GP1-3N is a yellow gold pen plating solution which deposits a brilliant 3N gold color to the surface applied. 3N can be described as a rich yellow with green undertones and considered to match 14 kt yellow gold plating in most international markets. It is a perfect solution to for two-tone plating applications where a rich gold color is required. It can also be used to highlight specific details or cover solder joints on 3N gold colored or 14 kt gold items. This yellow gold pen plating solution is nickel, lead, and cadmium free, and despite being a traditional cyanide based alkaline chemical, it is easily transported given the toxic level contained is below the limit established by international transportation laws.

### Product form
- **Product's pH**: Alkaline
- **Metal concentration**: 1 g/ 100 ml
- **Solution form**: Ready-to-use
- **Solution form**: Liquid
- **Plating solution color**: Green - Blueish
- **Storage time**: 2 years
- **Volume**: 100 ml

### Deposit data
- **Solution appearance**: Shiny
- **Purity (%)**: 100.0
- **Hardness [HV 0.01]**: 90 - 100
- **Density [g/cm³]**: 19.6
- **Plating solution color**: 3N yellow gold
- **Thickness range [µm]**: 0.1 - 0.3

### Operating data

<table>
<thead>
<tr>
<th>Operating data</th>
<th>RANGE</th>
<th>OPTIMAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deposition speed</td>
<td>5-10</td>
<td>8.0</td>
</tr>
<tr>
<td>pH</td>
<td>5-10</td>
<td>8.0</td>
</tr>
<tr>
<td>Voltage [V]</td>
<td>5-10</td>
<td>8.0</td>
</tr>
<tr>
<td>Working temperature [°C]</td>
<td>20 - 30</td>
<td>25</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>Gold</td>
<td></td>
<td>10.0</td>
<td>10.0</td>
</tr>
</tbody>
</table>

### Color coordinates
- L*: 87.8
- a*: 4.2
- b*: 26.4
- c*: 26.7
GP1-3N is a ready-to-use pen plating solution at the concentration of 1 g/ 100 ml. No preparation is required.

**EQUIPMENT**

Power supply: Pen plating machine (5 Amp – 12 Volt rectifier)
Anode: A pen with a platinum collar
Tips: Fiber (white or brown)

**PRE TREATMENT**

Work pieces designated to undergo a pen plating operation, must go through the same cleaning procedures as recommended for bath plating operations. GP1-3N can be deposited directly onto silver, palladium, gold, nickel and its alloys. An intermediate deposit or precious metal plating strike is necessary before depositing onto tin, lead, zinc, aluminum and iron.

**POST TREATMENT**

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 running water and dry.

**BATH MAINTENANCE**

Use until the rhodium solution is completely exhausted without incorporating replenishment or additives.

**SUPPLEMENTARY INFORMATION**

Choosing the correct voltage

The best voltage for using GP1-1N is to be chosen upon the kind of tip used on the pen:
White tips: 8 -10 V
Brown tips: 7 - 9 V
PEN GRAF: 3 - 5 V

**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.