BONDERITE

Technical Data Sheet

# BONDERITE M-CR 1200S AERO

Known as Alodine 1200S
September 2019

## PRODUCT DESCRIPTION

BONDERITE M-CR 1200S AERO provides the following product characteristics:

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| **Technology** | Metal Pre-Treatment |
| **Product Type** | Conversion Coating |
| **Application** | Immersion, brush, spray |

BONDERITE M-CR 1200S AERO is a powdered chemical used to produce a protectivecoating on aluminum which minimizes corrosion and provides an improved bond for paint. Surfaces treated with the BONDERITE M-CR 1200S AERO process range in color from a light iridescent golden to tan.

### Application Areas:

BONDERITE M-CR 1200S AERO coating chemical listed on Qualified Product List QPL-81706, is an approved material to produce Class 1A and Class 3 coatings, bare or painted, in accordance with Military Specifications MIL-DTL-5541.

## TECHNICAL DATA

**(as supplied)**:

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|---|---|
| Appearance | brown powder |

## DIRECTION OF USE

**Preliminary Statement:**
Prior to use it is necessary to read the **Material Safety Data Sheet** for information about precautionary measures and safety recommendations. Also, for chemical products exempt from compulsory labeling, the relevant precautions should always be observed. Please also refer to the local safety instructions and contact Henkel for analytical support.

### Use instructions

### Operating Summary

**Chemical / Bath preparation per 100 gallons/1000 liters**

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| BONDERITE M-CR 1200S AERO | 6.3 pounds/7,5 kg |
| BONDERITE M-CR 1200S AERO (Brush) | 12.5 pounds/15 kg |

### Operation and Control:

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| BONDERITE Coating Chemical Titration, mL | 6.0 |
| Concentration range, mL | 5.0 to 19.0 |
| pH | 1.3 to 1.8 |
| Temperature, °C | 20 to 35 |
| Temperature, °Fahrenheit | 70 to 100 |
| Time, sec. | 15 to 180 |

### Process:

The complete process for the BONDERITE M-CR 1200S AERO treatment normally consists of the following steps:

1. Cleaning
2. Water rinsing
3. Deoxidizing (required for heavily oxidized surfaces)
4. Water rinse (required when deoxidizing is used)
5. Treating with the BONDERITE M-CR 1200S AERO processing solution
6. Water rinsing
7. Drying

### Equipment:

Process tanks and housings should be fabricated from 300 series alloy stainless steel, such as 304L or 316L. The 316L being preferred for maximum tank life. In all cases approved welding techniques must be used.

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**Brush Application:**
Acid-resistant (wood, rubber, stainless steel, or plastic) buckets, troughs, or other suitable containers are used to hold the diluted BONDERITE M-CR 1200S AERO coating chemical solution. Lead, glass, tin or galvanized iron should not beused. 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 BONDERITE M-CR 1200S AERO 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.

**Spray and Immersion Application:**
Process piping and pumps should be constructed of 316 or 304 stainless steel alloys. Various formulations of plastic pipe may be used with recommended support spacing, Schedule-80 being generally recommended. PVC Type I is limited to maximum process temperatures of 140° Fahrenheit. CPVC and PP may be used up to a maximum process temperatureof 190° Fahrenheit. PVDF may be used for all expected operating temperatures and may reduce the rate of scale build up in process piping. The nozzles should be fabricated from 316 stainless steel.

Heat exchanger plates should be polished 316 stainless steel. If gas fired burner tubes are used, they should be made of Schedule-80 mild steel pipe or equivalent. All process circulation pump seals, valve seats, door seals, etc., which come into contact with the process solution and occasional acid equipment cleaners, should be FKM or PTFE. EPDM may be used, but its life will be shorter.

Chemical feed pump parts and other elastomers which may come into contact with the concentrated replenishingchemical should be FKM or PTFE. Again, EPDM may be used, but its life will be shorter.

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

Your local sales representative should be consulted for information on Henkel Technologies automatic process controlequipment for this process and any additional questions.

**Surface Preparation:**

**Cleaning:**
All metal to be treated with the processing solution must be free from grease, oil and other foreign matter before thetreatment. A complete line of cleaners is available under the BONDERITE trademark and our representative willrecommend the proper one for each installation.

**Water Rinsing:**
After cleaning, the metal must be thoroughly rinsed with water. The rinse should be overflowed continuously at a ratewhich will keep it clean and free from scum and contamination.

**Deoxidizing:**
Aluminum with corrosion products or heavy oxide coated surfaces should be treated with a deoxidizer prior to the conversion coating treatment step. The deoxidizing step should follow the water rinse and should itself be followed by a separate water rinse. Our representative can recommend the correct deoxidizer to be used.

**Treating with BONDERITE M-CR 1200S AERO processing solution:**

**Buildup (Immersion or Spray):**
Fill the tank about three-fourths full with cold water for each 100 gallons of final solution volume add 6.3 pounds of BONDERITE M-CR 1200S AERO and circulate until thoroughly mixed. Finally, add sufficient water to bring the solution up to the working level and then heat the operating temperature.

**Buildup (Brush):**
Mix 2 oz. of BONDERITE M-CR 1200S AERO coating chemical per gallon of water (this is equivalent to 15 g of BONDERITE M-CR 1200S AERO 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.**

**Operation:**
Time: 15 seconds to 3 minutes
Temperature: 70° to 100° Fahrenheit / 20° - 30°C

**Operational Recommendations:**
Each alloy reacts with the BONDERITE M-CR 1200S AERO coating chemical bath to produce a coating that is characteristic of the alloy. For the treating time selected, the bath should produce a light, iridescent golden to tan colored coating on aluminum. If the desired coatings are not obtained, add BONDERITE M-CR 1200S AERO in 1/4 oz increments (up to a maximum of 3.0 oz/gal) until satisfactory coatings are produced. As the concentration of BONDERITE M-CR 1200S AERO is increased, the bath will have to be titrated to determine the operating titration. The desired coatings may also be obtained by adjusting the pH.

The initial charge and replenishment data contained herein are normal for most installations; however, our representative may suggest a deviation from this data if indicated by local conditions.

If the BONDERITE coating is powdery, the cause may be one or more of the following:

1. The work has been improperly cleaned and/or rinsed.
2. The concentration of the BONDERITE coating chemical(s) in the bath is too high.
3. The BONDERITE M-CR 1200S AERO bath has become contaminated with phosphates, sulfates, chlorides, or some other contaminant (analysis required).
4. The coating time is too long.
5. The bath temperature is too high.
6. The pH of the bath is too low for the concentration selected.

If the BONDERITE coating is too light, the cause may be one or more of the following:

1. The treating time is too short
2. The concentration of BONDERITE M-CR 1200S AERO in the bath is too low.
3. The temperature of the bath is outside the specified range.
4. The pH of the bath is outside the specified range.

**Control Procedure for BONDERITE M-CR 1200S AERO :**

**Concentration:**

Pipet a 5 mL sample into an iodimetric flask and dilute to approximately 100 mL with water. Add 1/2 teaspoon(approximately 1 g) of Reagent 2 (potassium iodide) and agitate to dissolve. Add about 10 mL of Reagent Solution 49 ((HCl, 28%) in 5 mL increments tothe lip of the flask, raising the stopper slightly after each addition to allow the acid to run into the flask. Rinse the lipseveral times with water and replace the stopper.

After the sample has settled for approximately one minute, titrate with Titrating solution 104 (0,1N $Na_2S_2O_3$) until a straw color is obtained. **Do Not** rezero the burette. Add several ml of Indicator 10 and continue the titration until the blue-black color disappears. The mL of Titrating Solution 104 used is the bath concentration value in points (mL).

Concentration range: Within ± 1 point (mL) of the value which gives the desired results.

To increase the value 1 point (mL): Add 1 lb of BONDERITE M-CR 1200S AERO per 100 gallons.

Concentration: 1 mL of titrant = 1.73 mg/mL of hexavalent chrome in BONDERITE M-CR 1200S AERO

**pH Determination:**

A pH determination should be made after each replenishing addition.The optimum pH for this bath is between 1.3 to 1.8.

**NOTE: The pH of the BONDERITE M-CR 1200S AERO bath is controlled by the addition of 1/2 pint of concentrated nitric acid for every 2 to 4 pounds of BONDERITE M-CR 1200S AERO used. It is recommended that no large bulk additions to nitric acid be made. The nitric acid additions should be made along with the required BONDERITE M-CR 1200S AERO additions.**

In certain instances, the pH of the bath will continue to decrease several hours after an addition of nitric acid (as the solution seeks equilibrium). Accordingly, small adjustments in pH should be made allowing 15 minutes to elapse before subsequent adjustment.

If the amount of nitric acid specified is insufficient to maintain the bath pH, the pH will rise causing a reduction in colorintensity of the coating. If this occurs, increase the amount of nitric acid per addition (in small increments to a maximum of 1.5 pints per 2 to 4 pounds of BONDERITE M-CR 1200S AERO until the color intensity of the coating is maintained.

**After Treatment:**

**Water Rinsing:**
After the conversion coating treatment, the work is thoroughly rinsed in cold water. The rinse should be continuously overflowed and the overflow should be regulated with the rate of production so that the main body of the rinse never becomes excessively contaminated.

**Drying:**
The treated articles should be dried immediately after the post treatment. Enough heat usually remains from a hot posttreatment 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/60°C 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.

**Storage:**

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| Temperature, °C | -10 to 40 |
| Shelf-life (in unopened original packaging), months | 48 |

**Classification:**
Please refer to the corresponding **Material Safety Data Sheets** for details on:

- **Hazards identification**
- **Transport information**
- **Regulatory information**

## ADDITIONAL INFORMATION

### Disclaimer

**Note:**

The information provided in this Technical Data Sheet (TDS) including the recommendations for use and application of the product are based on our knowledge and experience of the product as at the date of this TDS. The product can have a variety of different applications as well as differing application and working conditions in your environment that are beyond our control. Henkel is, therefore, not liable for the suitability of our product for the production processes and conditions in respect of which you use them, as well as the intended applications and results. We strongly recommend that you carry out your own prior trials to confirm such suitability of our product.
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