# SurTec® 320 A
## Tin(II)sulphate-Solution

## Properties

- acidic solution
- based on tin(II)sulphate
- suitable for the electrolytic colouring of anodised aluminium
- colour tones from light bronze to black can be achieved
- as a speciality „stainless-steel-colours“ are also possible
- for the initial concentration and the further bath operation
- can be used with the common AC-process or with the patented CBS-colouring process
- utilisation of a stabilizer (e.g. SurTec 320 S) is recommended

## Application

make-up values:

| | |
|---|---|
| SurTec 320 A | 100-120 g/l |
| SurTec 320 S | 25 g/l |
| sulfuric acid | 18-22 g/l |

| | | |
|---|---|---|
| application time: | 0.5-15 min | (depending on the desired colour) |
| temperature: | 22°C | (20-24°C) |
| tank material: | polypropylene (PP), glass fibre reinforced plastic (GRP) or gummed steel tanks | |
| pH-value: | < 1 | |
| heating: | required | |
| cooling: | required | |
| exhaust: | required for worker´s protection | |
| filtration: | recommended: 10 µm pore size, 0.1-0.5 times the bath volume per hour | |

## Technical Specification

| *(at 20°C)* | Appearance | Density (g/ml) | pH-value (conc.) |
|---|---|---|---|
| SurTec 320 A | liquid, colourless, slightly cloudy | 1.200 (1.18-1.22) | approx. 1 |

## Maintenance and Analysis

Bath fluid is carried off constantly by the material being coloured and the colouring process uses up the active substances. So analyse the concentration of SurTec 320 A by titration regularly and adjust if necessary.

**Sample Preparation**

Take a sample at a homogeneously mixed position. Let it cool down to room temperature. If the sample is turbid, let the turbidity settle down and decant or filter the solution.

**SurTec 320 A and Sulfuric Acid – Analysis by Titration**

reagents:

0.1 N potassium iodate solution (1/60 mol/l $KIO_3$ solution)
1 N caustic soda solution (1 mol/l NaOH solution)
hydrochloric acid (conc.)
starch solution (5 g/l)
pH-meter with measuring electrode

procedure:

1. Pipette 50 ml bath sample into a 300 ml Erlenmeyer flask.
2. Dilute with 100 ml deionised water.
3. Immerse the pH-electrode and titrate with 1 mol/l NaOH solution to pH 2.1 under constant stirring.

   = consumption **A** (ml)
4. Pipette 25 ml bath sample into a 300 ml Erlenmeyer flask.
5. Dilute with deionised water to approx. 100 ml.
6. Acidify with 10 ml hydrochloric acid.
7. Add 5 ml starch solution.
8. Titrate with potassium iodate solution from colourless to blue.

   = consumption **B** (ml)

calculation:

consumption **A** in ml · 0.98 = g/l sulfuric acid
consumption **B** in ml · 2.29 = g/l SurTec 320 A

nominal values:

100-120 g/l SurTec 320 A is equivalent to:
43.7-52.4 ml of 1/60 M potassium iodate solution

20-24 g/l sulfuric acid is equivalent to:
20.4-24.5 ml of 1 N NaOH-solution

remark:

Calibrate the pH-meter before use. Store the pH-value measuring electrode always in 3 M potassium chloride solution. The buffering solutions should be renewed daily.

## Ingredients

- tin salt

## 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.

The following values per $m^2$ can be taken as estimated average consumption:

SurTec 320 A 14-45 g

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

SurTec 320 A 120 kg

## Product Safety and Ecology

The safety instructions and the instructions for environmental protection have to be followed in order to avoid hazards for human and environment. The Material Safety Data Sheets (according to European legislation) contain detailed information.

The following hazard designations and classifications into water hazard classes (WHC) have to be taken into account:

| *product* | *hazard designation* | *water hazard class* |
|---|---|---|
| SurTec 320 A | Xi - Irritant | WHC 1 |

## 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

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