

# SurTec® 669

## SurPass Tri

### Properties

- liquid concentrate
- trivalent passivation with medium layer thickness and very good corrosion protection
- applicable at room temperature
- produces bluish to yellowish-golden passivation layers

### Application

make-up value:	15 %vol	(12-17 %vol)
make-up:	Steps for make-up: 1. Fill SurTec 669 into the tank. 2. Fill up to the final volume with deionised water. 3. Adjust the pH-value to 1.9.	
temperature:	25 °C	(20-30 °C)
pH-value:	1.9	(1.7-2.0) adjust with nitric acid or sodium hydrogen carbonate
application time:	60 s	(45-75 s)
agitation:	rack movement or air agitation	
tank material:	steel with acid-resistant coating	
hints:	SurTec 669 has a potentially unlimited service life; the limiting factor is the iron concentration. Depending on the make-up concentration, the critical iron value concerning corrosion protection ranges between 50 and 100 ppm. At high throughput of incompletely zinc plated parts (e.g. long tubes), the addition of SurTec 660 A (iron inhibitor) is recommended in order to extend the service life.	

### Technical Specifications

(at 20 °C)	Appearance	Density (g/ml)	pH-value (conc.)
SurTec 669	liquid, purple	1.142 (1.11-1.17)	1.5 (1-2)

### Maintenance and Analysis

Check the pH-value regularly. Analyse and adjust the concentration of SurTec 669 regularly.

#### Sample Preparation

Take a bath sample at a homogeneously mixed position and filter it using a fluted filter.

### SurTec 669 SurPass Tri – Analysis by Photometry

- equipment: spectrophotometer or  
filterphotometer with 560 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 669 concentrate (dilution 1:4) in a 100 ml volumetric flask:
- |         |   |
|---------|---|
| 10 %vol | Fill up 2.5 ml concentrate to 100 ml and mix well |
| 12 %vol | Fill up 3.0 ml ...                                |
| 14 %vol | Fill up 3.5 ml ...                                |
| 16 %vol | Fill up 4.0 ml ...                                |
- Fill each standard into a cuvette (1 cm), clean the outside of the cuvette with a soft cloth. Measure the standards at 560 nm photometrically against air. Plot the extinction against the concentration.
- Sample measurement (dilution 1:4)
1. Fill 25 ml of the filtrated sample into a volumetric flask (100 ml).
  2. Fill up with deionised water and mix well
  3. Fill the solution into the cuvette (1 cm) that was used for determining the calibration curve.
  4. Clean the cuvette with a soft cloth.
  5. Measure the solution in the photometer at 560 nm against air.
  6. Determine the concentration using the calibration curve.

### SurTec 669 SurPass Tri – Analysis by Titration

- reagents: sodium hydroxide solution (10 %)  
 $\text{H}_2\text{O}_2$  (30 %)  
hydrochloric acid (1:1)  
potassium iodide  
0.1 N sodium thiosulfate solution (= 0.1 mol/l)  
indicator: starch solution 1 %
- procedure:
1. Pipette 5 ml bath into a 250 ml Erlenmeyer flask.
  2. Dilute with 50 ml deionised water.
  3. Add 20 ml sodium hydroxide solution (colour must be changed).
  4. Add 5 ml  $\text{H}_2\text{O}_2$  to the cold solution, cover it with a watch glass and wait 5 minutes for reaction.
  5. Add another 5 ml  $\text{H}_2\text{O}_2$  and leave it 5 minutes for reaction again.
  6. Boil the solution for 20 minutes (the solution should not be concentrated lower than 50 ml).
  7. Let the solution cool down. Wash up the watch glass and the sides of the Erlenmeyer flask into the flask.
  8. Acidify with 40 ml hydrochloric acid (1:1).
  9. Fill up to 200 ml with deionised water.
  10. Add approx. 2 g potassium iodide.
  11. Titrate with 0.1 N sodium thiosulfate solution until the solution is weak yellowish.
  12. Add some starch solution.
  13. Titrate to complete discolouration.
- calculation: consumption in ml  $\cdot 1.572 =$  %vol SurTec 669

