

## SULF BT™ HEF patent

LOW-TEMPERATURE surface treatment to prevent seizure of steel and cast iron parts.

### Description

Low-temperature surface treatment for steel and cast iron parts with high mechanical characteristics, carried out by anodic electrolysis in a molten salt bath heated to a temperature of  $195 \pm 5^\circ\text{C}$ .

### Layer characteristics

SULF BT produces a micro-layer of iron sulphide on the surface of the parts, which is completely embedded in the base metal and has excellent SEIZURE RESISTANCE properties. Thickness of the micro-layer: 7 microns maximum.

### Sample applications

- Case-hardened and surface hardened gears
- Camshafts
- Cam rings
- Rings under pinions
- Ball joints
- Homokinetic joints
- Satellite differentials
- Differential cross-members
- Cardan shafts
- Shafts and bearings
- Gearbox forks
- Gearbox spacer rings
- Steering bolts
- Rack and pinion
- Air hammer pistons
- Constant profile milling cutters and saw milling cutters
- Gearbox thrust washers
- Deep drawing tools
- Die-cutting tools
- Idler pinions
- etc.

### Thickness of the micro-layer

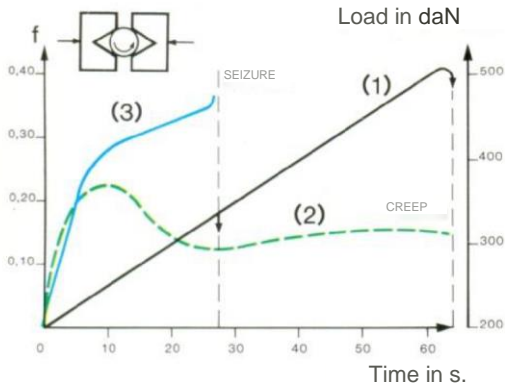
7 microns maximum

### Quality of the parts treated

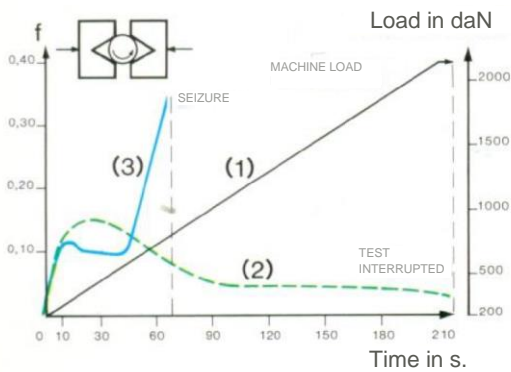
- Highly resistant to seizure
- Increased wear resistance
- Significant reduction in the coefficient of friction
- Significant high increase in the load-bearing capacity of oil films; depending on the lubricant and operating conditions; the ultimate tensile strength of the oil film can be tripled thanks to SULF BT.
- Improved running-in conditions
- No risk of deforming treated parts

### Safety measures

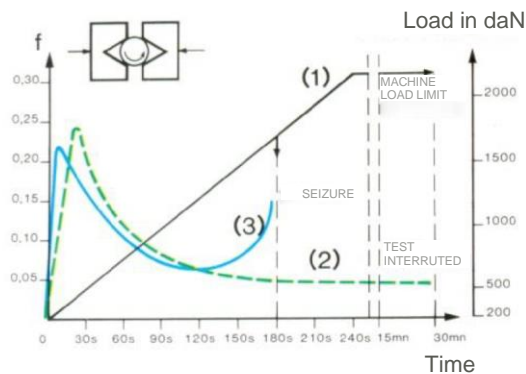
- BT SULF usually involves a LOSS OF EDGE of  $5 \pm 4$  microns on the diameter, which must be taken into account when machining high-precision parts.
- Rework should not be carried out after treatment with SULF BT, except for operations such as olive milling or roller burnishing.



Dry friction curves



Friction curves in petroleum jelly.



Friction curves in motor oil.

Legend  
 Tests conducted on the FAVILLE machine.  
 ① Machine loading  
 ② Performance of SULF BT specimens  
 ③ Performance of non-treated specimens

**Maximum dimensions of parts that can be treated:**

- Length: 1 m
- Width: 0.7 m
- Thickness: 0.6 m
- For greater dimensions: contact us

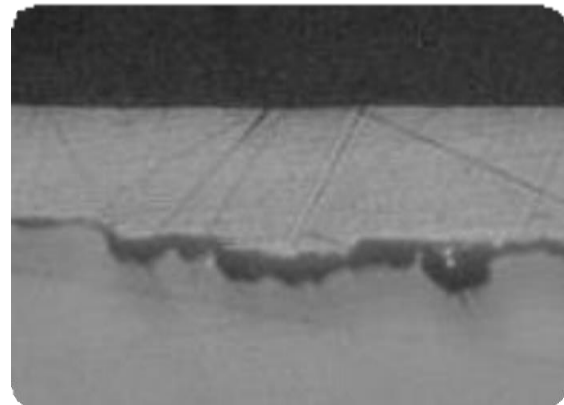
**Materials that can be treated:**

Thanks to the low treatment temperature, SULF BT is particularly recommended for steel or cast iron parts with high mechanical properties that have been subjected to low-temperature tempering. Primarily:

- Case hardened steels
- Surface-hardened steels and cast irons (high frequency and medium frequency)
- Through-hardened alloy steels tempered at temperatures above 180°C
- Steels with a bainitic structure
- Specific high-speed steels and tool steels
- Tempered cast irons

**Important note:**

Do not, under any circumstances, apply SULF BT on alloy steels that contain more than 12% chromium.



Micro-layer  
SULF BT