

# 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
- 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"><li>1. Fill SurTec 667 into the tank.</li><li>2. Fill up to the final volume with water.</li><li>3. Adjust the pH-value to pH 1.9.</li></ol>	
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
application time:	30 s	(15-60 s)
	With higher service life of the bath, the concentration and the immersion time has to be adapted, according the 66x Correction Card (see: <a href="#">SurTec Technical Letter 4</a> )	
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 concentration. Depending on the make-up concentration, the critical iron value is between 250 and 500 ppm. At high loading by incompletely zinc plated parts (e.g. long tubes), the addition of SurTec 660 A (iron inhibitor) is recommended.	
	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  
filterphotometer with 600 nm filter unit ( $\pm 50$  nm)  
100 ml volumetric flask, 1 cm cuvette
- procedure:                   Plot of the calibration curve (quarterly):  
Make up standards with SurTec 667 concentrate in a volumetric flask (100 ml):
- |         |                                                  |
|---------|--------------------------------------------------|
| 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 cuvette (1 cm). Clean the outside of the cuvette with a soft cloth. Measure the standards at 600 nm photometrically against air. Plot the extinction against the concentration. Repeat this for each standard and plot the absorbance against the concentration.
- Sample Measurement:
1. Fill the filtered bath sample into the cuvette (1 cm) that was used for determining the calibration curve.
  2. Clean the outside of the cuvette with a soft cloth.
  3. Measure the solution at 600 nm photometrically against air.
  4. Determine the concentration using the calibration curve.

### SurTec 667 – Analysis by Titration

- reagents:                   sodium hydroxide (10 %)  
H<sub>2</sub>O<sub>2</sub> (30 %)  
hydrochloric acid (conc.)  
potassium iodide  
0.1 N sodium thiosulfate solution  
starch solution (1 %)
- procedure:                   1. Pipette 10 ml bath sample into a 250 ml Erlenmeyer flask.  
2. Dilute with ca. 50 ml deionised water.  
3. Add sodium hydroxide to a pH of approx. 10 (colour changes).  
4. Add approx. 0.3 ml H<sub>2</sub>O<sub>2</sub>.  
5. Boil the solution for 30-40 min. It is important to remove excessive H<sub>2</sub>O<sub>2</sub> completely! (Max. evaporation loss: 25 ml).  
6. Cool down the solution and acidify with hydrochloric acid (colour changes to orange).  
7. Add approx. 2 g potassium iodide.  
8. Titrate with 0.1 N sodium thiosulfate solution until it is slightly yellowish.  
9. Add some drops of starch solution (colour changes to blue).  
10. Continue to titrate until complete discolouration.
- calculation:                   consumption in ml · 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)	approx. 1

## 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>