RU5DG-C is a ruthenium plating electrolyte in concentrated form. Simply add the 200 ml bottle to 800 ml of pure deionized water to prepare the ready to use solution. The electrolyte deposits an abrasion resistant layer of ruthenium metal in a dark gray color. The dark gray color produced is developed with extremely stable organic additives making this electrolyte easy to use and maintain. This acidic based compound is primarily used in decorative plating applications for a diverse dark color option in the case where corrosion resistance is also a requirement. The plating deposit is durable and can reach a maximum thickness of 0.2 micron. Due to the fact ruthenium has a lower conductivity than other precious metals, the electrolyte requires a greater metal concentration to function optimally.

**Product form**
- Metal concentration: 5 g/200 ml (Ru)
- Product’s pH: Acidic
- Solution form: Concentrated
- Plating solution color: Black
- Storage time: 2 years
- Volume: 1 liter

**Deposit data**
- Solution appearance: Shiny
- Purity (%): 99.9
- Plating solution color: Grey

**Operating data**

<table>
<thead>
<tr>
<th>Anode type</th>
<th>Platonized titanium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agitation</td>
<td>Strong</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metal concentration</th>
<th>METAL</th>
<th>RANGE (g/l)</th>
<th>OPTIMAL (g/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ruthenium</td>
<td>3-10</td>
<td>5.0</td>
<td></td>
</tr>
</tbody>
</table>
PREPARATION

RU5DG-C is a concentrated form. To prepare the ready to use solution, simply add the 200 ml bottle to 800 ml of pure deionized water.

EQUIPMENT

Working vessel: Pyrex glass / PVC / polypropylene.
Power supply: DC current rectifier with low residual AC (<5%).
Heating element.
Anode Type Platinized Titanium [1.5-2.5 µm].
For larger bath volumes:
Magnetic driven filter pumps with 5-15 µm cartridge (before use, boil and wash the cartridges with demineralized water for 3 hours to prevent organic contamination).
Amp/min counter.

PRE TREATMENT

RU5DG-C can be deposited directly onto Palladium, Gold, Nickel and its alloys. An intermediate deposit or precious metal plating strike is necessary before depositing onto Tin, Lead, Zinc, Cadmium, Aluminum and Iron.
Copper and alloys containing copper provide the poorest layer for ruthenium adhesion and the metals together run a high risk metal diffusion which should be avoided. Separate the layers with intermediate deposits of white bronze or nickel when applicable and palladium.

POST TREATMENT

The electrolyte should be removed from the surface as quick as possible.
1. Wash off the bath residual in a recovery rinse (still rinse) followed by
2. Wash the article in hot distilled water (80°C).
3. Rinse the parts in circulating or running water.
4. Dry
In the case a problem is observed, replace step #2 with a 50% cold ammonia solution rinse for 5 minutes. This action should be preformed under an exhaust hood.

WATER PURITY

To prevent contamination of the bath both during its preparation and any subsequent replenishing operations, use demineralized water with a conductivity of less than 3 µS/cm (containing no traces of organic compounds, Chlorine, Silicon, or Boron).

BATH MAINTENANCE

Metallic additions
For small-size ruthenium baths (up to 3 liters) we advise to use until the ruthenium solution is completely exhausted and dispose without incorporating replenishment. For larger-sized baths add RUSR which is a pre calibrated replenisher containing additional ruthenium in concentrate to restore the optimal ruthenium concentration. For perfect galvanic bath performance it is advisable to maintain the ruthenium concentration at a minimum of 20% of the initial concentration; for example, with a bath operating at a concentration of 5 g/l, additions should be made after a maximum consumption of 1 g/l of ruthenium. When introducing additional metal keep in mind that in optimum working conditions a bath working at 5 g/l normally deposits about 3 mg of ruthenium per Ampere/minute.

pH control
pH is a very important parameter especially when working on high thickness layers. The pH value must be frequently controlled and held under optimal values numerically described in the operating data table. In case corrections are needed use Ammonium hydroxide to raise the pH, and RUSS conductive salts to lower it.

Density control
Solution density is not a critical parameter. In the case of heavy productions, it is advised to control the density periodically by chemical titration. As the density lowers in value, restore to it's optimum working health using RUSS conductive salts. Adding 10 g/l of RUSS will raise the solution density of about 1° Bé.
SAFETY INFORMATION

Being an acidic solution, the electrolyte is corrosive therefore is an irritant to the skin, eyes and mucous membranes. Caution should be exercised when using the product, avoiding contact with the eyes and skin. Use gloves and safety goggles. Keep away from cyanide based chemicals. For further information please refer to the relative MSDS.

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 of 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.