

SurTec® 610

Zinc Phosphating

Properties

- zinc phosphating for iron and steel using immersion application
- produces a homogeneous layer with strong adhesion
- good corrosion protection
- by using different process parameters, it is easy to determine deposits of thin or thick layers
- thick layers are especially suitable for subsequent oiling or for cold deforming
- thin layers are especially suitable for subsequent lacquering and for lowering the sliding resistance

Application

The process SurTec 610 includes the following products:

- SurTec 610 A make-up solution contains the desired salts for the new make up in the correct relations
- SurTec 610 B Accelerator solution causes rapid and fine crystalline zinc phosphate depositions
- SurTec 610 E Replenishment Solution contains the salts for the maintenance

make-up values: ***thin layer zinc phosphating:***

SurTec 610 A	50 ml/l	(46-54 ml/l)
SurTec 610 B	35 ml/l	(32-38 ml/l)
urea	1 g/l	(0.9-1.1 g/l)

thick layer zinc phosphating:

SurTec 610 A	70 ml/l	(65-75 ml/l)
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thick layer zinc phosphating accelerated:

SurTec 610 A	70 ml/l	(65-75 ml/l)
SurTec 610 B	10 ml/l	(9-11 ml/l)
urea	1 g/l	(0.9-1.1 g/l)

make-up: Steps for make-up:

1. Fill the bath to 2/3 with deionised water.
2. Add SurTec 610 A, SurTec 610 B and urea portion by portion, stirring vigorously.
3. Fill up to the final volume.

temperature: ***for thin layer and accelerated thick layer:***

80 °C (75-90 °C)

for thick layer:

90 °C (90-95 °C)

pH-value: 1.4-1.6

application time: 7 min (5-15 min)
according to the desired weight of the deposit

weight of the layer: *thin layer:* 2 - 6 g/m²
thick layer: 20-30 g/m²
thick layer accelerated: 12-17 g/m²

tank material: stainless steel

filtration: not necessary

heating: necessary; of acid resistant material

cooling: not necessary

exhaust: required for worker's protection

hints: The treatment prior to phosphating is essential to achieve a good and homogeneous layer. This pretreatment should be adjusted according to the requirements (contamination, geometry of the pieces, alloy).

Occasionally, the tank and the heating system must be cleaned. The precipitated smut should be allowed to settle. Pump the supernatant liquid into an empty tank (e.g. an empty rinsing tank). After cleaning, pump back the phosphating bath. Missing volume must be completed as in the make up, using SurTec 610 A, SurTec 610 B and urea.

recommended process sequence (for iron parts):

1. highly alkaline cleaning, e.g. with SurTec 138 + SurTec 089
2. rinsing
3. pickling, e.g. sulfuric acid with SurTec 424
4. rinsing
5. activation, e.g. with SurTec 610 V Grain Refiner
6. zinc phosphating SurTec 610

When the surfaces are free of oxides and corrosion, pickling is not necessary.

Maintenance and Analysis

Analyse total acid, free acid, the free acid ratio and the nitrite content regularly and adjust according to the separate analysis data sheets with SurTec 610 A, SurTec 610 B, SurTec 610 E or urea.

The analysis can be done according to the separate analysis data sheets:

Analysis of “**thick layer phosphating**”

Analysis of “**accelerated thick layer phosphating**”

Analysis of “**thin layer phosphating**”

Technical Specification

(at 20 °C)	Appearance	Density (g/ml)	pH-value (at 10 g/l)
SurTec 610 A	liquid, green	1.700 (1.68-1.75)	1.7 (1.6-1.8)
SurTec 610 B	liquid, yellow-yellow/orange	1.090 (1.07-1.11)	8 (conc.)
SurTec 610 E	liquid, light greenish	1.720 (1.69-1.75)	1.7 (1.6-1.8)

Ingredients

SurTec 610 A and SurTec 610 E

- zinc oxide
- phosphoric acid
- nitric acid

SurTec 610 B

- nitrobenzene sulfonic acid derivatives

Consumption and Stock Keeping

The consumption depends heavily on the drag-out. To determine the exact amounts of drag-out, see [SurTec Technical Letter 11](#).

In order to prevent delays in the production process, per 1,000 l bath, the following amounts should be kept in stock:

SurTec 610 A	105 kg
SurTec 610 B	44 kg
SurTec 610 E	35 kg

Product Safety and Ecology

The safety instructions and the instructions for environmental protection have to be followed in order to avoid hazards for people and environment. The Material Safety Data Sheets (according to European legislation) contain explicit details for this.

The following hazard designations and classifications into water hazard classes (WHC) have to be taken into account:

<u>product</u>	<u>hazard designation</u>	<u>water hazard class</u>
SurTec 610 A	T - Toxic N - Dangerous for the environment	WHC 3
SurTec 610 B	Xi - Irritant	WHC 1
SurTec 610 E	Xn - Harmful N - Dangerous for the environment	WHC 3

Warranty

We are responsible for our products in the context of the valid legal regulations. The warranty exclusively accesses for the delivered state of a product. Warranties and claims for damages after the subsequent treatment of our products do not exist. For details please consider our [general terms and conditions](#).

Further Information and Contact

In our forum, you can discuss topics of the surface technology:
<http://forum.SurTec.com/>

If you have any questions concerning the process, please contact your local technical department: <http://SurTec.com/International.html>