



# **Surface Technologies**

## Technical Process Bulletin

# **Alocrom 1000**

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### **1. INTRODUCTION**

**Alocrom 1000** produces protective coatings on aluminium and its alloys without significantly changing the appearance of the aluminium surface. The process requires only one chemical for make-up and replenishment. **Alocrom 1000** is recommended where a very low surface electrical resistance is required.

Outside of the UK, the Alocrom range of products are marketed under the Alodine trade name. Alodine 1000 features on the QPL for MIL-C-5541(Class 3).

### **2. PROCESS SEQUENCE**

Stage 1	Pre-clean
Stage 2	Alocrom treatment
Stage 3	Water Rinse
Stage 4	Dry Off



### 3. PRE CLEANING

Remove all grease by degreasing in an alkali cleaner, alternatively, solvent degreasing may be employed. If an alkali cleaner is used it must be followed by thorough rinsing in running water.

On most aluminium alloy castings and heat treated alloys the surface is covered with an oxide skin which inhibits 'Alocrom' 1000 coatings. This can sometimes be removed by etching in a 'Ridoline' cleaner but the most satisfactory method is to use an acid deoxidiser. Two extra tanks are then required between Stages 1 and 2; Acid resisting tanks for the 'Deoxidiser' and its cold running rinse are recommended.

### 4. ALOCROM TREATMENT

Dip in the Alocrom tank for 2 to 4 minutes at 50°-70°C.

If the immersion time is too long for the bath temperature a visible brownish coating will begin to form.

### 5. ALOCROM BATH MAKE-UP

Add 10 litres of **Alocrom 1000** to each 90 litres of water.

### 6. ALOCROM BATH CONTROL

The 'Alocrom' bath is controlled in the plant by a single titration and a pH check.

#### 6.1 Test for 'Alocrom' Concentration

- a. Pipette a 50 cm<sup>3</sup> sample of the 'Alocrom' bath into a 250 cm<sup>3</sup> flask and dilute to approximately 100 cm<sup>3</sup> with distilled water.
- b. Add approximately 1 gram of Potassium Iodide, and agitate the solution until it has dissolved.
- c. Add about 5 cm<sup>3</sup> of concentrated Hydrochloric Acid.
- d. Allow the solution to stand for about 1 minute, titrate the solution with 0.1N Sodium Thiosulphate until a straw colour is obtained.

- e. Add 0.2 - 0.5 grams of 'Iotect' Iodine indicator (May and Baker Ltd) and continue the titration until the blue-black colour disappears. Calculate the required addition of **Alocrom 1000** from the following table:-

<b>cm<sup>3</sup> of 0.1N Sodium</b>	<b>Concentration of 'Alocrom'</b>
<b>Thiosulphate</b>	<b>% by volume</b>
5.0	7
5.7	8
6.5	9
7.2	10
7.9	11

The bath should normally be replenished whenever the concentration drops by 1% or more.

## **6.2 pH Determination**

A pH determination should be made after the bath has been replenished. This should be less than 4.0. If it rises above 4.5 the bath should be discarded. Narrow range pH papers are adequate for this test if a pH meter is not available.

## **7. RINSING**

After coating with 'Alocrom' 1000, drain the parts over the 'Alocrom' tank and then immerse them for about 30 seconds in rinse water. A warm water rinse (50 - 70°C) can be used to speed up drying.

The surface of the rinse bath should be kept clean by means of an occasional flow of water over the skimming trough and it should be changed at least daily to avoid excessive build-up of 'Alocrom' residues.

## **8. DRYING**

Where production conditions permit, the work may be allowed to air dry. Oven-drying will speed up production and a well ventilated oven at 70°C will generally be suitable.

## 9. EQUIPMENT

Basic equipment consists of simple dip tanks with facilities for heating in the pre-cleaning 'Alocrom' and final rinse stages.

The 'Alocrom' and 'Deoxidiser' tanks should be constructed of stainless steel (En 58J type) or mild steel lined with rigid PVC, 'Neoprene' or sheet Polythene, but **not lead, glass or natural rubber.**

Work can be handled in crates, baskets, tumbling barrels, or from jigs on a conveyor. Containers that are immersed with the work should be of stainless steel, heavy gauge aluminium or mild steel that has been suitably coated.

## 10. HANDLING PRECAUTIONS

Information on hazards and handling of the product as supplied is given in the relevant Health & Safety Data Sheet which must be read and understood by everyone handling or using the product.

Adequate ventilation should be provided for the Alocrom processing area.

**Alocrom 1000** is acidic.

Operators should be equipped with rubber or PVC gloves and aprons. In addition a face shield or goggles should be worn when handling the concentrate.

If Alocrom is splashed onto the skin wash off immediately with plenty of water then wash with warm water and soap. Avoid prolonged or repeated skin contact. If Alocrom gets into the eyes flush immediately with plenty of water and GET MEDICAL ATTENTION AT ONCE.

Spills should be contained or absorbed using inert material. **DO NOT USE SAWDUST TO ABSORB SPILLS.** Do not allow rags, clothing or other organic matter saturated with Alocrom to dry out. Rinse out with water before discarding.

Store in a cool dry place away from oxidisable or flammable materials.

## 11. FURTHER INFORMATION

Full information on the hazards and safe handling of the product as supplied is given in the Health & Safety Data Sheet which must be read and understood by everyone handling or using this product.

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