

BONDERITE M-FE 3960

Known as Duridine 3960
July 2016

PRODUCT DESCRIPTION

BONDERITE M-FE 3960 provides the following product characteristics:

Technology	Cleaner - coater
Product Type	Acid 1-component
Application	Spray
Concentration	10 to 30 g/L
Temperature	50 to 60°C

BONDERITE M-FE 3960 is a liquid product based on acidic phosphates and a combination of highly efficient surfactants. BONDERITE M-FE 3960 degreases and cleans steel, galvanized steel and aluminium.

On cold rolled steel and iron BONDERITE M-FE 3960 simultaneously generates a uniform iron phosphate layer with a coating weight of 0.2 g/m² - 0.4 g/m².

The iron phosphate layer provides an excellent adhesion for organic coatings and improves the corrosion resistance.

Also on galvanized steel and aluminium surfaces the adhesion of organic coatings is improved by BONDERITE M-FE 3960.

When parts out of aluminium or galvanized steel are treated in the same line at a high amount (>10%), BONDERITE M-AD 338 should be added to avoid a distortion of the iron phosphating process.

BONDERITE M-FE 3960 is used in spray applications.

BONDERITE M-FE 3960 can also be used in high pressure equipment.

Iron phosphating baths can be controlled by measuring the pH value or the conductivity.

For BONDERITE M-FE 3960 it is advisable to use the pH value measurement for controlling the bath and the dosing.

Process components

BONDERITE M-FE 3960

BONDERITE M-AD 565

BONDERITE M-AD 338 or BONDERITE M-AD 339 L, if needed

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.

Application:

Modification of the following data may be necessary due to specific needs of the phosphating line.

Bath make-up:

Fill the bath with water and heat it to operating temperature. Add with running circulating pump the correct amount of BONDERITE M-FE 3960. Please note that BONDERITE M-FE 3960 generates foam when the spray equipment starts working at temperatures below 50 °C.

Build-up for 1,000 L solution:

BONDERITE M-FE 3960 10 to 30 kg = 7.8 to 23.4 L

BONDERITE M-AD 565 to adjust the pH-value

Remarks:

A BONDERITE M-FE 3960 bath with a concentration of 10 g/L in deionized water has a pH-value of approx. 2.6. The pH-value depends on the concentration and the hardness of the water. With addition of BONDERITE M-AD 565 the pH-value increases. At the same time, the Total Acid pointage decreases. The correct amount of BONDERITE M-AD 565 has to be determined on site. A start pH-value of 4.5 to 4.8 is recommended.

Operating Parameters:

Total acid, points	4.1 to 12.3
pH	4.5 to 5.5
Temperature, °C	50 to 60
Time for the spray process, min	1.5 to 3
Spray pressure, bar	1 to 2

Bath Control:

The BONDERITE M-FE 3960 bath can be checked by titration of "total acid" and by pH-measurement.

"Total Acid" titration:

- Pipette a 10 mL sample into a 150 mL beaker and dilute with about 50 mL deionized water.
- Add 3 to 5 drops of indicator Phenolphthalein.
- Titrate with 0.1 N sodium hydroxide from colorless to the development of a permanent pink color.
- The mL of 0.1 N sodium hydroxide required indicates the Total Acid value in points.

It is also possible to titrate the Total Acid with a pH-electrode. The consumption of mL 0.1 N sodium hydroxide until a pH-value of 8.5 is the Total Acid pointage.

Replenishment:

To increase 1 point "Total acid" add per 1,000 L Duridine bath:

BONDERITE M-FE 3960 2.4 kg = 1.9 L

After Treatment:Water rinsing:

After phosphating, the work is thoroughly rinsed with water at ambient temperatures for 20 to 40 sec. The rinse should be continuously overflowed, and the flow should be regulated with the rate of production so that the main body of the rinse never becomes excessively contaminated.

Deionized water rinse:

A water rinse may be required following the post treatment. Deionized water is preferred but relatively pure tap water may be used. The paint used and the quality required for the finished part will determine if rinsing is necessary and if deionized water must be used.

Disposal information for the chemical, in the form as supplied, is given on the Material Safety Data Sheet.

General Maintenance:

In the operation of the process, a small quantity of sludge will be formed as a by-product of the coating reaction. This residue settles to the bottom of the tank and should be removed before its presence causes dusty coating, or interferes with the operation of the spraying system. A satisfactory method of removal is to transfer the solution to a rinse tank, leaving as much sludge as possible in the bottom of the processing tank. The sludge may then be removed by any convenient means.

When the solution has been heated for some time, scale will form on the heating unit and must be removed at intervals so that adequate heat transfer will occur and the proper processing temperature will be maintained. To remove the scale, dry the heat transfer surface either by removing it from the solution or by pumping the solution from the tank. The scale may then be removed by a suitable chemical or mechanical method.

Waste disposal information:

The processing bath is slightly acidic and contains phosphate. Neutralization and/or waste treatment of rinse water or processing solution may be required prior to discharge.

The processing bath and sludge which accumulates in the bath 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.

Equipment:

Process tanks and housings may be fabricated from mild steel plate, however, equipment life will be greatly extended by using stainless steel.

In case of using BONDERITE M-AD 338 or BONDERITE M-AD 339 L (Fluoride-component) it is necessary to use stainless steel or plastic-laminated steel. In all cases approved welding techniques must be used.

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 Buna-N, Viton (TM) or Teflon (TM).

Chemical feed pump parts and other elastomers which may come into contact with the concentrated replenishing chemical should be Buna-N, Hypalon (TM), Viton (TM) or Teflon (TM).

Materials for analysis:"Total acid" with indicator:

Pipette 10 mL (2)
Erlenmeyer-flask 300 mL (2)
Burette 25 mL (2)
Distilled water
0.1 % alcoholic solution of Phenolphthaleine
0.1 N Sodium hydroxide solution
Dropping bottle 25 mL (2)

"Total acid" with pH-electrode:

Beaker 200 mL (2)
Magnetic stirrer
Stirring device
pH-meter
Dosing unit (Dosimat)

Storage:

Recommended Storage Temperature, °C	5 to 40
Shelf-life, months	36
(in unopened original packaging)	

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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Reference 0.1