

SurTec® 660

Trivalent Blue Passivation

Properties

- liquid concentrate
- trivalent chromate without hexavalent chromium or oxidizing agents
- exceeds corrosion protection standards (neutral salt spray)
- produces coatings with a clear blue colour
- the passivation layer is easily inkable with organic dyes
- with long service life (see: SurTec Technical Letter 4)
- can be determined analytically and adjusted
- IMDS-number: 3641289

Application

make-up values: 7 %vol (5-15 %vol)

make-up: Steps for make-up:

1. Fill the calculated amount of SurTec 660 (together with the slight precipitation) into the working tank.
2. Fill up to the final volume with tap water.
3. Check the pH-value.

Now the bath is ready to use.

temperature: 20 °C (15-30 °C)

pH-value: 1.8 (1.7-2.1)
adjust with nitric acid resp. sodium hydrogen carbonate

pH-value < 1.7: decrease of corrosion resistance

pH-value > 2.1: tendency to yellowish layers,
decrease of corrosion resistance

In barrel and/or alkaline non cyanide zinc, the lower pH range is recommended.

immersion time: 30 s (20-60 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).

tank material: steel with acid resistant plastic or rubber coating

agitation: rack agitation or air injection

hints: SurTec 660 has a potentially unlimited service life; the only limiting factor is the iron content. Depending on the make-up concentration the critical value ranges within 200-500 ppm. At high throughput of incompletely zinc plated parts (e.g. long tubes) an addition of SurTec 660 A Iron Inhibitor is recommended.

SurTec 660 is also sensitive against lead 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 660 regularly.

Sample Preparation

Take a sample at a homogeneously mixed position and filter it with a folded filter.

SurTec 660 – 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 660 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, clean the outside of the cuvette with a soft cloth. Measure all standards at 600 nm photometrically against air and plot the absorbance against the concentration.

Sample measurement:

1. Fill the filtrated bath sample into the 1 cm cuvette that was used for determining the calibration curve.
2. Clean the cuvette with a soft cloth.
3. Measure the solution in the photometer at 600 nm against air.
4. Determine the concentration using the calibration curve.

SurTec 660 – Analysis by Titration

reagents: sodium hydroxide solution (10 %)
 H_2O_2 (30 %)
hydrochloric acid (conc.)
potassium iodide
0.1 N sodium thiosulfate solution (= 0.1 mol/l)
starch solution (1 %)

procedure:

1. Pipette 10 ml bath sample into a 250 ml Erlenmeyer flask.
2. Dilute approx. 50 ml deionised water.
3. Add sodium hydroxide solution to a pH-value of approx. pH 10 (colour changes).
4. Add approx. 0.3 ml H_2O_2 .
5. Boil the solution for 30-40 min (it is important to remove excessive H_2O_2 completely! Maximum evaporation loss: 25 ml).
6. Let the solution cool down.
7. Acidify with hydrochloric acid (colour changes to orange).
8. Add approx. 2 g potassium iodide.
9. Titrate with 0.1 N sodium thiosulfate solution until it is slightly yellowish.
10. Add some drops of starch solution.
11. Continue titrating to complete discolouration.

calculation: consumption in ml $\cdot 0.89 =$ %vol SurTec 660

Technical Specification

(at 20 °C)	Appearance	Density (g/ml)	pH-value (conc.)
SurTec 660	liquid, dark green, with little precipitate	1.230 (1.21-1.25)	1-3

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 660 60 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 660	Xi - Irritant	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>