

BONDERITE M-CR 1500 CHROMATE COATING (KNOWN AS ALODINE 1500)

Issued 6/10/2013

1. Introduction:

BONDERITE M-CR 1500 (known as ALODINE 1500) is a liquid chemical used to produce a protective coating on aluminum or aluminum alloys. The coating provides protection for aluminum and is an excellent preparation for clear organic coatings. BONDERITE M-CR 1500 (known as ALODINE 1500) should be used when the characteristic aluminum appearance must be retained.

BONDERITE M-CR 1500 (known as ALODINE 1500) is listed on the register for QPL-MIL-DTL-81706 and is approved to be used by Methods A and C (spray and immersion processing) to produce class 3 coatings in accordance with Military Specification MIL-DTL-5541 (current issue).

BONDERITE M-CR 1500 (known as ALODINE 1500) may also be used to process aluminum under Specification MIL-S-5002; however, in processing certain exterior aircraft surfaces, approval of the procuring agency should be secured.

2. Operating Summary:

<u>Chemical:</u> BONDERITE M-CR 1500 (known as ALODINE 1500)	<u>Bath Preparation per 100 gallons:</u> 8.7 pounds (1.0 gallon)
<u>Operation and Control:</u>	
Titration	6.8 to 7.2 ml
Temperature	70° to 160° Fahrenheit
Time	
	Immersion: 2 to 5 minutes
	Spray: 15 to 30 seconds
pH	Optimum below 4.0

3. The Process:

The complete process sequence normally consists of the following steps:

- A. Cleaning
- B. Water Rinsing
- C. Deoxidizing (optional)
- D. Water Rinsing



**BONDERITE M-CR 1500
CHROMATE COATING
(KNOWN AS ALODINE 1500)**

- E. Treating with BONDERITE M-CR 1500 (known as ALODINE 1500) processing solution
- F. Water Rinsing
- G. Drying

4. Materials:

BONDERITE M-CR 1500 (known as ALODINE 1500) chemical
Testing Reagents and Apparatus

5. Equipment:

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, FKM or PTFE.

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

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

6. 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 cleaners is 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.

Deoxidizing (optional):

When aluminum to be treated with BONDERITE M-CR 1500 (known as ALODINE 1500) chemicals has corrosion products or heavy oxide on the surface, it should be cleaned by installing two additional stages between the post cleaner rinse and the treatment stage. One is used for deoxidizing and the second is for an additional cold water rinse.

7. Treating with the BONDERITE M-CR 1500 (known as ALODINE 1500) Processing Solution:Buildup:

Fill the tank about three fourths full with cold water. For each 100 gallons of bath add 8.7 pounds (1.0 gallons) of BONDERITE M-CR 1500 (known as ALODINE 1500) 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.



**BONDERITE M-CR 1500
CHROMATE COATING
(KNOWN AS ALODINE 1500)**

Spray: 15 to 30 seconds.

Temperature: 70° to 160° Fahrenheit.

8. Testing and Control:ALODINE Titration:

Pour a 50 ml sample of the BONDERITE M-CR 1500 (known as ALODINE 1500) 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 react 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 ALODINE titration.

ALODINE titration range: 6.8 to 7.2 ml.

To increase the ALODINE titration 1.0 ml: 1.2 pounds (1.1 pints) of BONDERITE M-CR 1500 (known as ALODINE 1500) chemical per 100 gallons of bath.

pH Determination:

A pH determination should be made each time the BONDERITE M-CR 1500 (known as ALODINE 1500) 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.

9. After Treatment:Water Rinsing:

To avoid staining, after treating with BONDERITE M-CR 1500 (known as ALODINE 1500), a final rinse in warm water is recommended. If operating in accordance with MIL-S-5002, the final rinse is mandatory.

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.

10. Storage Requirements:

BONDERITE M-CR 1500 (known as ALODINE 1500) chemical freezes at 27° Fahrenheit. Should the chemical become frozen, it should be agitated upon thawing, prior to use. Do not store with chlorine containing materials.

11. Waste Disposal Information:

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

Disposal information for BONDERITE M-CR 1500 (known as ALODINE 1500) chemical is give on the Material Safety Data Sheet.



BONDERITE M-CR 1500
CHROMATE COATING
(KNOWN AS ALODINE 1500)

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.)

12. Precautionary Information:

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

BONDERITE M-CR 1500 CHROMATE COATING (KNOWN AS ALODINE 1500)

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

<u>Code</u>	<u>Quantity</u>	<u>Item</u>
596491	1	Bung Wrench
592477	1	Buret assembly, 25-ml Automatic, Glass
592489	2*	Flask, iodimetric, 250-ml
592484	1	Graduated Cylinder, 50-ml
592401	1 qt	Indicator 10 (starch solution)
592475	1	Indicator Dropping Bottle, 2 oz
592497	1	Pipet, 5-ml, Measuring
592494	1	Pipet Filler
592413	1 lb	Reagent 2 (KI)
592438	5 pt	Reagent Solution 49 (HCl, C.P.)
592416	1 gal	Titration Solution 104 (0.1N Na ₂ S ₂ O ₃)

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

_ * * * * _

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.

