

# SurTec® 463

## Electrolytic Brightening

### Properties

- acidic, liquid
- phosphate based environmentally friendly polishing bath
- suitable for aluminium and aluminium alloys
- free of nitric acid and other nitrogen containing compounds
- free of toxic heavy metals
- best degrees of gloss and reflection can be achieved on aluminium alloys with polished starting quality
- especially advantageous to achieve an adequate protecting passive film, even if the available electric power supply will be not sufficient
- surface-active organic additives ensure that the polished surfaces can be rinsed after the electrolytic polishing, without any risk of chemical etching by still adherent electrolyte

### Application

*For immersion application:*

make-up value:	100 %vol	
temperature:	64-67 °C	(50-80 °C)
pH-value:	< 1	
application time:	2-10 min	
aluminium content:	40-45 g/l	(35-45 g/l)
current density	5-15 A/dm <sup>2</sup>	
conductivity:	40-45 mS/cm	
agitation:	mandatory: circulation of the electrolyte by air injection and load carrier movement	
tank material:	polyvinylidene fluoride (PVDF)	
heating:	required, made of acid resistant material (heat exchanging material = PVDF)	
exhaust:	required for worker's protection	
hints:	Aluminium content of 38-45 g/l is strictly necessary to produce a correspondingly high quality gloss grade.  Dissolve only small amounts of aluminium during the brightening process (max. 5 kg per 1000 litres) because of the exothermal reaction the brightening bath will be warmed up strongly.	

## Technical Specification

(at 20 °C)	Appearance	Density (g/ml)	pH-value
SurTec 463	liquid, pale yellow, clear	1.70 (1.65-1.79)	< 1

## Maintenance and Analysis

The polishing system uses the "Never-Dump-System" and a concentration of aluminium ions of 38-45 g/l. Compensate any loss by drag-out or usage daily by adding the corresponding amount of SurTec 463.

### Sample Preparation

Take a sample at a homogeneously mixed position. Let it cool down to room temperature (20 °C). If the sample is turbid, let the turbidity settle down and decant or filter the solution.

### Aluminium – Analysis by Titration

reagents: 0.1 mol/l EDTA solution (Titrplex III)  
0.1 mol/l zinc(II)-sulfate solution  
sodium acetate solution (15 %)  
indicator: xylenol orange (1g grinded up finely into 99 g NaCl)

procedure:

1. Pipette 5 ml bath sample into a 1000 ml flask.
2. Dilute it with deionised water up to 1000 ml.
3. Pipette exactly 100 ml of this dilution to a 300 ml Erlenmeyer flask.
4. Add 25 ml 0.1 mol/l EDTA solution and mix well.
5. Let react this mixture for 15 minutes.
6. Then adjust the pH-value to pH 5.4 by using 15 % sodium acetate solution.
7. Add a spatula tip of indicator.
8. Titrate with 0.1 mol/l zinc(II)-sulfate solution until the colour turns to red-violet.

calculation:  $[25 - \text{consumption in ml}] \cdot 5.4 = \text{g/l aluminium}$

## Ingredients

- phosphoric acid
- sulfuric acid
- organic inhibitors

## 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 463 200-400 g per m<sup>2</sup>

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

SurTec 463 1000 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 463	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>

17 March 2009/DK, WT