

# Elevate® Gold 7990 NBV HT

## Electrolytic Sulfite Gold



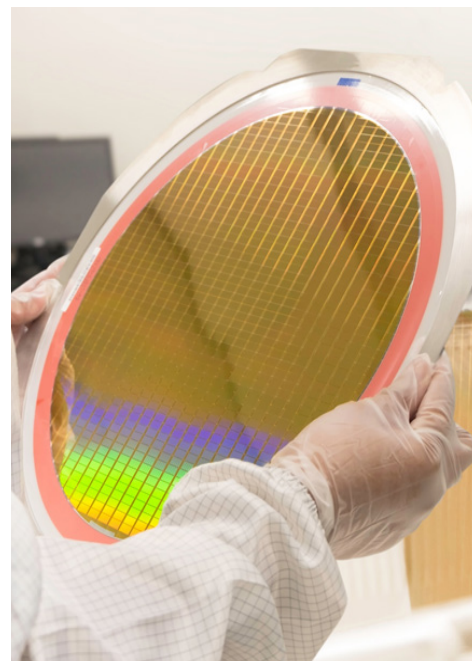
## Cyanide-free, versatile gold for Semiconductor

Trusted by leading semiconductor manufacturers worldwide, **Elevate® Gold 7990 NBV HT** is a sulfite gold process delivering pure, soft, and bright gold deposits with exceptional reliability and performance.

Sulfite gold processes are the preferred plating chemistries in the semiconductor industry. Legacy cyanide gold plating solutions that are high in toxicity are being phased out for safer products. The problem is traditional sulfite gold solutions also have inherent weaknesses; the sulfite complex is not as strong, as the cyanide complex makes the solution less stable. The high pH of sulfite gold can make the chemistry incompatible with some photoresists, presenting costly problems with the bath and adhesion. Also, the short bath life of sulfite gold processes makes operating costs much higher than cyanide gold systems.

Finally, while sulfite gold solutions are cyanide-free, they still present toxicity concerns because of their use of arsenic or thallium as grain refiners.

Elevate® Gold 7990 NBV HT eliminates all the inherent weaknesses of traditional sulfite gold processes. Because it operates at a pH of 6.3, it is compatible with all photoresists. At this pH, the deposit is bright, negating the need for toxic metallic grain refiners. The acidic pH extends the bath life by allowing the bath to produce optimum results at high specific gravity levels.



### Benefits

- Reduced cost of operation through:
  - Extended bath life, which significantly reduces the number of bath makeups per year
  - Stable electrolyte thanks to proprietary stabilizer, eliminating scrap produced from bath plate-out
  - Excellent coplanarity and step coverage resulting in less gold used per wafer
  - High-speed plating increases wafer production capabilities
- Safer product, thanks to its cyanide, thallium, and arsenic-free formulation
- For use in plating tools from manual wet bench and R&D to fully automatic production lines
- One of the most widely used and reliable sulfite gold chemistry in the semiconductor industry

### Features

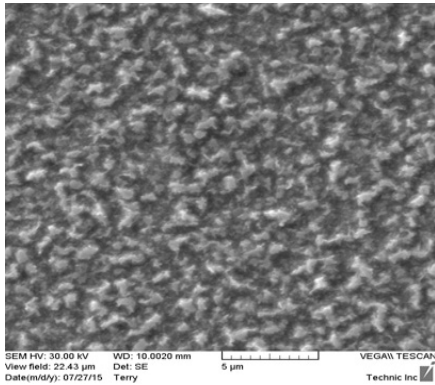
- Very stable electrolyte
- Low-stress deposit
- Smooth, bright deposit without the use of harmful metallic grain refiners
- Low deposit thickness variation across the wafer, even with small and large features on the same die
- Able to deposit 2–3 times more gold in vias, compared to a standard sulfite gold process
- Extended bath life of 4–5 metal turnovers in most applications
- Currently in production around the world in high volume manufacturing

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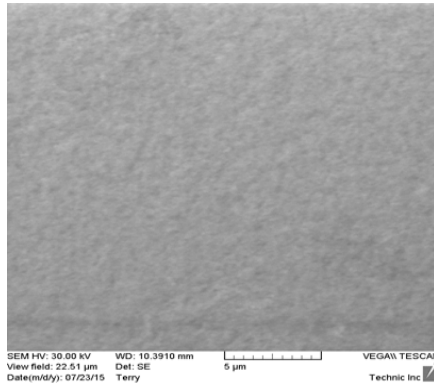
## Electrolytic Sulfite Gold

### Smooth and Bright Deposit

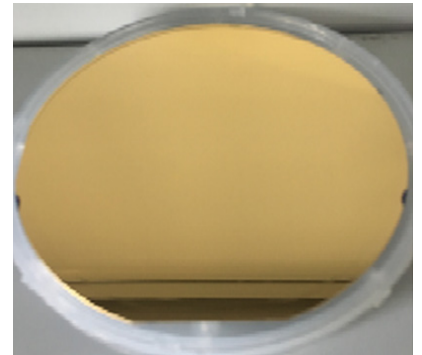
Elevate Gold 7990 NBV HT allows to obtain smooth and bright deposits, without the use of harmful additives such as thallium and arsenic.



**Fig. 1** Typical deposit from a standard sulfite gold bath.



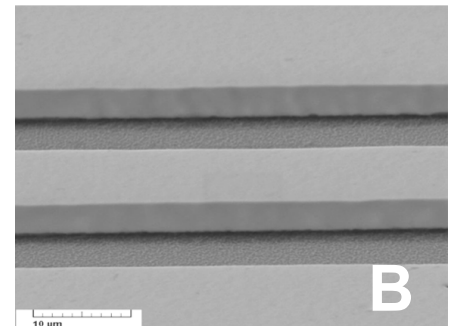
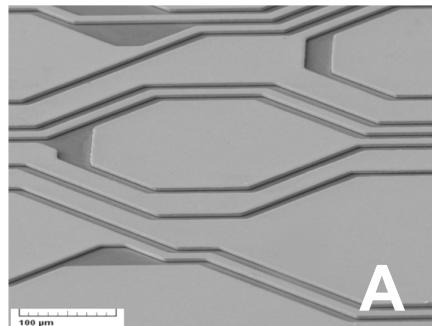
**Fig. 2** Smooth deposit of Elevate Gold 7990 NBV HT.



**Fig. 3** Elevate Gold 7990 NBV HT's bright deposit appearance.

### Thick Plating

The acidic pH of the chemistry allows for thick plating without compromising the resist. **Image A** shows features that are plated with 7 microns of gold. **Image B** shows sharp edges, smooth surface, and no under-plating. Overall excellent feature shape retention.



### Via Plating

**Images C and D** show excellent results with 7990 NVB HT conformal, and via fill applications. Vias can be plated without having to reduce the current density to achieve the targeted results.

