

# PTLUX-RTU

READY TO USE PLATING SOLUTION 2G/L PT + 1G/L RU

## DESCRIPTION

**PTLUX-RTU** is an electrolytic system which permits to obtain shiny deposit of a platinum–ruthenium alloy with a major composition in platinum. Thanks to its aesthetic and chemical-physical characteristics, the platinum–ruthenium alloy obtained with the **PTLUX-RTU** process is an alternative to a palladium deposition (or to palladium alloys) as flash mid protection layer as well as a final layer for white finishing.

- Thickness up to 1 micron without cracks
- Wide operative range
- For both roto-barrel and rack electrodeposition

## DEPOSIT DATA

<b>Thickness (um)</b>	0 – 0.2 (at 2 g/l Pt)
<b>Density (g/cm<sup>3</sup>)</b>	Approximately 20, as it is dependent by final composition of the electrodeposited alloy
<b>Appearance</b>	Shiny
<b>Color</b>	White

## PRODUCT FORM

<b>Form</b>	Ready to use solution
<b>Metal concentration</b>	2 g/l (Pt) + 1 g/l (Ru)
<b>Color of the solution</b>	Intense red/brown solution
<b>Chemical status</b>	Acidic
<b>Storage time</b>	1 year
<b>Volume</b>	1-liter bottle



PRODUCT USAGE	RANGE	OPTIMAL
<b>Voltage (V)</b>	1.5 – 3.0	1.8
<b>Current density (A/dm<sup>2</sup>)</b>	0.5 – 3	2
<b>Working temperature (°C)</b>	30 – 60	35
<b>Exposure time (sec)</b>	45 – 300	90
<b>Cathode efficiency (mg/Amin)</b>	4 – 6	5
<b>Anode/cathode ratio</b>	1:1 – 4:1	2:1
<b>Anode type</b>	Platinized titanium	Platinized titanium
<b>Agitation</b>	Moderate	Moderate

## METAL CONCENTRATION

METAL	RANGE (g/l)	OPTIMAL (g/l)
Platinum (Pt)	1.5 – 2.5	2
Ruthenium (Ru)	0.5 – 1.5	1

**JEWELRY  
PLATING**
**PTLUX-RTU**
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**COLOR COORDINATES**

<b>L</b>	87.0
<b>a</b>	0.6
<b>b</b>	3.0
<b>c</b>	3.1

**Note:** Color coordinates here reported have been measured on a white underlayer and they are to be intended as PURELY INDICATIVE being strongly dependent on underlayer color, on thickness of the deposit and on specific design (shape) of the surface.

**LIST OF THE CORRELATED PRODUCTS**
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<b>PTLUX-RTU.1L*</b>	Ready to use plating solution 2g/l Pt + 1g/l Ru – 1L
<b>PTLUX-F.KIT*</b>	Kit di formazione 1 litro pronto uso (1g/250ml ru + 2g/100ml Pt))
<b>PTLUX-R.250ML</b>	Replenisher for PTLUX – 250 ml
<b>PTLUX-PTR.1L*</b>	Platinum replenisher for PTLUX 15 g Pt/l
<b>PTLUX-RUR.250ML*</b>	Ruthenium replenisher for PTLUX 5 g Ru/250ml
<b>PTLUX-BR.1L</b>	Brightener additive for PTLUX – 1L

\*Substances which are subjected to the international regulations concerning transportation of dangerous goods

**SOLUTION PREPARATION**

**PTLUX-RTU** is a ready to use solution and not further dilution are required prior to start to work

**PRE-TREATMENTS**

**PTLUX-RTU** can be directly deposited on gold, silver, palladium and palladium alloys. For all the other metals it is necessary to make an intermediate deposit (strike) of precious metal especially to prevent any contamination for the plating solution from other metallic species like i.e. copper and zinc. All base metals that can suffer passivation over time must be reactivated before the application of **PTLUX-RTU**.

As pre-treatment it is suggested to run a preliminary degreasing through a cycle of ultrasonic degreasing treatment-solution followed by a wash step into running water. Then proceed with the electrolytic degreasing step by using the alkaline degreasing solution **SGR1**. Once the items has been washed again in demineralized water, then proceed in activate and neutralize the surface of the same by dipping them into the slightly acidic solution **NEUT1** for 3 – 4 times subsequently at room temperature, in order to be sure that no any alkaline residues coming from the degreasing previous steps are dragged into the **PTLUX-RTU** solution together with the same items to be treated (which would lead to a reduction of its life). After the neutralization, wash in demineralized running water and immerse the pieces in the **PTLUX-RTU** bath for the plating treatment.

**POST-TREATMENTS**

Proceed to remove any trace of the electrolyte from the treated surface as quick as possible. Wash off the electrolyte residues through a recovery (static rinse) followed by a wash in running D.I. water. Then proceed to dry the just treated items.

Before final drying, it can be useful to make another immersion in hot static demineralized water. This will confer more shine and brightness to the pure platinum deposit.

## BATH MAINTENANCE

Small – sized platinum plating solution (until 5 liters) can be used until exhaustion without making any replenishment. Vice versa, for larger installations the restoring operations can be done by the addition of its proper replenisher solutions.

In case of replenishment, keep in mind that, as guideline, every 600 A/min you should add:

- 50 ml of **PTLUX-R**, replenisher solution.
- 200 ml of **PTLUX-PTR** (equals to 3 grams of fine Pt).
- 15 ml of **PTLUX-RUR** (equals to 0.3 grams of fine Ru).

**Attention!** These values higher reported, although reliable, are purely indicative. They could be deviate from guideline depending on plant features, on specific articles to be treated, on the working methodology adopted. For these reasons, it is advisable to do frequent chemical analysis of the ready to use plating solution and to dose replenishers and additives after analysis reported by our lab and technical service only.

## REQUIRED EQUIPMENT AND SUPPLIES

### ANODES

For an optimal conduction of the process, it is strongly suggested the use of Titanium platinized anodes with a platinum coverage thickness not lower than 1.5 µm.

### MATERIALS FOR THE WORKING TANK

Pyrex glass (for small volume amount solutions in beaker scale) or PP/PVC/HDPE tanks for larger volumes and equipped with an efficient exhaust fume/suction or aspiration system (generation of mists diffused by gaseous hydrogen development also can be irritant if inhaled or with allergenic effects).

### MOVEMENT AND FILTRATION

Solution needs to be under movement and stirred by a suitable magnetic driven filter pump. When in movement, the solution needs also to be filtered by using 5 microns (max 10 microns) PP wrapped wire filter cartridges which stayed previously immersed in hot demineralized water at approximately 60°C for a couple of hours and then washed thoroughly with cold demineralized water before their usage.

Filter pump must have a flow rate of approximately 5 times/hour the volume of the liquid to grant the necessary filtration and agitation of the bath during the electrolysis.

If you wish to give movement to the objects to be covered, they should be moved through a moving cathodic bar while plating. The cathodic bar movement needs to be done with a rate of 2 – 8 cm/s.

The movement of the solution let to obtain homogenous and bright finishes as this combination removes in the most efficient possible way the gaseous hydrogen bubbles developed closer to the items surfaces during plating time.

### RECTIFIER

Use a current DC rectifier having an alternate current residue –ripple– less than 5% and having an output amperage enough to obtain a proper electroplating process. The rectifier should be equipped with:

- Ammeter
- Voltmeter
- Ampere/minutes counter

### HEATING SYSTEM

The admitted materials for heaters are Pyrex, quartz or PTFE, with a device for the regulation and the control of the temperature (thermostat).

**WATER PURITY**

To prevent any bath contamination during the ready to use solution preparation or during any other subsequent maintenance operation, it is advisable to use deionized water with a conductivity less than 3  $\mu\text{S}/\text{cm}$  (and free from any traces of organic compounds, silicon, boron).

**ATTENTION!** THIS ASPECT IS OF EXTREME IMPORTANCE FOR THE CORRECT USAGE OF THIS PLATING SOLUTION AS IT IS RESULTS HIGHLY SENSIBLE TO CONTAMINANTS, ESPECIALLY THOSE OF ORGANIC TYPE AND CYANIDES.

In case of plating solution contamination call our Technical Service to get the right corrective guidance.

**SUPPLEMENTARY INFORMATION**

**PTLUX-RTU** is a ready to use plating solution working at a nominal concentration of 2 g/l of Pt and 1 g/l of Ru for flash applications mainly.

**SAFETY INFORMATION**

Classification and designation are noted in the Material Safety Data Sheets for the product according to the European legislation. The safety instructions and the instructions for the environmental protection must be followed in order to avoid hazards for people and environment. Please consider the explicit details in our Material Safety Data Sheets.

**DISCLAIMER**

*All recommendations and suggestions in this bulletin concerning the use of our products are based upon tests and data believed to be reliable. Since the actual use by others is beyond our control, no guarantee expressed or implied, is made by Legor Group, its subsidiaries or distributors, as to the effects of such use or results to be obtained, nor is any information to be construed as a recommendation to infringe any patent.*