

# Antitarnish 328

## Operating Instructions

Edition: 22 January 2008

### Electrolytic process on a chromate basis for the antitarnish protection of silver

- cathodic application
- without solvents
- for decorative and technical applications
- application at room temperature
- for rack, barrel and reel-to-reel plants

### Bath Characteristics

Metal surfaces liable to tarnishing, especially those of silver, are largely protected against tarnishing in a sulphurous atmosphere by Antitarnish 328.

It is a prerequisite that the protected parts are not subjected to mechanical stress by means of friction, abrasion etc.

Antitarnish 328 is operated as an electroplating solution and can be applied in rack, barrel and reel-to-reel equipment.

Bath type: chromating process for the antitarnish protection of silver

pH value: > 12

Temperature: room temperature

Bath voltage: rack: 3 - 4 V  
barrel: 7 - 8 V  
reel-to-reel: 3,5 - 5 V

Treatment time: rack: ca. 1 - 1,5 min  
barrel: ca. 1,5 - 2 min  
reel-to-reel: ca. 15 - 20 s

### Form of Supply

Bath makeup: a<sub>1</sub>) Antitarnish 328 Makeup Salt  
85 g to make up 1 l of bath  
Standard packages to make up  
50 and 400 litres of bath  
Storage stability: unlimited

a<sub>2</sub>) Antitarnish 328 Initial Concentrate  
100 ml to make up 1 l of bath  
Storage stability: min. 3 years

### Bath Makeup

Makeup sequence: Approximately 75 % of the final bath volume is made up with deionized water. Then 85 g/l Makeup Salt are dissolved or 100 ml/l Initial Concentrate are stirred in and mixed thoroughly. Finally fill up to the final volume. The solution then is ready for use.

### Operating Conditions

Operating temperature: room temperature

pH value: > 12, need not be controlled

Bath density: 1.075 g/cm<sup>3</sup>

In the case of a deviation, e.g. by high drag-out, adjust with Makeup Salt or Initial Concentrate. To increase the density by 0.01 g/cm<sup>3</sup> approx. 11 g of Makeup Salt or 25 - 30 ml/l of Initial Concentrate are required.

Agitation: not required

Filtration: recommended, but not absolutely essential

Bath voltage: rack: 3 - 4 V  
barrel: 7 - 8 V  
reel-to-reel: 3,5 - 5 V

The current density adjusts accordingly (approx. 1 - 5 A/dm<sup>2</sup> at 3 - 4 V) and need not be considered.

The parts should be brought into the bath after connection to the current.

Treatment time: rack: ca. 1 - 1,5 min  
barrel: ca. 1,5 - 2 min  
reel-to-reel: ca. 15 - 20 s

vivid gas formation at the parts

### Bath Monitoring and Correction

Keep the bath clean and cover when not in use. Store in closed bottles when not in use for a longer period of time.

Occasionally check the bath density and correct it with the Makeup Salt or Initial Concentrate (see "Operating Conditions/Bath density").

If the protective effect should diminish (see "Special Process Hints/Testing the protective effect"), a new bath has to be made up.

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## Special Process Hints

Contacting:	Due to high current flow take note for a sufficient dimensioning of the contacts.
Pretreatment:	Degrease the parts electrolytically, rinse in running, finally in deionized water.
Protective treatment:	see under "Operating Conditions"
Post-treatment:	Rinse thoroughly and dry carefully. The Antitarnish may neither affect the brightness nor the colour of the parts.
Mechanical stress of the protective coating:	The thin protective coating is very sensitive to mechanical stress, especially when wet. Therefore the parts should be handled with care after the protection. Particularly in barrel operation the level of the parts and the rotational speed should be adapted.
Yellowish discolourations of the protective coating:	If the duration of the treatment is too long, the protective coating will become yellowish instead of colourless. The same may occur in the case of silver coatings which are not optimal (too matt). If there should be problems like these, the treatment time in the antitarnish bath as well as the functioning of the silver bath should be checked.
Testing the protective capacity:	To test whether or not the bath still works perfectly, immerse a silver part treated in the antitarnish bath in a 5 % potassium sulphide solution for 3 minutes. The part must not lose its white colour and its brightness - contrary to an untreated piece which will get a brownish-violet-black tarnish. The effectiveness also depends on the functioning of the silver bath used. If there should be problems, caused e.g. by too matt coatings, the silver bath has to be checked if it functions correctly.
Removal of the protective coating:	The antitarnish coating applied can be removed by immersion in hydrochloric acid diluted 1 : 1 with deionized water for approx. 20 seconds at room temperature. The protective coating must be removed if surface-protected parts are to be subsequently electroplated (e.g. gold-plating, rhodium-plating), otherwise the adherence of the electrodeposit on the parts will be poor.

Temperature resistance:	The protective effect is temperature-resistant up to 250 °C (5 min duration). At higher temperatures (e.g. at 350 °C, 5 min) or considerably longer exposure to temperature loads (250 °C, 30 min), the protective effect will be adversely affected but not completely cancelled out.
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## Equipment

Bath tanks:	plastic, preferably polypropylene natural
Anodes:	stainless steel anodes (e.g. Cr/Ni 18/8 or Cr/Ni 18/10)
Filtration:	recommended, but not absolutely essential
Rectifier:	rectifier with voltage indicator and a sufficient capacity
Exhaust system:	required

## Note

Our information relating to the storage stability refers to storage in closed original storage containers under the conditions stated on the label.

## Precautionary Measures/Safety Hints

For information on safety, please see the corresponding Material Safety Data Sheets! The valid accident prevention regulations and safety information must be observed!

## Reference to

Wastewater treatment:	available on request
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