

SurTec® 667

High Performance Blue Passivation

Properties

- liquid make-up concentrate without chromium(VI) and oxidising agents
- produces temper resistant passivation layers
- surpasses significantly the corrosion protection standards for blue passivated parts, also in barrel application
- produces coatings with an intensive blue colour even at short immersion times
- with long service-life (see: [SurTec Technical Letter 4](#))
- IMDS-number: 900924

Application

make-up value:	7 %vol	(5-12 %vol)
make-up:	Steps for make-up: <ol style="list-style-type: none">1. Fill the calculated amount of SurTec 667 into the tank.2. Fill up to the final volume with water.3. Adjust the pH-value to pH 1.9.	
temperature:	20°C	(15-30°C)
pH-value:	1.9	(1.7-2.2)
	adjust with nitric acid or sodium hydrogen carbonate	
	pH-value < 1.7:	decrease of corrosion protection
	pH-value > 2.2:	yellowish appearance of the passivation film, decrease of corrosion protection
immersion time:	30 s	(15-60 s)
	With growing service life of the bath, concentration and immersion time have to be adapted according to the 66x Correction Card (see: SurTec Technical Letter 4).	
agitation:	rack movement or air agitation	
tank material:	steel tanks with acid resistant plastic coating	
hints:	SurTec 667 has a potentially unlimited service-life; the limiting factor is the iron content. Depending on the make-up concentration, the critical iron value ranges within 250-500 ppm.	
	SurTec 667 is sensitive against lead and other heavy metal impurities (do not use lead as weight for air blowing tubes!).	

Maintenance and Analysis

Check the pH-value and analyse and adjust the concentration of SurTec 667 regularly.

Sample Preparation

Take a sample at a homogeneously mixed position. If the sample is turbid, let the turbidity settle down and decant or filter the solution.

SurTec 667 – Analysis by Photometry

- equipment: spectrophotometer or
filter photometer with 600 nm filter unit (± 50 nm)
100 ml volumetric flask, 1 cm cuvette
- procedure: Plot of the calibration curve (quarterly):
Prepare standards with SurTec 667 concentrate in a 100 ml volumetric flask:
- | | | |
|---------|---------|--|
| 4 %vol | Fill up | 4 ml concentrate to 100 ml and mix well. |
| 6 %vol | Fill up | 6 ml ... |
| 8 %vol | Fill up | 8 ml ... |
| 10 %vol | Fill up | 10 ml ... |
- Fill each standard into a 1 cm cuvette. Measure all standards at 600 nm photometrically against air and plot the absorbance against the concentration.
- Sample measurement:
1. Fill the filtered bath sample into the 1 cm cuvette that was used for determining the calibration curve.
 2. Measure the solution at 600 nm photometrically against air.
 3. Determine the concentration using the calibration curve.

SurTec 667 – Analysis by Titration

- reagents: sulfuric acid (conc.) p.a.
ammonium peroxodisulfate p.a.
0.1 N silver nitrate solution
potassium iodide p.a.
0.1 N sodium thiosulfate solution (= 0.1 mol/l)
starch solution (1 %)
- procedure:
1. Pipette exactly 10 ml bath sample into a 250 ml beaker.
 2. Acidify with 3 ml conc. sulfuric acid and mix by slight rotation (sample becomes clearly green).
 3. Dilute with approx. 50 ml deionised water.
 4. Add 15 ml silver nitrate solution.
 5. Add 2 g ammonium peroxodisulfate.
(Thereby a precipitation of silver nitrate will occur.)
 6. Cover it with a watch glass, heat up with a heating plate and boil it for 20 min (only slight boiling, sample will slowly become clearly yellow).
 7. After cooling to room temperature, wash down the drops from the watch glass and from the beaker's walls, using small amounts of deionised water.
 8. Dilute with deionised water to approx. 100 ml.
 9. Add 2 g potassium iodide (sample changes to milky light brown).
 10. Titrate with 0.1 mol/l sodium thiosulfate solution to a weak brownish colour of the solution.
 11. Add several ml of starch solution (sample changes to milky dark brown).
 12. Continue titrating until the colour fades to milky pale green.
- calculation: consumption in ml $\cdot 0.88 =$ %vol SurTec 667

Technical Specification

(at 20°C)	Appearance	Density (g/ml)	pH-value (conc.)
SurTec 667	liquid, dark green/violet	1.158 (1.14-1.18)	1.4 (0.3-2.5)

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 amount should be kept in stock:

SurTec 667	75 kg
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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 667	T - Toxic N - Dangerous for the environment	WHC 2

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>