

SurTec® 493

Desmutting Agent

Properties

- acidic liquid
- contains nitric acid for the pickling of high-alloyed aluminium alloys
- removes the smudge on alkaline etched aluminium alloys
- can be used as stand-alone product or in combination with nitric acid
- equally suitable as an acidic deoxidizer or instead of an alkaline etching
- for the treatment of difficult alloys

Application

make-up value:	70-80 g/l
application time:	2-5 min
temperature:	room temperature (approx. 20-25 °C)
tank material:	acid resistant tanks of polypropylene (PP) or steel with corresponding lining
heating:	required
exhaust:	required for worker's protection
hint:	After pickling a rinsing process is unconditionally required before the anodising process can be started: state of the art is a triple cascade rinsing appliance.

Technical Specification

(at 20 °C)	Appearance	Density (g/ml)	pH-value (conc.)
SurTec 493	liquid, colourless, slightly cloudy	1.300 (1.25-1.35)	< 1

Maintenance and Analysis

To ensure efficient bath operation, analyse and adjust the concentration of SurTec 493 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 493 as a Pickling Agent

SurTec 493 – Analysis by Titration

reagents:	1 mol/l caustic soda solution (= 1 N NaOH solution) indicator: Bromocresol green (0.1 % in 20 % ethyl alcohol)
procedure:	<ol style="list-style-type: none">1. Pipette 10 ml bath sample into a 250 ml Erlenmeyer flask.2. Dilute to 50 ml with deionised water.3. Add 5-8 drops of indicator solution and mix (solution colour turns to yellow).4. Titrate with 1 mol/l caustic soda solution until the solution colour turns to blue.
calculation:	consumption in ml · 12.6 = g/l SurTec 493
nominal values:	70-80 g/l SurTec 493 5.6-6.3 ml of 1 mol/l caustic soda solution

SurTec 493 as an Immersion Additive

1. Nitric Acid – Analysis by Titration

reagents:	1 mol/l caustic soda solution (= 1 N NaOH solution) indicator: bromophenol blue (0.1 % in 20 % ethyl alcohol)
procedure:	<ol style="list-style-type: none">1. Pipette 10 ml bath sample into a 250 ml Erlenmeyer flask.2. Dilute to 50 ml with deionised water.3. Add 5-8 drops of indicator solution and mix (yellow colouration).4. Titrate with 1 mol/l caustic soda solution starting from yellow until the solution colour turns to blue.
calculation:	consumption in ml · 6.3 = g/l nitric acid

2. SurTec 493 – Analysis by Ion Meter

equipment:	ion meter with fluoride electrode and reference electrode 25 ml pipettes (out of polypropylene, PP) 100 ml beakers (out of polypropylene, PP)
reagents:	1 mol/l caustic soda solution additional solution (for preparation see 2.1. below) calibration solutions: 1000 ppm, 100 ppm and 10 ppm fluoride (for preparation see 2.2. below)
procedure:	<ol style="list-style-type: none">1. Pipette 10 ml bath sample into a 1000 ml beaker.2. Neutralize with 1 mol/l caustic soda solution up to pH 7.3. Dilute to 1000 ml in a graduated flask.4. Use a 100 ml polypropylene beaker to prepare 25 ml addition solution TISAB (IV).5. Here to transfer exactly 25 ml of the diluted bath sample and mix well.
calculation:	display · 100 = ppm fluoride nominal value: 4500-5500 ppm ppm fluoride · 0.015 = g/l SurTec 493 nominal value: 70-80 g/l SurTec 493
hint:	Please take care that no air bubbles remain on the electrode surfaces during the measurement, i.e. when it is immersed in the electrolyte.

2.1. Preparation of the Additional Solution TISAB (IV)

Prepare 500 ml of distilled water and 84 ml hydrochloric acid (38 %) in a 1000 ml measuring flask. Add 242 g tris(hydroxymethyl)aminomethane and 230 g sodium tartrate and mix thoroughly. Cool down the buffer solution and fill up with deionised water to the calibration mark of 1000 ml.

2.2. Preparation of the Calibration Solutions

Fluoride stock solution: 1000 ppm fluoride

Dry 2.210 g sodium fluoride (NaF) at 120 °C for 2 hours, fill up in a 1000 ml measuring flask and dilute with deionised water up to the calibration mark.

Fluoride calibration solution: 100 ppm fluoride

Pipette 100 ml of the fluoride stock solution and dilute with deionised water to 1000 ml.

Fluoride calibration solution: 10 ppm fluoride

Pipette 10 ml of the fluoride stock solution and dilute with deionised water to 1000 ml.

Ingredients

- nitric acid
- fluoride salt

Consumption and Stock Keeping

The following value can be taken as estimated average consumption:

SurTec 493 10-15 g per m²

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

SurTec 493 150-180 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:

<u>product</u>	<u>hazard designation</u>	<u>water hazard class</u>
SurTec 493	T+ - Very toxic C - Corrosive	WHC 2

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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