

## BONDERITE® M-ZN 20

Known as Granodine 20  
September 2023

### PRODUCT DESCRIPTION

The BONDERITE® M-ZN 20 Process provides the following product characteristics:

<b>Technology</b>	Metal Pretreatment
<b>Product Type</b>	Phosphating products for metals
<b>Application</b>	Conversion coating
<b>Process Components:</b>	BONDERITE® M-ZN 20 BONDERITE® M-AD 565 BONDERITE® M-AD 130

BONDERITE® M-ZN 20 is a nitrate, nitrite accelerated phosphating process, which produces microcrystalline zinc calcium phosphate layers on steel and iron surfaces.

#### Application Areas:

BONDERITE® M-ZN 20 is used in spray- and spray/immersion processes. It must be combined with a suitable cleaning booster.

The conversion layers provide very good corrosion protection and excellent adhesion for follow up painting or coating.

BONDERITE® M-ZN 20 is low in sludge and an exceptionally easy-care, one component process.

The coating weight varies between e.g. 3 to 6 g/m<sup>2</sup> (depending on process conditions and / or substrate the value can deviate).

BONDERITE® M-ZN 20 is used as a conversion step in typical immersion pre-treatment cycle were the steel pieces have been previously pre-treated to remove surface pollutants like oils, rust etc.

#### Note:

In Special cases it is possible to employ the process at a temperature range of 85 to 90 °C on the "iron side".

#### Process components

BONDERITE® M-ZN 20	for the make up and replenishment
BONDERITE® M-AD 565	additive
BONDERITE® M-AD 130	accelerator

### 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.

#### Operating data:

Temperature, °C	70 to 80
Time, min	2 to 5
Concentration, %	4.4 to 6.6

#### Bath Make-up:

- Fill the tank about 3/4 full with water.
- Add 44 to 66 kg of BONDERITE® M-ZN 20 for each 1000 L tank volume.
- Fill the bath to the final level and heat up to operating temperature.
- Make the controls and (when necessary) the required adjustments while agitating : 7.5 to 11.4 kg of BONDERITE® M-AD 565.

Just before the start up add 0.5 kg BONDERITE® M-AD 130 for each 1,000 L bath volume.

#### Note:

BONDERITE® M-AD 130 solution is produced by dissolving 25 kg in 100 L water. BONDERITE® M-AD 130 solution should be added only shortly before start of production.

#### Bath Control:

The working bath is run through the control of the following parameters:

Concentration	44 g/L	64 g/l
Total Acid	20 to 30	
Free Acid	3 pt	4.5 pt
Accelerator	0.8 to 1.5 pt	0.8 to 1.5 pt

#### Total Acid:

- Pipette 10 mL of working bath into a 250 mL flask and add 30 to 50 mL of DI water.
- Add 5 to 10 drops of Phenolphthalein Indicator (1 % alcoholic solution).
- Under slight agitation titrate with 0.1 N Sodium Hydroxide (NaOH) solution until the colour turns from colourless to pink.

The mL of 0.1 N NaOH solution used for the titration corresponds to Total Acid points.

#### Free Acid:

- Pipette 10 mL of working bath into a 250 mL flask.
- Add 5 to 10 drops of Bromophenol blue Indicator (Alcoholic solution 0.04 %) or 5 to 10 drops of Methylorange Indicator.
- Titrate under slight agitation with 0.1 Sodium Hydroxide



(NaOH) solution until the colour turns from yellow to blue (Bromophenol Blue Indicator) or from orange to yellow (Methyl Orange Indicator).

- The mL of 0.1 N NaOH solution used for the titration correspond to Free Acid points.

#### Accelerator:

Before making the control make sure that no Fe(II) is present (use sensitive strips). If present add some BONDERITE®

M-AD 130 (i.e. 125 g in water solution for each 1,000 L bath, then verify Iron absence. When the bath is free from Fe(II) titrate as following:

- Pipette 10 mL working bath into a 250 mL flask and add 10 drops H<sub>2</sub>SO<sub>4</sub> 50 % solution.
- Titrate with 0,1 N Potassium Permanganate (KMnO<sub>4</sub>) until it acquires a permanent pink colour.

The mL of 0.1 N KMnO<sub>4</sub> used for the titration is the Accelerator value.

#### **Replenishment:**

##### Total Acid

For each missing point and every 1,000 L of bath solution add:

BONDERITE® M-ZN 20 : 2.1 kg

##### Adjustment of the Free Acid

If the pointage is above the specified range adjust by adding small amounts of BONDERITE® M-AD 565 whilst thoroughly stirring.

For each 0.1 point above the spec. range and every 1,000 L add:

BONDERITE® M-AD 565 : 0.4 kg

##### Accelerator

Add per missing toner point and per 1,000 L bath volume 0.3 L of BONDERITE® M-AD 130 solution.

#### **Caution:**

1. The phosphating tank should be made of stainless steel (advisable AISI 316). The tank bottom should be cone-shaped to get an easier removal of the settled sludge. The heat exchanges should be installed away from the sludge settling area inside the tank.

2. Keep the bath surface free from any floating pollutant.

3. Whenever the phosphatising bath has to be partially replaced (i.e.: during cleaning operation) BONDERITE® M-ZN 20 has to be used at the make up concentration.

4. The pieces just coming out of the phosphatising bath have to be immediately rinsed with plenty of cold water to avoid powdering.

5. Slight differences in the product appearance do not affect its performances.

#### **Classification:**

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

#### **Hazards identification**

#### **Transport information**

#### **Regulatory information**

#### **Storage:**

Process Component	Recommended Storage Temperature, °C	Shelf life, months (in unopened original packaging)
BONDERITE® M-ZN 20	- 16.9 to 40	36
BONDERITE® M-AD 565	0 to 50	36
BONDERITE® M-AD 130	0 to 50	12



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