d. The bath temperature is too high.
 - e. The immersion time is too long.
4. If the **ALODINE** coating is too light or iridescent, the cause may be found in one or more of the following:
 - a. The temperature of the **ALODINE** bath is too low for the immersion time selected.
 - b. The immersion time is too short.
 - c. The concentration of the bath is too low.
 - d. The pH of the bath is outside the proper range.
5. The following precautions should be observed during the operation of the **ALODINE 600** process:
 - a. Adequate ventilation should be provided for the **ALODINE** processing area. Operators must not breathe **ALODINE** vapours.
 - b. Operators should be equipped with rubber gloves and aprons. When handling **ALODINE** concentrate, operators should use, in addition, respirators and face shields.
 - c. Any **ALODINE** bath or concentrate should be immediately flushed from the skin with water.

7. **AFTER TREATMENT**

After the work is treated, it should be given two rinses - an unheated water rinse and a final warm rinse to facilitate drying. The final rinse may be acidulated to overcome hard water conditions. Your Henkel technical representative will recommend the **Deoxylyte** best suited to local conditions.

8. DRYING PAINT BONDING COATINGS

Parts coming from the final, acidulated rinse should be dried as soon as possible in an indirectly fired oven or by other means which will not contaminate the metal with fumes, oil, or partially burnt gas. In many cases, heavy-gauge metal will retain enough heat to dry completely and rapidly without using an oven.

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

If handling of the dried, uncoiled or unpainted work is necessary, operators should wear **clean** cotton gloves.

9. EQUIPMENT NOTES

The work is processed in conventional immersion processing equipment. The equipment for the **ALODINE 600** (and **Deoxidiser**, if used) stage should be constructed of stainless steel (type 316 preferred for weldability.) All other stages may be constructed of mild steel.

All heated tanks should be equipped with steam plate coils and side heating (preferred for a more even temperature distribution) or other heat sources capable of rapidly heating the bath to the specified temperature.

Acid-resistant crates, baskets, tumbling barrels, or conveyors, etc., should be provided to carry the work through the various stages.

Note: Detailed equipment specifications for a particular processing line may be obtained from your Henkel representative.

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