Technical Data Sheet

BONDERITE® M-AC TG-2 B

November 2025

Product description
BONDERITE® M-AC TG-2 B provides the following product characteristics:

Technology	Metal pretreatment
Product type	Activation product for manganese phosphating process
Application	Immersion
Process components	BONDERITE® M-AC TG-2 BONDERITE® M-AC TG-2 B

BONDERITE® M-AC TG-2 consists of two powdered components and is used in pre-rinsing in manganese phosphating processes. Pre-rinsing causes uniform and finely crystalline manganese phosphate layers to be applied to steel and iron after a strong alkaline degreasing or pickling in mineral acids.

Please note
BONDERITE® M products are used in the surface modification of metals and usually applied in a multi-stage process. The performance of these surface treatments depends on various factors such as the preceding cleaning or etching steps, line design or process parameters.

Directions for use

Preliminary statement
Prior to use it is necessary to read the **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, for 1000 L
3/4 of the bath is filled with water. Then add whilst thoroughly circulating:

BONDERITE® M-AC TG-2, kg	0.5 - 2
BONDERITE® M-AC TG-2 B, kg	0.5 - 2

Note:
It is advisable to pre-dissolve BONDERITE® M-AC TG-2 and BONDERITE® M-AC TG-2 B with hot water.

Operating parameters	
Time, min	1 - 3
pH-value	8 - 9
Temperature, °C	20 - 60

Process description
The complete process normally consists of the following steps:

- Cleaning / Pickling
- Rinsing
- Pre-rinse with BONDERITE® M-AC TG-2
- Phosphating with BONDERITE® M-MN (Thermoil Granodine)
- Rinsing
- Post-treatment

Cleaning / Pickling
For cleaning and degreasing we recommend the use of suitable products from our BONDERITE range. To remove rust and scale the material must be pickled. Suitable for pickling are mineral acids that contain an inhibitor. For details on the application of our BONDERITE inhibitors please refer to the respective Technical Data Sheets.

Rinse
After cleaning and pickling, the treatment material is rinsed with water. The rinsing baths must have a constant supply of fresh water and be equipped with an overflow device.

Pre-rinse with BONDERITE® M-AC TG-2
The pre-rinse bath must be prepared with a high-speed agitator which ensures a thorough circulation of the BONDERITE suspension. The efficiency of the pre-rinse will go down if BONDERITE® M-AC TG-2 precipitates on the bath floor. It is necessary to continuously circulate the suspension even during breaks or at night.

Phosphating
For manganese phosphating a suitable BONDERITE® M-MN process is applied. Details on the application can be found in the Technical Data Sheet.

Rinse
The rinsing bath must have a constant supply of fresh water and be equipped with an overflow device.

Post-treatment
The post-treatment is usually performed in a watery passivation solution, or the parts are oiled with a corrosion protection emulsion or a corrosion protection oil.

Bath control
Since the pH value is not so high, the total alkalinity of the preparation water must be taken into account. This value must be subtracted from the value of the bath analysis.

Required equipment and reagents:

- 1 measuring cylinder 100 ml
- 1 beaker 250 ml
- 1 stirrer
- 1 automatic burette
- Indicator Bromocresol Green 0.4 %
- Hydrochloric acid solution 0.1 N (alternatively 0.1 N sulfuric acid)

Total alkalinity of the preparation water

- Measure exactly 100 ml of the preparation water with a measuring cylinder and pour into the 250 ml beaker.
- Add 5 - 6 drops of bromocresol green 0.4 %.
- Homogenize.
- The solution turns blue.
- Using the 25 ml burette filled with 0.1 N hydrochloric acid solution, titrate the sample until the colour changes to yellow.

Consumed ml = V_1

Total alkalinity of the bath test

- Measure exactly 100 ml of the activation bath with a measuring cylinder and pour into the 250 ml beaker.
- Add 5 - 6 drops of bromocresol green 0.4 %.
- Homogenize.
- The solution turns blue.
- Using the 25 ml burette, filled with 0.1 N hydrochloric acid solution, titrate the bath sample until the colour changes to yellow.

Consumed ml = V_2

Conclusion
$V_2 - V_1$ gives the total alkalinity of the activation bath.
For a new bath with a concentration of 0.5 g/l each of both components BONDERITE® M-AC TG-2 and BONDERITE® M-AC TG-2 B, the titration results in $V_2 - V_1 = 3.0$ ml.

Bath supplement
For each missing ml of 0.1 N hydrochloric acid solution, the following are added to the activation bath per 1000 l:

BONDERITE® M-AC TG-2	150 g
BONDERITE® M-AC TG-2 B	150 g

If no improvement occurs despite this measure, the foreign salt content introduced is too high. A new approach is then required.

General information
The bath tank, the agitator and the heating equipment may be made of suitable materials. Wastewater treatment must be carried out in accordance with the local official discharger guidelines.

Caution
The hazard warnings and safety advice on the container labels and Safety Data Sheets must be followed.

Bath analyses
Required equipment and reagents:

- Beaker 300 ml (2)
- Special indicator paper, pH 6.5 - 10 (Merck, Art. 9543) or pH meter

The glass devices are listed in double numbers for reasons of the risk of breakage. Phosphate solution without a water rinse.

Waste disposal information

- Applicable regulations covering disposal and discharge of chemicals should be consulted and followed.
- Disposal information for the chemical, in the form as supplied, is given on the Material Safety Data Sheet.
- The treatment solution contains heavy metal and phosphate. Waste treatment may be required prior to discharge to the sewer.
- The treatment solution sludge can contain ingredients other than those present in the chemical as supplied and analysis of the solution and/or sludge may be required prior to disposal.

Classification
Please refer to the corresponding **Safety Data Sheets** for details on:
Hazards identification
Transport information
Regulatory information

Storage

Recommended storage temperature, °C	-20 - 50
Shelf-life (in unopened original packaging), months	24

Additional information

Disclaimer
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