

BONDERITE M-ED 9000

Known as Alodine ECC 9000
July 2022

PRODUCT DESCRIPTION

BONDERITE M-ED 9000 provides the following product characteristics:

| | |
|---------------------|--------------------|
| Technology | Industrial Cleaner |
| Product Type | Chromium-free |
| Application | Metal Parts |

BONDERITE M-ED 9000 is a chromium-free ceramic coating designed especially for being applied on aluminium, titanium and their alloys in 2 to 15 µm thick layers.

Parts are coated in an immersion process.

BONDERITE M-ED 9000 can remain without paint in many applications, but also provides an excellent base for adhesive bonds, thermal spray coatings, porcelain and organic coatings.

DIRECTIONS FOR 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.

Bath Make-up:

Bath preparation per 100 L, add:

BONDERITE M-ED 9000 5 to 8 L (depending on the coating system)

Treatment, setting and control values (rinsing cycles are necessary)

| | |
|-----------------|------------|
| Concentration* | 5 to 8% |
| Treatment time* | 1 to 5 min |
| pH* | 1.6 to 1.8 |
| Temperature | 15 to 50°C |

The actual setting ranges vary depending on the application conditions, and need to be determined by trials in the individual case.

Pretreatment:

- Alkaline cleaning
- Rinsing

- Rinsing
- Rinsing (demineralised water in counterflow)
- Electroceramic coating with BONDERITE M-ED 9000
- Rinsing
- Rinsing
- Rinsing (demineralised water in counterflow)

Process Components:

BONDERITE M-ED 9000
BONDERITE M-AD 700
Test reagents and device

Plant Requirements:

Danger of electric shock.

Similar to any other electrical coating process or electrical system, it is essential to ensure that the process is insulated from the operator by means of non-conductive barriers, such as PVC or other plastics.

Pulse currents may occur during the process.

People with a pacemaker or similar implanted devices must not stay within a radius of 5 metres around the container or the cabling system of the plant.

As an additional protection measure against an electric shock, a large-dimensioned partition wall made from a transparent plastic material must be erected between operating staff entering the stations or areas and the voltage-carrying process.

For more detailed information regarding automatic process controls of Henkel Adhesives Technologies please contact your Henkel sales consultant who will also gladly answer any further questions.

All devices and technical components getting into contact with the product solutions need to be thoroughly cleaned prior to their use.

This also applies, without limitation, to metering pumps for chemicals, the solution container as well as covers/housings. To this end, our representative will provide you with a cleaning recommendation describing the procedure to be followed.

Surface Preparation:

Cleaning:

All metallic surfaces to be treated with the process solution must be free from oils, greases and other contaminations. A full range of suitable cleaning agents is available. Our representative will recommend you the optimum product from this range for each application.

Water Rinsing:

Following the cleaning operation, the metallic surface needs to be thoroughly rinsed with water. The rinse water is added

continuously overflowing in a volume flow designed such that spoiling, foaming and other contaminations are prevented. During the last rinsing step upstream of the BONDERITE M-ED 9000 treatment container as well as the subsequent rinsing cycle, the electrical conductivity needs to be kept to a maximum of 10 to 20 $\mu\text{S}/\mu\text{m}$.

Electrochemical coating with BONDERITE M-ED 9000:

Quantity to be used:

It is recommended to use 5 to 8 litres of the chemical per 100 L bath preparation.

Fill the container about half full with demineralized water.

Add to the bath the correct amount of BONDERITE M-ED 9000 and adjust the bath with the BONDERITE M-AD 700 (about 2 to 4 L per 100 L of bath preparation) to a pH value of 1.6 to 1.8.

Then, add more water to reach the desired process filling level.

Subsequently, mix thoroughly.

Operating data:

| | |
|----------------|---------------|
| Voltage | 300 to 450 V* |
| Treatment time | 120 to 180 s |
| Temperature | 15 to 49°C |

* The current density and other parameters depend on the application conditions and are determined by your Henkel agent.

The concentration of the solution may be increased or reduced depending on the metal and plant conditions. Our representative will support you in determining the optimum concentration.

Bath Control:

Never use your mouth but only a pipette filler for pipetting.

Concentration measurement:

The concentration of the product solution is determined in a simple calorimetric process.

A 250 mL volumetric plastic flask is filled as follows:

Pipette 2 mL of the used bath liquid into the flask.
 Add 100 mL of demineralized water.
 Add 100 mL RS44 (50% sulphurous, precisely measured) per measuring cylinder).
 Add 10 mL RS 46 solution per measuring cylinder.
 Fill up to the 250 mL mark with the remaining demineralized water.

Measure the extinction with the help of a mobile Hach spectrophotometer (No. 59530-42) adjusted to 420 nm (use water as the comparison sample). Check or perform the correct zero adjustment of the device prior to the measurement. It is essential to comply with the operating

manual of the system used. Thereafter, determine the bath concentration by using the table below:

Note:

A 420 nm Pocket Colorimeter II with a 10 mL plastic cuvette (1 cm path length, Hach No. 41658-02) - manufactured for the Hach Pocket Colorimeter II (No. 59530-42) - must be used since, otherwise, the values of the table do not apply.

| <u>Extinction:</u> | <u>Bath concentration (v/v):</u> |
|--------------------|----------------------------------|
| 0.27 | 3.0 |
| 0.34 | 4.0 |
| 0.395 | 4.5 |
| 0.41 | 5.0 |
| 0.47 | 5.5 |
| 0.49 | 6.0 |
| 0.53 | 6.5 |
| 0.56 | 7.0 |
| 0.62 | 8.0 |
| 0.7 | 9.0 |
| 0.76 | 10.0 |

pH adjustment:

For normal processing operations - except for refilling of the bath - a pH adjustment is usually not necessary.

Measurement of layer thickness:

For this purpose, any commercial eddy current test instrument (non-ferrous type) can be used here, facilitating a reading of 0.01 μm .

Rinsing with water:

Following the treatment, the metal needs to be thoroughly rinsed with water. The rinse water is added continuously overflowing in a volume flow designed such that spoiling, foaming and other contaminations are prevented. Usually, demineralized or reverse osmosis water is required.

After Treatment:

Drying:

After having been rinsed, the treated workpieces should be dried in an indirectly heated oven (or by means of another method preventing any contamination of the metal due to flue gas, oil or incineration residues).

In some cases the water of the last rinsing cycle is heated such that a further drying step is rendered unnecessary.

Workpieces with cavities or recesses in which humidity may be trapped, should be blown dry by means of clean compressed air.

Clean gloves of a lint-free cotton material should be worn for manually handling the dried, still unpainted workpieces, if necessary.



Replenishment:

Depending on the metal surface and the type of the workpiece, BONDERITE M-ED 9000 Makeup or Replenisher should be used (tests and checks are identical for both products).

To maintain the pH value in the bath, more BONDERITE M-AD 700 is required.

Our Technical Service will suggest the most suitable products for replenishing operations according to the plant.

Disposal:

Relevant regulations regarding the disposal and discharge of chemical substances must be taken note into account and complied with.

Disposal instructions for BONDERITE M-ED 9000 can be found in the safety data sheet of each product.

The bath has a pH value between 1.6 and 2.0 and contains fluoride.

Therefore, treatment and neutralization of the fluid may become necessary before discharging it into sewerage system.

Caution:

First aid measures and handling recommendations contained in the associated safety data sheet should be taken into account and complied with when handling the chemical product used in this process. The product solution is acidic and may cause irritations of the skin and ocular burns. Therefore, skin and eye contact must be avoided. In case of a skin and eye contact, the recommended remedial measures must be initiated as are described in the BONDERITE M-ED 9000 safety data sheet.

Storage:

If the chemical product has been frozen, it needs to be thoroughly mixed before it is used.

At storage temperatures below 4°C or above 38°C BONDERITE M-ED 9000 may precipitate.

Therefore, it must be stored at temperatures between 4°C and 38°C.

If the temperature has exceeded or fallen below the above range, the product should be heated up or cooled down to the permissible temperature immediately and stirred.

Classification:

Please refer to the corresponding **Material Safety Data**

Sheets for details on:

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

ADDITIONAL INFORMATION**Disclaimer**

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. Any liability in respect of the information in the Technical Data Sheet or any other written or oral recommendation(s) regarding the concerned product is excluded, except if otherwise explicitly agreed and except in relation to death or personal injury caused by our negligence and any liability under any applicable mandatory product liability law.

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Reference 0.0