

# SurTec® 621

## Cold Blackening

### Properties

- liquid
- works at room temperature
- uniform black coating on steel and iron parts
- good corrosion protection in combination with protective oil

### Application

The parts must be totally free of oil and grease. The cleaning can be done in organic solvents or in an usual hot degreasing.

The process SurTec 621 includes the following products:

- SurTec 621 I
- SurTec 621 II

make-up values:

SurTec 621 I	5 %vol	(for hardened steel: 3 %vol)
SurTec 621 II	5 %vol	(for hardened steel: 3 %vol)

make-up: Steps for make-up:

1. Fill in the calculated amount of water.
2. Add the additives SurTec 621 I and SurTec 621 II.

temperature: 20-30 °C

contact time: 3-8 min

tank material: stainless steel or plastic coated steel

agitation: by filtering the bath volume (70-120 l/min)

**Important:** a good agitation is necessary to take off all the pigments from the surface of the parts, to reach a good abrasive resistance.

post treatment: After the blackening, rinse in an economic rinse, then in a fresh water rinse. After the last rinse, immerse the parts into a corrosion protection oil (e.g. SurTec 590). This step produces the corrosion resistance (see "recommended process sequence").

hints: The blackening can be applied in baskets or racks out of iron, stainless steel or plastic. Parts with a great amount of rust, scaled or rolled parts have to be pickled for longer time in 10-20 % hydrochloric acid, which should be inhibited (e.g. SurTec 424).

The parts should not be dry when they get into the blackening, they should be wetted homogenously to prevent a formation of spots.

recommended process sequence:

- |                          |   |
|--------------------------|---|
| 1. soak cleaning         | SurTec 151, conc.: 5 %<br>temp.: 50-60 °C, time: 2-5 min  |
| 2. water rinse           |   |
| 3. electrolytic cleaning | SurTec 177, conc.: 5 %<br>temp.: 20-30 °C, time: 1-3 min  |
| 4. water rinse           |   |
| 5. activation            | in 10-12 % hydrochloric or sulfuric acid<br>temp.: 20-30 °C, time: 10-40 s<br>(inhibitor: approx. 1 % SurTec 421 I) |
| 6. water rinse           |   |
| 7. blackening            | SurTec 621 I and 621 II, each conc. 3-5 %<br>temp.: 20-30 °C, time: 3-8 min   |
| 8. economic rinse        |   |
| 9. water rinse           |   |
| 10. protection oil       | SurTec 590  |

## Technical Specification

(at 20 °C)	Appearance	Density (g/ml)	pH-value (conc.)
SurTec 621 I	liquid, colourless, clear	1.284 (1.24-1.32)	4.5 (4-5)
SurTec 621 II	liquid, blue-green, clear	1.193 (1.18-1.22)	1.1 (1.0-1.2)

## Maintenance

Remove the produced precipitations by filtering.

According to the throughput, add fresh concentrate of the blackening, in the same ratio as for the first make-up. 5-10 % of the first make-up should be added in regularly sequences.

When the black colour gets greyish, also add SurTec 621 I and SurTec 621 II.

## Ingredients

- phosphoric acid
- complexing agents
- 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](#).

For the blackening of 10 m<sup>2</sup> the following values can be taken as estimated average consumption:

SurTec 621 I	1 l
SurTec 621 II	1 l

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

SurTec 621 I	60 kg
SurTec 621 II	60 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:

<i><u>product</u></i>	<i><u>hazard designation</u></i>	<i><u>water hazard class</u></i>
SurTec 621 I	Xn - Harmful	WHC 2
SurTec 621 II	T - Toxic	WHC 3
	N - Dangerous for the environment	

## 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>