

Pen plating solutions

Instructions for use

Edition 01/2020

Product description

Pen plating is suitable for selective application of gold, silver and rhodium on smallest surfaces. The method is predominantly used for jewellery pieces (stone settings, clips), glasses or similar items. Coatings applied by pen plating are very thin. If thicker galvanic layers are to be deposited we recommend the standard method with covering lacquer and subsequent electroplating in the respective electrolyte.

Table of articles

Pen rhodium WhiteStar® PEN	(20 g Rh/l)	Art. No. 81012168
Pen rhodium WhiteStar® PEN, 100 ml	(2 g Rh/100 ml)	Art. No. 81012170
Pen rhodium WhiteStar® PEN, 50 ml	(1 g Rh/50 ml)	Art. No. 81012169
Pen rhodium WhiteStar® PEN+	(20 g Rh/l)	Art. No. 81015439
Pen rhodium WhiteStar® PEN+, 100 ml	(2 g Rh/100 ml)	Art. No. 81015440
Pen rhodium WhiteStar® PEN+, 50 ml	(1 g Rh/50 ml)	Art. No. 81015441
Black pen rhodium bath DK-S	(20 g Rh/l)	Art. No. 81010392
Black pen rhodium bath DK-S, 100 ml	(2 g Rh/100 ml)	Art. No. 86914950
Black pen rhodium bath DK-S, 50 ml	(1 g Rh/50 ml)	Art. No. 81010230
Pen gold bath 204-S yellow	(50 g Au/l)	Art. No. 86908020
Pen gold bath 204-S yellow	(20 g Au/l)	Art. No. 86908005
Pen gold bath 204-S yellow, 30 ml	(1,5 g Au/30 ml)	Art. No. 86908000
Pen gold bath 204-S green	(9 g Au/l)	Art. No. 86908080
Pen gold bath 204-S green, 100 ml	(9 g Au/l)	Art. No. 86908070
Pen gold bath 204-S green, 30 ml	(9 g Au/l)	Art. No. 86908060
Pen gold bath 204-S rose	(7,9 g Au/l)	Art. No. 86908050
Pen gold bath 204-S rose, 100 ml	(7,9 g Au/l)	Art. No. 86908040
Pen gold bath 204-S rose, 30 ml	(7,9 g Au/l)	Art. No. 86908030
Pen gold bath 204-DS	(50 g Au/l)	Art. No. 81012909
Pen gold bath 204-DS	(20 g Au/l)	Art. No. 81013000
Pen gold bath 204-DS, 30 ml	(1,5 g Au/30 ml)	Art. No. 86908120
Pen silver bath 360-S	(100 g Ag/l)	Art. No. 86909950
Pen silver bath 360-S, 30 ml	(3 g Ag/30 ml)	Art. No. 86909900

Process overview

Pre-treatment

Prerequisite for a strongly adhesive pen plating is an intensive pre-treatment of the surface. This should be carried out using an ultrasonic cleaning bath made-up with *Ultrasonic cleaning concentrate ULTRA 3000*, *Electrolytic degreasing bath Type A* and finally an acid dip treatment in *Acid dip bath S* or 10% sulphuric acid solution. Multistate rinsing in water is required after operation of each of the respective process baths. The last rinsing step before gold plating should be performed in deionised water. Afterwards the surface to be coated must be dried well.

Coating

The felt tip to be used for the plating pen is put into the respective pen plating bath for 1–2 min so that it can absorb the pen electrolyte. Now the felt tip is inserted into the cleaned pen until it stops. Then the piece of jewellery is contacted with the pair of tweezers before the required voltage at the rectifier is applied. Now the surface is gently stroked with the inserted felt tip of the plating pen. After coating, the piece of jewellery should again be rinsed under running water and, if necessary, electrolytically degreased, treated with an acid dip and then dried.

IMPORTANT ADVISE

It should always be taken a suitable quantity of the pen plating electrolyte to be used from the original bottle or canister it is delivered in and this quantity should be used until it has lost its effect. After the taking out, this quantity should neither totally nor partially be put back into the original bottle or container because this can render the still unused pen plating bath useless.

Before each use, the plating pen should be well rinsed with running deionised water (< 10 µS) to remove any residues from the inside that could prevent contacting the felt tip. A felt tip needs to be replaced if it has blackened significantly at the tip or if another electrolyte is being used.

After use, the felts should be stored in a rinsing glass filled with deionised water to prevent them from drying out.

Process parameters

Bath temperature:	20–30 °C (room temperature)	
Exposition time:	a few seconds	
Cathode movement:	pen movement	
Anode material (+):	plating pen with felt tip	
Cathode material (-):	pair of tweezers or clamp	
Voltage:	Pen rhodium WhiteStar® PEN	6-9 V
	Pen rhodium WhiteStar® PEN+	6-9 V
	Black pen rhodium bath DK-S	10 V
	Pen gold bath 204-S yellow	6 V
	Pen gold bath 204-S green	6 V
	Pen gold bath 204-S rose	6 V
	Pen gold bath 204-DS	8-10 V
	Pen silver bath 360-S	4 V

Hazard information, storage, disposal

Pen rhodium solutions contain acid and must **not** come into contact with cyanides or cyanide-based solutions. The occupational safety measures and regulations specified in the safety data sheet must be observed.

Pen gold bath 204-S yellow, Pen gold bath 204-S green and Pen silver bath 360-S are classified as toxic according to the German Hazardous Substances Ordinance (GefStoffV). They contain cyanides and must **not** be brought into contact with acids or acidic solutions.

The occupational safety measures and regulations specified in the safety data sheets must be observed.

Pen gold bath 204-S rose is an alkaline corrosive solution.

The occupational safety measures and regulations specified in the safety data sheet must be observed.

All bath chemicals must be stored sealed and separately from food in suitable and labelled containers. Spent pen plating solutions and drag-out rinse waters must **not** be discharged into the waste water without first being treated.

The information on our product and the method are based on intensive research and technical experience of this application. We provide these results to the best of our knowledge and reserve the right to make technical changes in the course of product development.

However, this does not relieve the user of their responsibility to check our specifications for their own use before application.

If you have any questions or would like a consultation, please contact our application technology service department at any time.

We would also be happy to discuss our further electroplating product range.