SurTec® 320
Complete Tin Colouring

Properties

- acidic liquid
- for electrolytic dyeing of anodised aluminium
- colour shades from light bronze to black can be achieved
- reduces the oxidation of tin(II) to tin(IV) induced by oxygen
- improves the throwing power in electrolytic colouring solutions
- simplified bath control by combination of tin-II-sulphate and stabilizer in one solution

Application

SurTec 320 is applied in immersion application.

make-up values:

SurTec 320	110-120 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) tanks, GRP- or rubber coated steel tanks	
heating:	required	
cooling:	necessary	
exhaust:	required for worker's protection	
filtration:	recommended: 10 µm; 0.1-0.5 times the total bath volume per hour	

Technical Specification

(at 20°C)	Appearance	Density (g/ml)	pH-value (conc.)
SurTec 320	liquid, colourless to red, clear to slightly turbid	1.230 (1.21-1.25)	< 1

Maintenance and Analysis

Bath fluid is carried off constantly by the objects being coloured and the colouring process consumes the active substances So analyse the concentration of SurTec 320 regularly and adjust the bath by adding SurTec 320 A, 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 – Analysis by Titration

reagents:	hydrochloric acid (conc.) p.a. 0.1 N potassium iodate solution (1/60 mol/l KIO_3 solution) starch solution (< 2 g/l) 1 N caustic soda solution (1 mol/l NaOH solution)
procedure:	1. Pipette 25 ml bath sample into a 300 ml Erlenmeyer flask. 2. Dilute with deionised water to 100 ml. 3. Acidify with 10 ml conc. hydrochloric acid. 4. Add 5 ml starch solution. 5. Titrate with 0.1 N potassium iodate solution until the solution turns to blue.
calculation:	consumption in ml · 2.16 = g/l SurTec 320
nominal values:	110-120 g/l SurTec 320 is equivalent to: 50.9-55.6 ml 0.1 N potassium iodate solution

Sulfuric acid – Analysis by Titration

reagents:	1 N caustic soda solution (1 mol/l NaOH solution) pH-meter with measuring electrode
procedure:	1. Pipette 50 ml bath sample into a 300 ml Erlenmeyer flask. 2. Dilute with 50 ml deionised water. 3. Immerse the measuring electrode into the bath sample and titrate with 1 mol/l caustic soda solution to pH 2.1 under continuous stirring.
calculation:	consumption in ml · 0.98 = g/l sulfuric acid
nominal values:	18-22 g/l sulfuric acid is equivalent to: 18.4-22.4 ml 1 mol/l caustic soda solution
remark:	Calibrate the pH-meter before use. The pH-value measuring electrode has to be stored always in 3 M potassium chloride solution. The buffering solutions should be renewed daily.

Ingredients

- tin(II)-salt solution
- iron salt
- organic acid

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	14-45 g	(C31 - C35)

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

SurTec 320	240 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:

product	*hazard designation*	*water hazard class*
SurTec 320	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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