

SurTec® MS 2/12

Chromium-free Multi-Metal Pre-Treatment

Properties

- suitable as multi-metal passivation prior to painting (steel, aluminium, HDG and EG zinc and zinc die cast)
- produces uniform nano-size layers
- gives excellent adhesion of lacquers and excellent corrosion protection
- no or very low sludge formation
- low process temperature
- especially robust against flash corrosion
- enables automatic dosing via pH-measurement or conductivity
- free of phosphates, zinc, nickel, manganese and VOC
- in full compliance with RoHS (EU Directive 2002/95/EC), WEEE (EU Directive 2002/96/EC) and ELV

Application

make-up value: 2.0 %vol (0.75-4.0 %vol)

analytical values:

Total Acid (TA)	3.5 Points	(2.5-15.0 Points)
zirconium:	20 Points	(7-40 Points)

temperature: room temperature (20-35°C)

pH-value: 4.7 (4.2-5.2)
adjust with 1 % sodium hydroxide solution
resp. with SurTec MS 2/12

application time: 45 s (20-120 s)

spray pressure: 0.8-1.2 bar

make-up: Steps for make-up:

1. Dilute SurTec MS 2/12 concentrate with deionised water under vigorous stirring.
2. Control the pH-value and adjust it, if necessary.

tank material: stainless steel or steel with acid- and fluoride-resistant coating

filtration: remove sludge, only if necessary (see: "hints")

heating: not necessary; temperature must be within 20-35°C

exhaust: required for worker's protection

hints: After some time a minor amount of sludge is formed in the bath, which does not affect the quality of the process. Occasionally it can be removed by pressure cleaning, e.g. during a revision or a bath change.

During processing steel parts, the colour of the passivation bath turns from colourless to slightly reddish.

The colour of the processed parts depends on material and alloy. Steel surfaces appear silver to brass/gold. Aluminium surfaces will appear colourless to yellowish.

storage: During storage, in SurTec MS 2/12 concentrate a slight precipitation may occur. This will not impair quality or function of the product.

recommended process sequence:

1. cleaning SurTec 168 / SurTec 086 (for steel only)
 SurTec 132 / SurTec 086 (for multi-metal)
2. rinsing
3. DI-rinsing (maximum 350 μ S/cm, 100 ppm Ca)
4. passivation SurTec MS 2/12
5. rinsing with DI-water (max. 50 μ S/cm)
6. hot air drying

The rinsing methods have to be adapted to the pretreatment line.

Technical Specification

(at 20°C)	Appearance	Density (g/ml)	pH-value (conc.)
SurTec MS 2/12	liquid, colourless, clear	1.015 (1.00-1.03)	approx. 1.8

Maintenance and Analysis

Check the pH-value and the Total Acidity (TA) regularly.

Analyse and adjust the Zirconium Points at least 2 times per shift. An automatic bath control is recommended. Replenishment is done according to the Zirconium Points.

Sample Preparation

Take a sample at a homogeneously mixed position. Let it cool down to room temperature. If the sample is turbid, let the turbidity settle down and decant or filter the solution.

Total Acid (TA) – Analysis by Titration

reagents: 0.1 N sodium hydroxide solution (NaOH solution)
indicator: phenolphthalein

procedure: 1. Pipette 100 ml bath sample into a 250 ml Erlenmeyer flask.
2. Add 3 drops of indicator.
3. Titrate with 0.1 N NaOH solution from colourless to pink.

calculation: consumption in ml = TA-Points

correction: At more than 15 TA-Points, dump 50 % of the bath and replenish with fresh make-up.

Zirconium – Photometric Analysis

equipment:	photometer / pocket-photometer with 500 nm wave length glass-cuvette
reagents:	indicator: reagent 2211 (dyestuff solution) (storable for at least 3 month under dark and cool conditions) 0.2 mol/l HCl buffer solution: pipette exactly 20 ml HCl (37 %; p.a.) into a volumetric flask and fill up to 1 l with deionised water ascorbic acid
procedure:	Carry out the following steps in the mentioned order: <ol style="list-style-type: none">1. Dissolve a spatula spoon (approx. 5 g) of ascorbic acid in approx. 50 ml 0.2 M HCl buffer solution. = Solution 1 (daily fresh make-up!)2. Pipette exactly 1 ml filtered bath sample into a 20 ml volumetric flask and add Solution 1 to reach the final volume. = Solution 23. In case of high iron content > 250 ppm Fe(III), wait 10 min before proceeding.4. Pipette exactly 1 ml Reagent 2211 and 1 ml Solution 2 into a glass cuvette.5. Add 5 ml Solution 1.6. Rotate gently to mix the solution and avoid gas bubbles (bubbles can be removed by knocking at the cuvette).7. Immediately measure the absorbance (ABS) of the sample at 500 nm against a blank sample. blank sample: 6 ml Solution 1 + 1 ml Reagent 2211
calculation:	$ABS \cdot 274 = \text{Zirconium Points}$

Ingredients

- zirconium salts

Stock Keeping

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

SurTec MS 2/12 50 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 MS 2/12	-	WHC 1

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>

16 July 2012/DK, PV