GF3N is a gold electrolyte intended for bath plating, which deposits a uniform, shiny layer in a 3N color. 3N can be described as a rich yellow with green undertones and considered to match 14 kt yellow gold plating in most international markets. GF3N is intended for decorative use therefore has been designed for flash plating permitting a deposition thickness of up to 0.2 micron. This yellow gold plating solution is Nickel, Lead, and Cadmium free, and despite being a traditional cyanide based alkaline bath, it is easily transported given the toxic level contained is below the limit established by international transportation laws.

**Product form**
- Metal concentration: 0.8 g/l (Au)
- Product's pH: Alkaline
- Solution form: Ready-to-use
- Solution form: Liquid
- Plating solution color: Transparent
- Storage time: 2 years
- Volume: 1 liter

**Deposit data**
- Solution appearance: Shiny
- Purity (%): 99.9
- Hardness [HV 0.01]: 90-100
- Density [g/cm³]: 19.0
- Plating solution color: 3N Yellow
- Thickness range [µm]: 0.1 - 0.2

**Operating data**

<table>
<thead>
<tr>
<th>Property</th>
<th>RANGE</th>
<th>OPTIMAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>pH</td>
<td>10.00 - 10.50</td>
<td>10.3</td>
</tr>
<tr>
<td>Voltage [V]</td>
<td>3.5-5.5</td>
<td>4.5</td>
</tr>
<tr>
<td>Current density [A/dm²]</td>
<td>0.5 - 2.0</td>
<td>1.2</td>
</tr>
<tr>
<td>Working temperature [°C]</td>
<td>55-65</td>
<td>60</td>
</tr>
<tr>
<td>Exposure time (sec)</td>
<td>20 - 50</td>
<td>40.0</td>
</tr>
<tr>
<td>Cathode efficiency [mg/Amin]</td>
<td>8 - 14</td>
<td>10.0</td>
</tr>
<tr>
<td>Anode-cathode ratio</td>
<td>&gt;1:1</td>
<td></td>
</tr>
<tr>
<td>Anode type</td>
<td>Platinized titanium or stainless steel</td>
<td></td>
</tr>
<tr>
<td>Agitation</td>
<td>Moderate</td>
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</tr>
</tbody>
</table>

**Metal concentration**

<table>
<thead>
<tr>
<th>Metal</th>
<th>RANGE (g/l)</th>
<th>OPTIMAL (g/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gold</td>
<td>0.8 - 0.4</td>
<td>0.8</td>
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</tbody>
</table>

**Color coordinates**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>L*</td>
<td>87.8</td>
</tr>
<tr>
<td>a*</td>
<td>4.1</td>
</tr>
<tr>
<td>b*</td>
<td>26.4</td>
</tr>
<tr>
<td>c*</td>
<td>26.7</td>
</tr>
</tbody>
</table>
PREPARATION

GF3N is a ready-to-use plating bath at the concentration of 0.8 g/l of gold. No preparation is required.

EQUIPMENT

Working vessel materials: 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] or stainless steel
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

GF3N can be deposited directly onto Pd, Ni, and precious metal substrates. An intermediate deposit of Pd or Ni is required over Ag, and all alloys containing copper to prevent copper migration. An intermediate deposit or precious metal plating strike is necessary before depositing onto Sn, Pb, Zn, Cd, Al and Fe.

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 circulating deionized water and dry.

WATER PURITY

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

BATH MAINTENANCE

This process is easy to maintain, but will initially requires frequent analytical controls in order to obtain a correct concentration level of all the metals present. Metal concentrations greatly influence the final deposited color; therefore, an incorrect management of these parameters shall inevitably lead to unwanted colors. Some general guidelines for maintenance are below described:
- Adding GF1AGR will lead the colour towards green-/pale hues.
- Adding GF1CUR will lead the colour towards red/pink hues.
- Adding GF10AUR will lead the colour towards yellow hues.
- Adding AUS683 is used to replenish the gold content
- KCN concentration must be frequently controlled to be maintained at the correct working concentration (0.6-1.2 g/l).

SUPPLEMENTARY INFORMATION

For maximum performance and in particular in terms of resulting color do not use an excessive agitation. A moderate agitation of the pieces to be plated will be sufficient. For larger volumes it is sufficient the use of a magnetic drive filter pump with a not too much high capacity.

SAFETY INFORMATION

Being an alkaline solution, the electrolyte is an irritant to the skin, eyes and mucous membranes. Caution should be exercised when using the product. Use gloves and safety goggles. Keep away from acid based chemicals. For further information please refer to the MSDS

DISCLAIMER

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