SurTec® 311
Anodizing Additive

Properties

- powdery additive for anodizing processes
- lowers the concentration of sulfuric acid
- extends the life time of the anodizing bath
- maximum Al content is 28 g/l aluminium
- optimises the conductivity of anodic electrolytes
- reduces the treatment times
- higher bath temperatures can be compensated
- operation temperatures up to 30°C are possible

Application

make-up value:	20-25 g/l
analytical values:	
SurTec 311	20 - 25 g/l
sulfuric acid	140-200 g/l
aluminium	6 - 28 g/l
application time:	depending on the desired layer thickness and the current density
temperature:	20-30°C
tank material:	polypropylene (PP)
heating:	not necessary
cooling:	necessary
exhaust:	required for worker's protection
pH-value:	1.5-1.9
filtration:	possible

Technical Specification

(at 20°C)	Appearance	Bulk density (kg/l)	pH-value (at 10 g/l)
SurTec 311	powder, white	approx. 1.000	1.7 (1.4-2.0)

Maintenance and Analysis

To ensure a successful prolonged service life of the bath, analyse and adjust the concentration of SurTec 311 and sulfuric acid regularly by titration.

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 311 – Analysis by Titration

reagents:	0.02 mol/l potassium permanganate solution (= 0.1 N $KMnO_4$ solution) sulfuric acid (conc.)
procedure:	1. Pipette 5 ml bath sample into a 250 ml Erlenmeyer flask. (Do not dilute with water!) 2. Acidify with 10 ml conc. sulfuric acid. 3. Place it with a magnetised bar on a magnetic stirrer. 4. Titrate immediately with 0.1 N potassium permanganate solution using a brown glass burette until the solution colour persists permanent pink (stable for at least 1 minute).
calculation:	consumption in ml · 1.22 = g/l SurTec 311

Free Sulfuric Acid and Aluminium – Analysis by Titration

reagents:	1 mol/l caustic soda solution (= 1 N NaOH solution) Indicator 1: methyl orange solution (0.04 %) indicator 2: phenolphthalein
procedure:	1. Pipette 5 ml bath sample into a 250 ml Erlenmeyer flask. 2. Dilute to 100 ml with deionised water. 3. Add 2-3 drops methyl orange solution. 4. Titrate with 1 mol/l NaOH solution from red to orange (do not wait until the solution becomes yellow) = consumption **A** (ml) 5. Add 4-5 drops phenolphthalein. 6. Titrate again with 1 mol/l NaOH solution without making zero of the burette until the solution changes to pale pink colour. = consumption **B** (ml)
calculation:	consumption **A** in ml · 9.8 = g/l free sulfuric acid (consumption **B** in ml - consumption **A** in ml) · 1.8 = g/l aluminium

Ingredients

- organic acids
- inorganic salts

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 311	8-10 g

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

SurTec 311	50-75 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 311	Xn - Harmful	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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