

Protection upgraded

SurTec® 350

Nickel Free Cold Sealer for anodized Aluminium

Properties

- liquid 1-component product with all needed substances in the optimum ratio
- free of nickel, cobalt and chromium
- concentrate is used for make-up and replenishment
- optional usable in combination with the Make-up Additives SurTec 350 A (aluminium) and SurTec 354 F (fluoride)
- very good sealing quality within extremely short treatment time
- also creates anodizing layers, stable up to pH 12.5 ¹⁾
- high corrosion resistance
- very low heating requirements
- fulfils the current quality specifications:
 - loss of mass test (ISO 3210)
 - dye spot test (ASTM B 136-7)

¹⁾ For detailed information please ask for the corresponding product information sheets

Application

SurTec 350 is a 1-component fluoride-containing product. It contains the needed ions in the optimum ratio for the bath. For the initial make-up an addition of SurTec 350 A Make-up Additive is recommended in order to reassure an optimal aluminium content at the beginning of the process. SurTec 354 F Correction Solution is only used for the initial make-up, only to increase the fluoride content.

Prepare the make-up with deionised water (max. conductivity: 100 µS/cm).

make-up values:	<i>without aluminium addition:</i>		
	SurTec 350	5 %vol	(3-7 %vol)
	<i>for adjusting a slight aluminium content:</i>		
	SurTec 350	5 %vol	
	SurTec 350 A	3 ml/l	(Aluminium Additive)
	SurTec 354 F	1 ml/l	(Correction Solution for fluoride)
analytical values:	SurTec 350	5 %vol	(3-7 %vol)

make-up:	Steps for make-up:		
	<ol style="list-style-type: none"> 1. Before usage clean an already used tank very thoroughly. 2. Fill ½ of the tank with deionised water. 3. Add the required amount of SurTec 350 under good agitation. 4. Fill up to the final volume with deionised water and mix well. 5. Adjust the pH-value cautiously to pH 5.7 with ammonia solution or caustic soda resp. with sulfuric acid. 6. After this adjustment the bath has to be clear and colourless. If the pH-value is higher than pH 6.5, immediately decrease the pH with diluted sulfuric acid. Otherwise the bath will get instable and the active components will precipitate. 		
temperature:	20-25° C	(20-30° C)	
pH-value:	5.6-5.8	(5.4-6.0)	
application time:	<i>for layers < 10 µm:</i> 1 min per µm <i>for layers > 10 µm:</i> 10 min		
tank material:	polypropylene (PP), polyvinylchloride (PVC), glass fibre reinforced plastic (GRP) or steel tanks (alloy 1.4571)		
heating:	if necessary		
exhaust:	not required		
filtration:	necessary: 0.5-1 times the total bath volume per hour; pore size: 5 µm		
hints:	<p>The sealing reaction itself does not require air circulation but air injection is recommended for the thoroughly mixing of the bath solution during preparation of a new make-up or replenishment.</p> <p>In order to remove dragged-in suspension particles an appropriate filter pump has to be installed.</p>		

Technical Specification

(at 20° C)	appearance	density (g/ml)	pH-value (conc.)
SurTec 350	liquid, colourless , clear	1.029 (1.01-1.04)	5.4 (5.2-5.6)
SurTec 350 A	liquid, colourless , clear	1.023 (1.01-1.03)	approx. 12.8
SurTec 354 F	liquid, colourless, clear	1.072 (1.05-1.09)	approx. 6.3

Maintenance and Analysis

Sealing is one of the most sensitive processes in the whole anodising plant and maintenance must be carried out daily.

Therefore it is absolutely necessary to carry out the following:

- check the pH-value daily (for optimum sealing results at least twice per shift) and adjust with diluted ammonia solution resp. with diluted sulfuric acid
- analyse the concentrations daily (for optimum sealing results at least once per shift)
- analyse and adjust the concentration of SurTec 350 regularly (analysing method is separately available, please ask for information)

Sample Preparation

Take a sample at a homogeneously mixed position and let it cool down to room temperature, if necessary. If the sample is turbid, let the turbidity settle down and filter the solution with a folded filter.

Free Fluoride - Analysis by Ion Meter

reagents:	TISAB I - Additional Solution calibration solutions: 1000 ppm, 100 ppm, 10 ppm fluoride
procedure:	Fluoride analysis in accordance with DIN 38405, chapter 4: (Hint: a pre-dilution of the bath sample is NOT necessary!) <ol style="list-style-type: none"> 1. Pipette 25 ml bath sample into a 100 ml polypropylene (PP) beaker. 2. Pipette 25 ml TISAB I Additional Solution (analysis of the free fluoride) into the PP-beaker and mix thoroughly. 3. Let react for one minute. 4. Measure the sample in a calibrated ion meter.
calculation:	indication = ppm free fluoride
correction:	addition of 1 %vol SurTec 350 = rise by 70 mg/l fluoride
note:	The ion meter has to be calibrated before measuring the fluoride concentration. Select the calibration solutions (10 ppm, 100 ppm, 1000 ppm fluoride) according to the measurement range. Please take care that no air bubble remains below the electrode during the measurement. When working with fluoride containing solutions use polypropylene (PP) beakers.

Preparation of the Calibration Solutions:

10 ppm solution:	25 ml TISAB I solution + 25 ml standard solution	10 ppm fluoride
100 ppm solution:	25 ml TISAB I solution + 25 ml standard solution	100 ppm fluoride
1000 ppm solution:	25 ml TISAB I solution + 25 ml standard solution	1000 ppm fluoride

Preparation of TISAB I - Additional Solution:

Prepare 500 ml deionised water with 57 ml ice acetic acid (of 99 %) and 58 g sodium chloride in a 1000 ml beaker and mix the solution thoroughly. Adjust the pH-value with 5 mol/l caustic soda to pH 5.0-5.5. Cool down the solution to room temperature. Fill the solution into a 1000 ml volumetric flask and add deionised water to reach the calibration mark.

Preparation of the fluoride-containing Standard Solutions:

Fluoride-containing Standard Solution 1000 ppm:

Dry 2.210 g sodium fluoride 2 hours at 120°C, fill in a 1000 ml volumetric flask and fill up to the calibration mark with deionised water (can be ordered also at company Merck, 1000 ppm standard).

Fluoride-containing Standard Solution 100 ppm:

Pipette 100 ml standard solution 1000 ppm in a 1000 ml volumetric flask and fill up to the calibration mark with deionised water.

Fluoride-containing Standard Solution 10 ppm:

Pipette 10 ml standard solution 1000 ppm in a 1000 ml volumetric flask and fill up to the calibration mark with deionised water.

Ingredients

SurTec 350

- inorganic salts
- fluorides

SurTec 350 A

- ammonium salts

SurTec 354 F

- fluorides

Stock Keeping

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

SurTec 350 50 kg

Product Safety and Ecology

Classification and designation are noted in the Material Safety Data Sheets (according to the European legislation). The safety instructions and the instructions for environmental protection have to be followed in order to avoid hazards for people and environment. Please consider the explicit details in our Material Safety Data Sheets.

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>

