

BONDERITE M-CR 1000L AERO CHROMATE CONVERSION COATING

(KNOWN AS ALODINE 1000L)

INTRODUCTION:

BONDERITE M-CR 1000L AERO (known as ALODINE 1000L) is a liquid chemical used to produce a protective coating on aluminum and aluminum alloys. The coating provides protection for aluminum and this coating provides an excellent bond for organic coatings. BONDERITE M-CR 1000L AERO develops a clear or colorless protective coating and it should be used when the characteristic aluminum appearance or finish must be retained. BONDERITE M-CR 1000L AERO is approved for use under Boeing Specification BAC 5719 for Class B.

OPERATING SUMMARY:

General Use Instructions:

Chemical:

BONDERITE M-CR 1000L AERO

Bath Preparation per 100 gallons:

10.0 gallons (10% by volume)

Operation and Control:

BONDERITE Titration

6.8 to 7.2 ml

Temperature

70° to 160° Fahrenheit
(21 - 71 °C)

Time

Immersion:

2 to 5 minutes

Spray:

15 to 30 seconds

pH

Optimum below 4.0

**BONDERITE M-CR 1000L AERO
CHROMATE CONVERSION COATING
(KNOWN AS ALODINE 1000L)****Boeing BAC 5719, Class B Use for Type 1 and Type III:****Chemical:**

BONDERITE M-CR 1000L AERO

Bath Preparation per 100 Gallons:15.0 gallons (15% by volume)
15.0 liters per 100 liters or
19.20 fluid ounces/gallon
150 ml/liter**Operation and Control:**

BONDERITE Titration:

10 to 11.5 ml

Temperature:

140° to 160°F (60° - 71°C)

Time:

Immersion:

2 to 5 minutes

pH:

Optimum below 4.0

Boeing BAC 5719, Type II, Manual Application:**Chemical:**

BONDERITE M-CR 1000L AERO

Bath Preparation:

Dilute 4 parts (volume) of product with 6 parts (volume) of water and completely mix.

Operation and Control:

1. Prepare the surface via the best approved method in order to ensure a uniform, tight conversion coating.
2. Mixed material that has not been contaminated must be stored in closed covered containers of stainless steel (300 series) or acid resistant plastic (polyethylene is highly preferred) or acid resistant rubber.
3. Applicators should be properly cleaned/stored or correctly disposed of in accordance with plant procedures.

BONDERITE M-CR 1000L AERO CHROMATE CONVERSION COATING

(KNOWN AS ALODINE 1000L)

PROCESS:

The complete process sequence normally consists of the following steps:

1. Cleaning with a BONDERITE® cleaner
2. Water Rinsing
3. Deoxidizing with BONDERITE® technology, if required.
4. Water Rinsing
5. Treating with BONDERITE M-CR 1000L AERO processing solution
6. Water Rinsing
7. Drying

MATERIALS:

1. BONDERITE M-CR 1000L AERO chemical
2. Testing Reagents and Apparatus

EQUIPMENT RECOMMENDATION:

The process tank, housing, pumps and piping should be constructed from stainless steel, such as 316L or 304L. The 316L being preferred for maximum tank life. In all cases, approved welding techniques must be used.

Heat exchanger plates should be polished 316 stainless steel. Gas fired burner tubes are not recommended. All process circulation pump seals, valve seats, etc., which come into contact with the process solution and occasional acid equipment cleaners, should be EPDM, Viton™ or Teflon™.

Chemical feed pump parts and other elastomers which may come into contact with the concentrated replenishing chemical should be Viton or Teflon.

Support equipment available from Henkel Surface Technologies for this process includes: chemical feed pumps, level controls, transfer pumps and bulk storage tanks.

Our sales representative should be consulted for information on Henkel Surface Technologies automatic process control equipment for this process and any additional questions. In addition, the "Henkel Surface Technologies Equipment Design Manual" may be consulted.

SURFACE PREPARATION:**Cleaning:**

All metal to be treated must be free from grease, oil and other foreign matter before the treatment. A complete line of BONDERITE cleaners are available and our representative should be consulted.

Water Rinsing:

After cleaning, the metal must be thoroughly rinsed with water. The rinse should be overflowed at a rate that will keep it clean and free from scum and contamination.



BONDERITE M-CR 1000L AERO CHROMATE CONVERSION COATING

(KNOWN AS ALODINE 1000L)

Deoxidizing (optional):

When aluminum to be treated with the BONDERITE M-CR 1000L AERO has surface corrosion products or heavy surface oxides, it should be activated by installing two additional steps between the post cleaner rinse and the treatment stage. One is used for deoxidizing and the second is for an additional cold water overflowing rinse.

TREATING WITH THE BONDERITE M-CR 1000L AERO PROCESSING SOLUTION:**Buildup:**

Fill the tank about three fourths full with cold water. For each 100 gallons of bath add 10.0 gallons of BONDERITE M-CR 1000L AERO chemical and circulate until thoroughly mixed. Finally add sufficient water to bring the solution up to the working level and adjust temperature, if necessary.

Operation:

Time

Immersion: 2 to 5 minutes.

Spray: 15 to 30 seconds.

Temperature: 70° to 160° Fahrenheit (21° - 71 °C) for general use.
140° to 160° Fahrenheit (60° - 71°) for Boeing use.**TESTING AND CONTROL:****BONDERITE Titration:**

Pour a 50 ml sample of the BONDERITE M-CR 1000L AERO bath into an iodimetric flask and dilute with water to approximately 100 ml. Add approximately 1 gram (1/2 teaspoon) of Reagent 2 and agitate the solution until the solid material is completely dissolved. Add approximately 10 ml of Reagent Solution 49 in 5 ml increments to the lip of the flask, raising the stopper slightly after each addition to allow the acid to run into the flask. Rinse the lip several times with water and replace the stopper.

Allow the sample to settle for approximately one minute, titrate with Titrating Solution 104 until a **straw** color is obtained. Add several milliliters of Indicator Solution 10 to the sample. The solution should turn blue-black. Continue to titrate with Titrating Solution 104 until the **blue-black** color disappears.

Record the number of milliliters of Titrating Solution 104 as the BONDERITE titration.

BONDERITE titration range: 6.8 to 7.2 ml (general use)
10.0 to 11.5 ml (BAC 5719)

To increase the BONDERITE titration 1.0 ml: 1.4 gallons of BONDERITE M-CR 1000L AERO chemical per 100 gallons of bath or 1.4 liters of BONDERITE M-CR 1000L AERO per 100 liters of bath.

pH Determination:

A pH determination should be made each time the BONDERITE M-CR 1000L AERO bath is titrated. The pH of the bath should be 4.0 or lower. Should the pH go above 4.0 the bath should be discarded.



BONDERITE M-CR 1000L AERO CHROMATE CONVERSION COATING

(KNOWN AS ALODINE 1000L)

AFTER TREATMENT:**Water Rinsing:**

To avoid staining, after treating with BONDERITE M-CR 1000L AERO, a final rinse in warm water is recommended.

Drying:

Parts coming from the final water 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 gases.

STORAGE REQUIREMENTS:

BONDERITE M-CR 1000L AERO chemical freezes at 27° Fahrenheit (-3°C). Should the chemical become frozen, it should be agitated upon thawing, prior to use. Do not store with chlorine containing materials.

DISPOSAL INFORMATION:

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

Disposal information for BONDERITE M-CR 1000L AERO chemical is given on the Material Safety Data Sheet.

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

PRECAUTIONARY INFORMATION:

Consult the appropriate Henkel Material Safety Data Sheets for safety and handling guidelines for the products and reagents listed in this bulletin.

Avoid contact with eyes, skin and clothing. Do not take internally. Use with adequate (equivalent to outdoor) ventilation. A **NIOSH approved** respirator should be used during mist conditions.

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

Before using this product, refer to container label and HENKEL MATERIAL SAFETY DATA SHEET for additional precautionary, handling and first aid information.

NOTICE:

The above information and recommendations concerning this product are based upon our laboratory tests and field use experience. However, since conditions of actual use are beyond our control, any recommendations or suggestions are made without warranty, express or implied. Manufacturer's and seller's sole obligation shall be to replace that portion of the product shown to be defective. Neither shall be liable for any loss, damage, or injury, direct or consequential, arising out of the use of this product.



**BONDERITE M-CR 1000L AERO
CHROMATE CONVERSION COATING
(KNOWN AS ALODINE 1000L)**

Testing Reagents and Apparatus
(Order only those items which are not already on hand.)

| <u>Code</u> | <u>Quantity</u> | <u>Item</u> |
|-------------|-----------------|--|
| 205999 | 1 | Bung Wrench |
| 205700 | 1 | Buret assembly, 25-ml Automatic, Glass |
| 205897 | 2* | Flask, iodimetric, 250-ml |
| 205852 | 1 | Graduated Cylinder, 50-ml |
| 205010 | 250 ml | Indicator 10 (starch solution) |
| 205590 | 1 | Indicator Dropping Bottle, 2 oz |
| 205953 | 1 | Pipet, 5-ml, Measuring |
| 205947 | 1 | Pipet Filler |
| 205082 | 450 gm | Reagent 2 (KI) |
| 205249 | 2.5 L | Reagent Solution 49 (HCl, C.P.) |
| 205104 | 1.0 L | Titrating Solution 104 (0.1N Na ₂ S ₂ O ₃) |

*Includes one more than actually necessary to allow for possible breakage.

Rev. 8/2013

Henkel Corporation | 32100 Stephenson Highway | Madison Heights, MI 48071
PHONE: (248) 583-9300 | FAX: (248) 583-2976 | www.henkelna.com/

Trademark usage

Except as otherwise noted, all trademarks in this document are trademarks of Henkel Corporation in the U.S. and elsewhere. © denotes a trademark registered in the U.S. Patent and Trademark Office.

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel Corporation's products. Henkel Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

