

SurTec® 312

Hard Anodising Additive

Properties

- acidic liquid
- additive for hard anodising electrolytes based on sulfuric acid (DC-process)
- compared to low temperature anodising processes economically advantageous
- reduces the dissolution of the oxide film under unfavourable anodising conditions
- improves the uniformity of the film thickness
- minimises the effects of temperature and current density fluctuations during anodising
- increases the capacity of sulfuric acid anodising processes as higher temperatures are possible

Application

For immersion application:

make-up value:	2 %vol	(4 %vol for difficult alloys, e.g. 2024 or 7075)
application time:	depends on the desired thickness of the oxide layer	
temperature:	-10 to +10 °C	
tank material:	polypropylene tanks (PP) or steel tanks (alloy 1.4571)	
heating:	not required	
cooling:	required	
exhaust:	required for worker's protection	

Technical Specification

(at 20 °C)	Appearance	Density(g/ml)	pH-value
SurTec 312	liquid, yellowish, clear	1.26 (1.14-1.28)	1.4 ± 0.2

Maintenance and Analysis

Analyse and adjust the concentration of SurTec 312 regularly.

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 312 – Analysis by Titration

reagents: 0.1 mol/l ferrous ammonium sulfate solution
(0.1 mol/l FAS-solution, $\text{Fe(II)(NH}_4)_2(\text{SO}_4)_2$ -solution)
sulfuric acid (50 %)
0.1 mol/l cerium(IV) sulfate solution (0.1 mol/l $\text{Ce(IV)(SO}_4)_2$ -solution)
indicator: ferroin

procedure: I. Standardisation:

1. Pipette 25 ml of the approx. 0.1 mol/l ferrous ammonium sulfate solution (FAS-solution) in a 300 ml Erlenmeyer flask.
2. Dilute with 100 ml deionised water.
3. Add 25 ml of 50 % sulfuric acid.
4. Add 4 drops of indicator.
5. Titrate with 0.1 mol/l cerium(IV)-sulphate solution until the red colour change to blue consumption (ml).

II. Analysis of the bath:

1. Pipette 25 ml bath sample into a 1000 ml volumetric flask.
2. Fill up with deionised water to the 1000 ml calibration mark and mix well.
3. Pipette 25 ml of the diluted solution into a 300 ml Erlenmeyer flask.
4. Add 25 ml of 50 % sulfuric acid.
5. Dilute to 150 ml with deionised water.
6. Add exactly 25 ml of the 0.1 mol/l cerium(IV)-sulfate solution.
7. Boil the solution with 2-3 boiling stones for 10-15 minutes.
8. Cool down to room temperature.
9. Add deionised water to reach a volume of 150 ml.
10. Add 3 drops of indicator.
11. Titrate with 0.1 mol/l FAS starting from green/blue until the solution colour turns to red, consumption **A** (ml).

calculation: I. Standardisation:
 $\text{consumption in ml} / 25 = \text{factor } \mathbf{F}$
Note: the FAS-solution should be discarded, if the consumption of 0.1 mol/l Cerium(IV)-sulfate solution is less than 15 ml.

II. Analysis of the bath:
 $[25 - (\text{consumption } \mathbf{A} \text{ in ml} \times \text{factor } \mathbf{F})] / 2.67 = \% \text{vol SurTec 312}$

nominal values: 2-4 %vol SurTec 312
19.7-14.3 ml 0.1 mol/l FAS solution (as $F = 1$)

Ingredients

- 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 can be taken as estimated average consumption:

SurTec 312 5-10 g per m²

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

SurTec 312 25-50 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 312	C - Corrosive	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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