

# SurTec® 620

## Browning/Blackening Salt for Hot Black Finishing

### Properties

- highly alkaline powder
- for steel and iron
- forms black finishing layers
- for soak application
- with special activator for better oxidation reaction
- cyanide free
- IMDS-number: 145305244

### Application

make-up values: per 100 l of bath volume:

SurTec 620 Browning/Blackening Salt 75 kg  
cold water 75 kg  
(the density of the working solution is about 1.5 kg/l)

*for better oxidation reaction:*

SurTec 620 N Activator 0.2-0.5 kg/100 l

make-up: Steps for make-up:

1. Fill the calculated amount of cold water into the tank.
2. Add cautiously SurTec 620 in small doses to avoid local overheating. Stir slowly but vigorously. Attention! Exothermic reaction! Solution becomes very hot and can sprinkle out!

temperature: **normal steel parts**

133-145 °C (boiling point)

above 145 °C : the layer turns to red-brown

below 133 °C : no layer is formed

**hardened and alloy steel parts (one step)**

pickled: 136-139 °C

not pickled: 138-141 °C

**hardened and alloy steel parts (two steps)**

1. pre-blackening at: 136-138 °C  
(optionally intermediate rinsing with cold water)

2. blackening at: 138-142 °C

application time: 15-60 min depending on the intended colour  
and the type of material

tank material: normal steel (e.g. ST 37)

agitation: recommended to obtain homogeneous colour

heating: out of alkaline-resisting material

exhaust: absolutely necessary

recommended process sequence

1. soak cleaning I - important: silicate free!!  
*emulsifying:* 5 kg/100 l SurTec 186; 50-60 °C; 2-5 min  
*demulsifying:* 4 %vol SurTec 138 + 0.4 %vol SurTec 089
2. rinse
3. soak cleaning II: see above, but 1-3 min
4. rinse
5. activation:  
10-15 %vol phosphoric acid (or sulfuric or hydrochloric acid)  
2 %vol SurTec 425 inhibitor; 20-30 °C, 10-40 s
6. cascade rinse
7. hot rinse: as hot as possible; best is if the parts get into the  
bronzing nearly dry
8. black finishing SurTec 620: one step or two steps (see page 1)
9. hot rinse
10. corrosion protection oil: e.g. SurTec 590

## Technical Specification

(at 20 °C)	Appearance	Density (kg/l)	pH-value (at 10 g/l)
SurTec 620	powder, white	approx. 1.235	13.8
SurTec 620 N	powder, white	0.625 (0.50-0.67)	> 13

## Maintenance and Analysis

Evaporation losses are compensated regularly. Measure the boiling area and correct according to the trouble shooting list.

### Measuring of the Boiling Area:

Heat up some bath solution in a beaker on a magnetic stirring heater and determine the boiling area by thermometer.

Correction: the boiling temperature could be decreased by adding water and increased by adding SurTec 620.

## Ingredients

- sodium hydroxide
- sodium nitrate
- phosphates
- inorganic and organic sulfuric compounds

## Stock Keeping

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

SurTec 620 Browning/Blackening Salt	625 kg
SurTec 620 N Activator	25 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 620	T - Toxic	WHC 2
SurTec 620 N	Xn - Harmful	WHC 2
	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>

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## Trouble Shooting

problem	possible cause	remedy
colouring with spots	a) wrong boiling temperature	adjust the boiling area by addition of water or SurTec 620
	b) gas bubbles are on the surface	bath movement or rack agitation
too light or red-brown colour	time of treatment is too short	post-colouring in the blackening bath
red-brown to green colour	boiling temperature is too high	add water
no colouring	bath concentration is too low, temperature is too low	evaporate water or add SurTec 620
white-brown spots after storing	insufficient rinsing after blackening	optimize the hot rinsing