

# AURUNA® 250/261/262/263/264

## Operating Instructions

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### Electrolytes for selective decorative pencil gold-plating (brush gold-plating)

- different colour variants available
- gold-plating at room temperature
- gold content 2 g/100 ml
- electrolytes ready for use

### Bath Characteristics

Pencil plating is a special type of brush plating. With pencil gold-plating, small area elements of parts are selectively gold-plated by means of direct current through a wiping touch with a tampon tip soaked with the respective gold bath. Application examples are the applying of decorative patterns on e.g. jewellery, spectacles, cutlery as well as repair work of electronic components, e.g. on printed circuit boards.

Bath type:	pencil gold-plating bath
Gold content:	2 g/100 ml
pH-value:	between 0.6 and 9, depending on bath (see "Form of Supply")
Temperature:	room temperature (20 - 30 °C)
Voltage:	250, 261-263: 10 volts (8 - 15 volts) 264: 6 volts (4 - 8 volts)
Deposition speed:	between 0.07 and 0.1 µm/min, depending on bath

### Coating Characteristics

Coating:	gold - depending on bath different alloy components	
Alloy composition:	depending on bath between 90 and 99.5 % by weight gold, rest different alloy components	
Colour:		acc. to DIN 8238
AURUNA® 250	yellow	approx. 3 N
AURUNA® 261	pale light-yellow	approx. 1 N
AURUNA® 262	neutral yellow	approx. 2 - 3 N
AURUNA® 263	rich deep-yellow	fine gold colour
AURUNA® 264	rosé	approx. 4 - 5 N

### Basic Equipment

The basic equipment in all cases consists of:

- A tampon pencil including a supply of tampon tips.  
This pencil is normally a plastic holder with a connection to the rectifier. The absorbent and exchangeable tampon tips are inserted into a suitable contact socket at the front end of the holder.
- Pencil gold-plating bath of one's choice.
- Rectifier with adjustable and readable voltage up to at least 10 volts.

We recommend our rectifiers

TG 511	(10 V/10 A)
TG 2011	(10 V/20 A) or
TG 5050	(20 V/50 A).

### Form of Supply

For mainly decorative purposes the following types of gold baths are available:

- AURUNA® 250, ready for use (pH approx. 0.6)  
Special bath for direct gold-plating of stainless steel, coating colour yellow, approx. 3 N
- AURUNA® 261, ready for use (pH approx. 7)  
coating colour pale light-yellow, approx. 1 N
- AURUNA® 262, ready for use (pH approx. 3)  
coating colour neutral yellow, approx. 2 - 3 N
- AURUNA® 263, ready for use (pH approx. 7)  
coating colour rich deep-yellow, fine gold colour
- AURUNA® 264, ready for use (pH approx. 9)  
coating colour rosé, approx. 4 - 5 N

Solutions ready for use containing 2 g of gold per 100 ml. Usually delivered in 100 ml units. Larger units on request, if required.

Storage stability: in each case min. 2 years

Special replenishments and corrections are not necessary, because the solution is used up during application.

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## Operating Conditions

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Operating temperature:	room temperature (20 - 30 °C)
pH-value:	between 0.6 and 9, depending on bath
Voltage:	250, 261-263: 10 volts (8 - 15 volts) 264: 6 volts (4 - 8 volts)

Deposition speed: between 0.07 and 0.1 µm/min, depending on bath

With the colour gold-plating baths AURUNA® 261/262/263/264, approx. 0.1 µm can be reached if 1 cm<sup>2</sup> is treated for about 1 minute while the movement is constant.

With the gold-plating bath AURUNA® 250 for stainless steel, a thickness of 0.1 µm is reached if 1 cm<sup>2</sup> is treated for about 1.2 - 1.4 minutes (at 10 volts). If a faster deposition is required, the voltage should be increased to 15 - 20 volts.

In any case take care that the tampon tip is always well soaked with the electrolyte. Usually it is sufficient to dip the pencil into the bath approx. 2 - 3 times per minute.

The specified speed may only serve as a rough approximate value because the deposition speed is influenced by the individual carrying out of the work (movement, pressure, dipping frequency).

## Special Process Hints

Procedure: The cable fixed to the tampon pencil is connected to the positive pole of the rectifier. The negative pole is connected to the workpiece to be treated by means of a second cable and e.g. a crocodile clip. Suitable are rectifiers supplying at least 8 - 10 volts. The voltage should be adjustable and readable, as e.g. with rectifier TG 511.

The tampon tip should always be well soaked with the electrolyte. If the tip is dry, remove it from the holder and dip both ends into the bath, one after the other, until it is completely saturated. Then the tip is again deeply inserted into the contact socket of the holder.

**Caution:** The baths contain highly poisonous cyanide! Handle the tips with tweezers and rubber gloves! For different types of baths different tips must be used by all means! AURUNA® 250 is strongly acidic and in no case may come into contact with the other baths or bath rests containing cyanide.

Pretreatment: As with any other plating treatment, the parts first have to be cleaned thoroughly. This is done in the usual way by soak cleaning or ultrasonic pre-degreasing and electrolytic degreasing. Afterwards, rinse in deionized water.

If fine structures with borders as exact as possible are to be applied, the surface of the part should be dried rapidly or the adhering water film should at least be spun off. If the surface of the part is wet, the electrolyte film will easily run during the treatment and thus lead to blurred borders.

Pencil gold-plating:

The connections to the part (cathode, negative pole) and to the pencil (anode, positive pole) have been made. Turn on the current and adjust the voltage. After dipping the tampon tip again into the bath, the tampon tip is moved back and forth or in small circles on the area to be gold-plated, applying very slight pressure. The article is gold-plated as long as the sufficiently soaked tampon tip is in contact with the article.

Metal depletion in the contact area is avoided by:

- the special composition of the electrolyte
- good movement of the tip on the part
- occasional renewed dipping of the tip into the bath supply (approx. 2 - 3 times per minute)

Deformed and blunt tampon tips can be resharpened (caution! cyanide!). Occasionally change the tip.

Seal the tip with the cap prior to idle periods.

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**Posttreatment:** Electrolyte should be removed from the surface as quick as possible. Rinse off the bath rests in a recovery rinse (still rinse). Rinse the parts in deionized water and dry.

**Disposal:** Used baths or rinsing water must not get directly to the sewage, but must be disposed of by means of cyanide oxidation.

## 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.

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